

WELDERS TO THE NATION SINCE 1951



(Formerly Advani-Oerlikon Ltd.)



COMPENDIUM

A ready reckoner of Welding &
Cutting Solutions for Engineering Projects



About - **AWL**

Since its inception (1951), Ador Welding Ltd. (AWL) has gone a long way to become one of India's leading players in the industry. As a pioneer, Ador Welding Ltd. has played a significant role in country's industrialization and infrastructure development by providing the finest welding consumables and equipments in India. The organization is listed on Bombay Stock Exchange (BSE), Mumbai with Scrip Code 517041 and National Stock Exchange (NSE) with symbol: ADORWELD.

Exceeding expectations is the cultural trademark of this company ably supported by state-of-the-art manufacturing plants. With Knowledge Based Centres of Excellence (R&D), a comprehensive sales and distribution network, Project Engineering Business Division, High-tech patented Plasma MIG solution covering many high-end specialization, AWL sets new standards in the Indian and Overseas markets.

Vision

To be the most respected Industrial leader across the globe, foster business excellence and maintain the highest level of ethical and social practices.

Mission

To raise the bar of perfection, be at par with technology and exceed expectations.



Group Profile



J. B. ADVANI & COMPANY PVT. LTD.

This joint venture built India's welding Industry during its most formative period and, over a 63-year time horizon, gained strong leadership status.



ADOR MULTIPRODUCTS LIMITED

Dependable Outsourcing Partnerships



ADOR FONTECH LIMITED

Life enhancing solutions for industrial components



ADOR GREEN ENERGY PVT. LTD. (AGEPL)

Solutions for New & Renewable Energies



ADOR POWERTRON LIMITED

Tapping into global opportunities in Digital Power Electronics



ADOR WELDING ACADEMY PVT. LTD.(AWA)

Harnessing Welding Wisdom For Total Customer Satisfaction



Welding Electrodes

I N D E X

Product Name	AWS Code	IS Class	Page No.
MILD STEEL GENERAL PURPOSE (MSGP)			
SUPERBOND	E 6013	ER 4212X	1
SUPERBOND S	E 6013	ER 4222X	2
SUPERBOND SS	E 6013	ERR 4222X	3
KINGBOND	E 6013	ER 4211X	4
METALBOND	E 6013	ER 4112X	5
MAGNABOND	E 6013		6
E BOND	E 6013	ER 4121	7
E BOND M	E 6013		8
MAXBOND	E 6012		9
C-Mn STEEL (Low Hydrogen)			
SUPABASE	E 7018	E B5426H ₃ JX	10
SUPABASE X PLUS	E 7018	E B5426H ₃ JX	11
X BOND	E 7018		12
TENALLOY	E 7018-1	E B5529H ₃ JX	13
TENALLOY Z PLUS	E 7018-1	E B5629H ₃ JX	14
TENALLOY S PLUS	E 7018-1	E B5629H ₃ JX	15
TENALLOY HH SPL	E 7018-1	E B5629H ₃ JX	16
TENALLOY R	E 7018-G	E B5629H ₃ JX	17
TENALLOY 38R SPL	E 7018-G		18
TENALLOY 16	E 7016	E B5426H ₃ X	19
TENALLOY 16 W	E 7016	E B5426H ₃ X	20
TENALLOY 16 SPL	E 7016-1H8R		21
TENALLOY 16 G	E 7016-G		22
C-Mn STEEL (High Efficiency)			
TOPSTAR	E 6020	E A4222X	23
TOPSTAR 110	E 7014	E RR5222 JX	24
TOPSTAR 140	E 7024	E RR 5242 KX	25
TOPSTAR 140 SPL	E 7024-1		26
C-Mn STEEL (Special Purpose)			
SILOX Fe		E S4122	27
SILOX Fe LH			28
ADOR SP-6			29
CELLULOSIC			
CELWEL 60	E 6010		30
CELWEL 60 S	E 6011		31
CELWEL 70 G	E 7010-G		32
CELWEL 70 P	E 7010-P1		33
CELWEL 80 G	E 8010-G		34
LOW ALLOY STEEL (High Temperature)			
MOLYTEN	E 7018-A1		35
MOLYTEN S PLUS	E 7018-A1		36
CROMOTEN	E 8018-B2		37
CROMOTEN PHT SPL	E 8018-B2		38

Welding Electrodes

I N D E X

Product Name	AWS Code	IS Class	Page No.
LOW ALLOY STEEL (High Temperature)			
CROMOTEN S PLUS	E 7018-B2L		39
CROMOTEN C	E 9018-B3		40
CROMOTEN C PHT BATCH	E 9018-B3		41
CROMOTEN C S PLUS	E 8018-B3L		42
CROMOTEN D	E 8018-B6		43
CROMOTEN D SPL	E 8018-B6L		44
CROMOTEN 9	E 8018-B8		45
CROMOTEN 9M	E 9018-B9		46
CROMOTEN 9M-15	E 9015-B9		47
CROMOTEN 9M SPL	E 9016-B9		48
CROMOTEN V	E 8013-G		49
CROMOTEN Ti	E 8013-G		50
CROMOTEN C Ti	E 9013-G		51
LOW ALLOY STEEL (Low Temperature)			
TENALLOY 70 A	E 8018-C1		52
TENALLOY 70 B	E 8018-C2		53
TENALLOY 70 BL	E 7018-C2L		54
TENALLOY 70 C	E 8018-C3		55
TENALLOY 55	E 8018-G		56
TENALLOY 60	E 8018-G		57
TENALLOY 16E SPL	E 8016-G		58
LOW ALLOY STEEL (High Strength)			
TENALLOY 60 D3	E 8018-D3		59
TENALLOY 70 D1	E 9018-D1		60
TENALLOY 75 D2	E 10018-D2		61
TENALLOY 75	E 10018-M		62
TENALLOY 80	E 11018-M		63
TENALLOY 80HH SPL	E 11018-M		64
TENALLOY 75G	E 10018-G		65
TENALLOY 65	E 9018-G		66
TENALLOY 65 SPL	E 9018-G		67
TENALLOY 70	E 9018-G		68
TENALLOY 4130			69
TENALLOY 125		E 1Cr Mo V B 22 H5	70
LOW ALLOY STEEL (Weathering Steel)			
ULTRACORTEN III	E 8018-W2		71
LOW ALLOY STEEL (Nimoten Series)			
NIMOTEN	E 9018-M		72
NIMOTEN PLUS	E 10016-G		73
NIMOTEN PLUS 535			74
NIMOTEN PLUS 535 A			75
NIMOTEN PLUS 535 B			76
STAINLESS STEEL (Austenitic Steel)			
SUPERINOX 1A	E 308-16	E 19.9 R26	77
SUPERINOX 1AH	E 308H-16		78

Welding Electrodes

I N D E X

Product Name	AWS Code	IS Class	Page No.
STAINLESS STEEL (Austenitic Steel)			
SUPERINOX 1A-15	E 308-15	E 19.9 B20	79
KING STAINLESS 308L	E 308L-16		80
BETANOX 308 PLUS	E 308-17	E 19.9 R36	81
SUPERINOX 1C	E 308L-16	E 19.9 LR26	82
SUPERINOX 1C-15	E 308L-15	E 19.9 LB20	83
SUPERINOX 1C-15 LT	E 308L-15	E 19.9 LB20	84
BETANOX 308L PLUS	E 308L-17	E 19.9 LR36	85
SUPERINOX 2A	E 316-16	E 19.12.2 R26	86
BETANOX 316 Plus	E 316-17	E 19.12.2 R36	87
SUPERINOX 2C	E 316L-16	E 19.12.2 LR26	88
BETANOX ZF	E 316L-16	E 19.12.2 LR26	89
BETANOX K	E 316L-15	E 19.12.2 LB20	90
BETANOX K SPL			91
BETANOX 316L PLUS	E 316L-17	E 19.12.2 LR36	92
SUPERINOX 2D	E 317L-16	E 19.12.3 LR26	93
SUPERINOX 2B	E 318-16		94
BETANOX 318 PLUS	E 318-17	E 19.12.2 Nb R36	95
SUPERINOX 1B	E 347-16	E 19.9 Nb R26	96
BETANOX 347 PLUS	E 347-17	E 19.9 Nb R36	97
STAINLESS STEEL (Dissimilar Steel Welding)			
BETANOX D	E 309-16	E 23.12 R26	98
BETANOX 309 PLUS	E 309-17	E 23.12 R36	99
BETANOX DL	E 309L-16	E 23.12 LR26	100
BETANOX D Cb	E 309 Nb-16	E 23.12 Nb R26	101
BETANOX 309 Cb PLUS	E 309Nb-17	E 23.12 Nb R36	102
BETANOX D Mo	E 309Mo-16	E 23.12.2 R26	103
BETANOX 309Mo PLUS	E 309Mo-17	E 23.12.2 R36	104
BETANOX D MoL	E 309L Mo-16	E 23.12.2 LR26	105
SUPERINOX 312	E 312-16	E 29.9 R26	106
STAINLESS STEEL (Heat Resisting)			
BETANOX C	E 310-16	E 25.20 R26X	107
BETANOX 310 PLUS	E 310-17	E 25.20 R36X	108
BETANOX 20/30	E 320-15		109
BETANOX 20/25/5/Cu	E 385-16	E 20.25.5 LCu R 26	110
STAINLESS STEEL (Plain Chrome Series)			
BETACHROME N		E 18.8 Mn B45	111
BETACHROME ND		E 18.8 Mn B20	112
BETACHROME ND SPL		E 18.8 Mn B20	113
BETACHROME 13Cr	E 410-15		114
BETACHROME 13/4			115
BETACHROME 13/4 LB	E 410 Ni Mo-15		116
BETACHROME 17Cr	E 430-15		117
BETACHROME 17/4			118

Welding Electrodes

I N D E X

Product Name	AWS Code	IS Class	Page No.
STAINLESS STEEL (Duplex SS)			
BETANOX 4462	E 2209-16	E 22.9.3 LR23	119
BETANOX 2553	E 2553-16		120
BETANOX 2594	E 2594-15		121
BETANOX 2595-16	E 2595-16		122
BETANOX 2595-15	E 2595-15		123
CAST IRON			
CASTEN	E St	E Fe B26	124
CASTMONEL	E NiCu-B		125
CASTNICKEL	E Ni-CI		126
FERRICAST	E NiFe-CI	E Ni Fe G16	127
CASTFERRINICKEL			128
HARD FACING (Moderate - Abrasion Impact)			
ZEDALLOY 250			129
ZEDALLOY 350			130
ZEDALLOY 350 LH			131
ZEDALLOY 500			132
ZEDALLOY 550			133
ZEDALLOY 550 LH			134
ZEDALLOY 600			135
ZEDALLOY 600B			136
HARD FACING (High Impact - Work Harenable)			
ZEDALLOY 12Mn			137
ZEDALLOY 16Mn			138
HARD FACING (High Impact - Corrosion Resistance)			
ZEDALLOY 16Cr			139
ZEDALLOY 20Cr			140
HARD FACING (Abrasion - Corrosion)			
ZEDALLOY K			141
ZEDALLOY BELL			142
HARD FACING (High Abrasion)			
ZEDALLOY VB			143
SUPER ZEDALLOY			144
SUPER ZEDALLOY Ni			145
MAGANACANE			146
ZEDALLOY 16			147
HARD FACING (High Temperature Oxidation - Impact - Abrasion)			
ZEDALLOY CoCr-A			148

Welding Electrodes

I N D E X

Product Name	AWS Code	IS Class	Page No.
HARD FACING (Build Up)			
ADOR AS			149
ZEDALLOY 400B			150
NON FERROUS (Ni Alloys)			
SUPERMONEL	E NiCu-7		151
NICALLOY 1	E Ni-1		152
NICALLOY Fe-2	E NiCrFe-2		153
NICALLOY Fe-3	E NiCrFe-3		154
NICALLOY Mo-3	E NiCrMo-3		155
NICALLOY Mo-4	E NiCrMo-4		156
NICALLOY Mo-5	E NiCrMo-5		157
NICALLOY Mo-6	E NiCrMo-6		158
NICALLOY Mo-10	E NiCrMo-10		159
NICALLOY Mo-12	E NiCrMo-12		160
NON FERROUS (Al Alloys)			
ALBOND 5 Si	E 4043		161
ALBOND 12 Si			162
NON FERROUS (Cu Alloys)			
BRONZE	E CuSn-A	E CuSn-A	163

Continuous Welding Consumables (Wires & Fluxes)

I N D E X

Product Name	AWS Code	Page No.
GMAW/GTAW C-Mn STEEL		
AUTOMIG 70S-6	ER70S-6	164
TIGFIL 70S-6	ER 70S-6	165
TIGFIL 70S-2	ER 70S-2	166
TIGFIL 70S-2 SPL	ER 70S-2	167
AUTOMIG 70S-G	ER70S-G	168
GMAW/GTAW LOW ALLOY STEEL (High Temperature)		
AUTOMIG 70S-A1/ TIGFIL 70S-A1	ER 70S-A1	169
AUTOMIG 80S-B2 / TIGFIL 80S-B2	ER80S-B2	170
AUTOMIG 90S-B3 / TIGFIL 90S-B3	ER90S-B3	171
AUTOMIG 80S-B6 / TIGFIL 80S-B6	ER80S-B6	172
AUTOMIG 80S-B8 / TIGFIL 80S-B8	ER80S-B8	173
AUTOMIG 90S-B9 / TIGFIL 90S-B9	ER90S-B9	174
GMAW/GTAW LOW ALLOY STEEL (Low Temperature)		
AUTOMIG 80S-Ni1 / TIGFIL 80S-Ni1	ER80S-Ni1	175
AUTOMIG 80S-Ni2 / TIGFIL 80S-Ni2	ER80S-Ni2	176
GMAW/GTAW LOW ALLOY STEEL (High Strength)		
AUTOMIG 80S-D2 / TIGFIL 80S-D2	ER80S-D2	177
AUTOMIG 80S-G / TIGFIL 80S-G	ER80S-G	178
AUTOMIG 90S-D2 / TIGFIL 90S-D2	ER90S-D2	179
AUTOMIG 90S-G / TIGFIL 90S-G	ER90S-G	180
GMAW / GTAW STAINLESS STEEL		
MIGINOX 308L / TIGINOX 308L	ER308L	181
MIGINOX 308L Si	ER308LSi	182
MIGINOX 309L / TIGINOX 309L	ER309L	183
MIGINOX 309L Si	ER309LSi	184
MIGINOX 309 Mo / TIGINOX 309 Mo	ER309Mo	185
MIGINOX 316L / TIGINOX 316L	ER316L	186
MIGINOX 316L Si	ER316LSi	187
MIGINOX 347 / TIGINOX 347	ER347	188
MIGINOX 347 Si	ER347Si	189
MIGINOX 410 NiMo / TIGINOX 410 NiMo	ER410NiMo	190
GMAW / GTAW DUPLEX STAINLESS STEEL		
MIGINOX 2209 / TIGINOX2209	ER2209	191
GMAW/GTAW NICKEL ALLOYS		
AUTOMIG Ni-1 / TIGFIL Ni-1	ERNi-1	192
AUTOMIG NiCr-3 / TIGFIL NiCr-3	ERNiCr-3	193
AUTOMIG NiCrMo-3 / TIGFIL NiCrMo-3	ERNiCrMo-3	194
AUTOMIG NiCrMo-4 / TIGFIL NiCrMo-4	ERNiCrMo-4	195
AUTOMIG NiCu-7 / TIGFIL NiCu-7	ERNiCu-7	196

Continuous Welding Consumables (Wires & Fluxes)

I N D E X

Product Name	AWS Code	Page No.
GMAW/GTAW ALUMINIUM ALLOYS		
AUTOMIG 4043 / TIGFIL 4043	ER 4043	197
AUTOMIG 5183 / TIGFIL 5183	ER 5183	198
AUTOMIG 5356 / TIGFIL 5356	ER 5356	199
GTAW COPPER ALLOYS		
TIGFIL CuNi	ERCuNi	200
FCAW C-Mn STEEL		
AUTOMIG FC 71T-1	E71T-1C/M H8	201
AUTOMIG FC 121	E71T-1C H8	202
AUTOMIG FC 71T-5	E71T-5C/M H4	203
AUTOMIG FC 71T-1C-J	E71T-1C-J H8	204
FCAW LOW ALLOY STEEL (High Temperature)		
AUTOMIG FC 81T1-B2	E81T1-B2C H8	205
FCAW LOW ALLOY STEEL (Low Temperature)		
AUTOMIG FC 81T1-Ni1	E81T1-Ni1C/M H8	206
AUTOMIG FC 81T1-K2C-J	E81T1-K2C-J H8	207
AUTOMIG FC 90T5-K2	E90T5-K2C H4	208
FCAW LOW ALLOY STEEL (High Strength)		
AUTOMIG FC 18M SpI	E91T1-D1C/M H8	209
AUTOMIG FC 110T5-K4	E110T5-K4C H4	210
FCAW LOW ALLOY STEEL (Weathering Steel)		
AUTOMIG FC 180R	E81T1-W2 C/M H8	211
FCAW STAINLESS STEEL		
MIGINOX FC 308L	E308LT1-1/4	212
MIGINOX FC 309L	E309LT1-1/4	213
MIGINOX FC 316L	E316LT1-1/4	214
MIGINOX FC 347	E347T1-1/4	215
FCAW DUPLEX STAINLESS STEEL		
MIGINOX FC 2209	E2209T1-1/4	216
FCAW HARD FACING Abrasion-Impact		
AUTOMIG FC 580		217
AUTOCORE FC 10Cr		218
FCAW HARD FACING High Impact Work Hardenable		
AUTOCORE FC 16Mn		219

Continuous Welding Consumables (Wires & Fluxes)

I N D E X

Product Name	Page No.
FCAW HARD FACING High Abrasion	
AUTOCORE FC CrC	220
FCAW HARD FACING Elevated Temperature High Abrasion	
AUTOCORE FC 65	221
C-MN WIRES FOR SUBMERGED ARC WELDING	222
WIRES FOR SUBMERGED ARC WELDING OF CREEP RESISTANT STEELS	223
WIRES FOR SUBMERGED ARC WELDING FOR CRYOGENIC APPLICATIONS	224
WIRES FOR SUBMERGED ARC WELDING OF HIGH STRENGTH STEELS	225
WIRES FOR SUBMERGED ARC WELDING OF STAINLESS STEELS	226
NOTE ON SAW FLUXES	227
SAW Fluxes	
AUTOMELT A55 (AUTOMELT Gr II)	228
AUTOMELT A57	230
AUTOMELT A81	232
AUTOMELT A82	234
AUTOMELT A61	236
ACEMELT	238
AUTOMELT B31 (AUTOMELT Gr IV)	240
AUTOMELT B71	242
AUTOMELT B22 PLUS	245
AUTOMELT B20 PLUS	247
AUTOMELT B41	250
AUTOMELT S76	253
AUTOMELT S33	254

SOME BASICS TO KNOW	256-260
MOST COMMON TYPES OF INSULATION CLASSES USED IN WELDING EQUIPMENT	
MOST COMMON TYPES OF ENCLOSURE PROTECTIONS USED IN WELDING EQUIPMENT	
MOST COMMON TYPES OF DUTY CYCLES USED IN WELDING EQUIPMENT	
ELECTRODE SELECTION TABLE	
HELP ME CHOOSE	
RED / TPA SERIES WELDING TRANSFORMERS	251
DOUBLE MUSTANG / DOUBLE RACER / DOUBLE HORSE / DOUBLE STALLION	263
E-WELMAC 190	265
GL SERIES WELDING RECTIFIERS (DIODE BASED)	267
THYROLUXE 401 / THYROLUXE 600	269
THYROLUXE 1000 / THYROLUXE 1200	271
CHAMP 200	273
CHAMP 250	275
CHAMP T400	277
CHAMP 500 / CHAMP 600	279
CHAMP 1200 - GOUGEMASTER	281
SUPERGEN 320	283
SILENT CHALLENGER 401	285
SILENT CHALLENGER 501	287
SILENT CHALLENGER 2 X 301	289
MAXIMIG 251	291
MAXIMIG 400	293
RANGER 403	295
RANGER 600	297
RANGER 600 MULTI	299
CHAMPMIG 250	301
CHAMPMIG 400	304
CHAMPMIG 600	307
CHAMPMULTI 400, 600	310
MIG TROLLEY	315
HF 2000 / HF 2000 AD & HF 3000 / HF 3000 AD	317
CHAMPTIG 220P	319
CHAMPTIG 300P	324
CHAMPTIG 400P	327
CHAMP TIG 300 AD	330
MAESTRO SERIES 800, 1000, 1200	333
MAESTRO 1200 (I)	337
DRYING OVEN	341
UNI - MAESTRO RETROFIT UNIT FOR SAW	343
COMBO MS 600	345

I N D E X

Product Name	Page No.
ADOR BRINGS ORBITAL GMAW/ FCAW WELDING SYSTEM	350
CNC CUTTING MACHINE KING CUT PRO SERIES	351
ADVANCE ROBOTIC WELDING SOLUTIONS	352
SPM'S FOR AUTOMATED SOLUTIONS	
L SEAM WELDING SPM	353
C SEAM WELDING SPM	353
SQUARE AXLE WELDING MACHINE	353
PIPE WELDING SPM	354
VALVE WELDING SPM	354
TORCH ROTARY MACHINE	354
CYLINDER WELDING SPM	355
AUTOMATIC PLUS/H/BOX BEAM WELDING SOLUTION	356
TILTING SYSTEM	356
V BLOCK	356
ROTATORS	357
POSITIONERS	357
COLUMN & BOOM	357

I N D E X

Product Name	Page No.
PORTABLE GAS CUTTING MACHINES	
PANTHER NM	358
KING PANTHER-IM	359
TIGER NM	360
KING CUTTING / WELDING / HEATING TORCHES	
KING JOIN - AGWT /3W	361
KING TORCH-NM	361
KING JOIN - AGHT / HT-1	362
KING JOIN - AGWT /25W	362
GAS CUTTING NOZZLE	363
KING REGULATORS	
KING REGULATOR SERIES (TWO-STAGE) GAS REGULATORS	364
KING REGULATOR SERIES (SINGLE-STAGE) GAS REGULATORS	365
KING ADAPTOR	366
KING PROTECT FLASHBACK ARRESTORS	
KING PROTECT - T FLASHBACK ARRESTOR FOR TORCH	367
KING PROTECT - R FLASHBACK ARRESTOR FOR REGULATOR	368
PERSONAL PROTECTIVE EQUIPMENT (PPE)	
KING SHIELD-HAND (83 X 108 MM)	369
KING SHIELD-AUTO	369
KING GLOVE – GP	369
KING GLOVE – MP	370
KING GLOVE – MIG	370
KING GLOVE – TIG	370
KING GLOVE – HR	371
KING APRON	371
KING SLEEVE GUARD	371
KING LEG GUARD	371
SAFETY SHOE - BISON	372
SAFETY SHOE - RHINO	372
WELDING ACCESSORIES	
HOLDER HC-600	373
HOLDER KING COOL-600	373
HOLDER KING SWORD-600	373
EARTH CLAMP-600	373
KING HOSE	374
KING WELDING CABLE	375
ADOR HANDY	376



Welding Electrodes

Mild Steel General Purpose | C-Mn Steels
Cellulosic | Low Alloy Steel | Stainless Steel
Cast Iron | Hard Facing | Non Ferrous



SUPERBOND

MILD STEEL GENERAL PURPOSE (MSGP)



Mild Steel Electrode for General Purpose Welding

CLASSIFICATION :	AWS A/ SFA 5.1	IS 814	APPROVALS :
	E 6013	ER 4212X	ABS/BV/DNV/IRS/LRA/IBR/BIS/NKK/MND

KEY FEATURES :

- Rutile coated
- Suitable for general purpose structural steels
- All position operating characteristics
- X-ray quality weld deposit

WELDING POSITION :   **AC (50 OCVmin.)/ DCEN**

TYPICAL APPLICATIONS :

- Steel structures
- Tanks
- Truck frames and bodies
- Ships, Pipelines
- Bridges
- Joining ASTM SA 283 Gr.A/B/C/D

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.07	0.5	0.2	0.02	0.02
Specification	0.10 max	0.60 max	0.30 max.	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS, MPa	EL%	CVN Impact at 0°C, J
Typical	As Welded	500	430	25	60
Specification		460-550	370-480	22-28	50 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	296	4	17
3.15 x 350	100-130	171	4	29
3.15 x 450	100-130	139	4	36
4.0 x 450	140-180	90	4	55
5.0 x 450	180-240	58	4	85



Mild Steel Electrode for Radiographic Quality Welding

CLASSIFICATION :	AWS A/ SFA 5.1	IS 814	APPROVALS :
	E 6013	ER 4222X	ABS/IRS/LRA /IBR/BIS/DNV/BV

KEY FEATURES :

- Rutile type medium coated
- Outstanding welding characteristics
- X-ray quality weld deposit
- All position capability

WELDING POSITION : 

 **AC (50OCV min.)/ DCEN**

TYPICAL APPLICATIONS :

- Boiler tubes
- Storage tanks
- Railway wagons
- Shipbuilding, Bridges
- Pressure vessels
- Joining steels like- ASTM SA 36/36M
SA 283/283M Gr.A/B/C/D
SA285/285M Gr.A/B/C
SA 414/414M Gr.A/B

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.06	0.5	0.2	0.02	0.02
Specification	0.10 max	0.60 max	0.25 max.	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 0°C, J
Typical	As Welded	510	440	25	63
Specification		460-550	370-480	22-28	50 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
1.6 x 250	30-50	942	4	5
2.0 x 300	40-60	505	4	10
2.5 x 350	60-90	277	4	18
3.15 x 450	100-140	129	4	39
4.0 x 450	140-190	84	4	59
5.0 x 450	180-250	55	4	89



SUPERBOND SS

MILD STEEL GENERAL PURPOSE (MSGP)

Mild Steel Electrode for High Speed Structural Welding

CLASSIFICATION :	AWS A/ SFA 5.1	IS 814	APPROVALS :
	E 6013	ERR 4222X	ABS/DNV/BV/LRA/IBR/BIS/IRS

KEY FEATURES :

- Rutile based heavy coated
- Touch type electrode
- X-ray quality weld deposit
- Suitable for major structural work and bridging wide root gap

WELDING POSITION : 



AC (50OCV min.)/ DCEN

TYPICAL APPLICATIONS :

- Pressure vessels, Storage tanks
- Locomotive fireboxes, Boilers
- Railway coach panels
- Fine steel furniture
- Automobile bodies
- Joining steels like- ASTM SA 36/36M
- SA 283/283M Gr.A/B/C/D
- SA285/285M Gr.A/B/C
- SA 414/414M Gr.A/B

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.06	0.45	0.2	0.02	0.02
Specification	0.10 max	0.60 max	0.30 max.	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 0°C, J
Typical	As Welded	515	445	25	65
Specification		460-550	370-480	23-30	50-80

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.0 x 300	40-60	495	4	10
2.5 x 350	60-90	244	4	20
3.15 x 450	100-140	114	4	44
4.0 x 450	140-190	73	4	68
5.0 x 450	190-250	48	4	102



Mild Steel Electrode for All Position General Fabrication

CLASSIFICATION :	AWS A/ SFA 5.1	IS 814	APPROVALS :
	E 6013	ER 4211X	BIS

KEY FEATURES :

- Rutile type medium coated
- Operates at low OCV
- X-ray quality weld deposit
- Vertical down welding capability
- Suitable for major structural work

WELDING POSITION :   **AC (50 OCV)/DCEN/DCEP**

TYPICAL APPLICATIONS :

- General fabrication in steel plants
- Light construction work
- Shipbuilding, Pipes
- Storage tanks, Furniture work
- Automobile bodies
- Joining steel grade IS 2062, 226

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.1	0.4	0.3	0.02	0.02
Specification	0.12 max	0.25-0.55	0.12-0.35	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 0°C, J
Typical	As Welded	520	440	24	57
Specification		450-540	370-480	22-28	50 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-85	150	6	18
3.15 x 350	90-130	85	6	29
3.15 x 450	90-130	85	6	37
4.0 x 450	140-180	55	6	59
5.0 x 450	180-240	36	6	90



METALBOND

MILD STEEL GENERAL PURPOSE (MSGP)

Mild Steel Electrode for General Purpose Structural Application

CLASSIFICATION :	AWS A/ SFA 5.1	IS 814	APPROVALS :
	E 6013	ER 4112X	ABS/BV/DNV/IRS/LRA/BIS/IBR/ NTPC/BHEL

KEY FEATURES :

- Rutile type medium coated
- Operates at low OCV
- X-ray quality weld deposit
- All position welding capability
- Suitable for mild steel structural work

WELDING POSITION :



AC (50OCV min.)/ DCEN

TYPICAL APPLICATIONS :

- Storage tanks, Pipes
- Machine frames
- Construction equipment
- Welding steel grade IS 2062, 226

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.09	0.4	0.25	0.02	0.02
Specification	0.12 max	0.55 max	0.35 max.	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 0°C, J
Typical	As Welded	510	430	25	55
Specification		460-550	370-470	22-28	50 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-80	296	4	17
3.15 x 350	100-130	177	4	28
3.15 x 450	100-130	137	4	36
4.0 x 450	140-180	91	4	54

Mild Steel Electrode for Sheet Metal Work Application

CLASSIFICATION : AWS A/ SFA 5.1
E 6013

APPROVALS :
ABS/BV/DNV/IRS/LRA/BHEL

KEY FEATURES :

- Rutile type medium coated
- Quick freezing slag
- X-ray quality weld deposit
- Vertical down welding capability
- Best suited for thin plates and horizontal butt joint of storage tanks

WELDING POSITION : 

 **AC (50 OCV min)/DCEP/DCEN**

TYPICAL APPLICATIONS :

- Ship building, Bridges
- Pressure vessels, Pipes
- Storage tanks, Automobile bodies
- Sheet metal work
- Construction and Furniture work
- Joining steel grade ASTM SA 36/36M, SA 53/53M, SA 283/283M Gr.A/B/C/D

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.09	0.4	0.25	0.02	0.02
Specification	0.11 max	0.65 max	0.45 max.	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 0°C, J
Typical	As Welded	500	415	26	54
Specification		460-550	360-480	22-30	47-70

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg
2.5 x 350	60-100	5	4	20
3.15 x 450	85-130	5	4	20
4.0 x 450	130-190	5	4	20
5.0 x 450	150-240	5	4	20

E BOND

MILD STEEL GENERAL PURPOSE (MSGP)

General Purpose Electrode for Welding Mild Steel and Low Carbon Steels

CLASSIFICATION :	AWS A/ SFA 5.1	IS 814	APPROVALS :
	E 6013	ER 4121	BIS

KEY FEATURES :

- Superior welding characteristics
- All position electrode
- Operates at low OCV
- Ideal for mild steel and low carbon Mn steel with UTS of 430-540 MPa

WELDING POSITION :   **AC (50 OCV min.)/ DCEN**

TYPICAL APPLICATIONS :

- Sheet metal work
- Storage tanks
- Vehicles, Railway wagons
- Shipbuilding, Pipes
- Steel furniture
- General structural application
- Welding IS 2062 and equivalent grades upto 20 mm thick

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.08	0.35	0.25	0.02	0.02
Specification	0.10 max	0.2-0.5	0.30 max.	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 27°C, J
Typical	As Welded	490	435	24	58
Specification		430-540	370-480	22-26	40-70

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	150	6	17
3.15 x 350	100-130	85	6	29
3.15 x 450	100-130	85	6	36
4.0 x 450	140-180	55	6	56
5.0 x 450	180-240	36	6	87



Mild Steel Electrode for General Purpose Fabrication

CLASSIFICATION : AWS A/ SFA 5.1

E 6013

KEY FEATURES :

- Rutile type coating
- Specially designed for general purpose fabrication application
- Superior welding characteristics
- All position electrode

WELDING POSITION :



AC (50 OCV min.)/ DCEN

TYPICAL APPLICATIONS :

- Sheet metal work
- Storage tanks
- Steel furniture
- General fabrication

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.08	0.3	0.1	0.02	0.02
Specification	0.10 max	0.2 min	0.20 max.	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact	
					at 27°C, J	At 0°C, J
Typical	As Welded	460	405	26	60	41
Specification		430-540	370-480	22 min	40-70	30-50

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-85	150	6	17
3.15 x 350	90-120	87	6	28
3.15 x 450	90-120	87	6	36
4.0 x 450	130-170	55	6	57
5.0 x 450	170-200	36	6	88



General Purpose Mild Steel Electrode for Structural and Repair Work

CLASSIFICATION : AWS A/ SFA 5.1

E 6012

APPROVALS :

ABS/BV/DNV/IRS

KEY FEATURES :

- Rutile coated electrode
- Quick freezing slag
- All position type
- Additionally can be operated on DCEP
- Ideal for poor fit up
- Usable on rusty plates
- For general fabrication and repair work

WELDING POSITION : 



AC (50 OCV min.) / DCEN

TYPICAL APPLICATIONS :

- Truck bodies, Storage tanks
- Construction equipment
- Light gauge work
- Steel furniture, Machinery
- Foundry equipment, Barges
- Tacking work, Small parts repair

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.09	0.5	0.2	0.02	0.02
Specification	0.12 max	0.35-0.55	0.25 max.	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 27°C, J
Typical	As Welded	500	430	26	68
Specification		430 min.	330 min.	22 min.	47 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg
2.5 x 350	55-95	5	4	20
3.15 x 450	95-125	5	4	20
4.0 x 450	125-175	5	4	20
5.0 x 450	165-260	5	4	20

SUPABASE

C-Mn STEEL (Low Hydrogen)

Special Welding Electrode for Pressure Vessels and Bridges

CLASSIFICATION :	EN ISO 2560-A	AWS A/SFA 5.1	IS 814	APPROVALS :
	E 42 2 B 32 H5	E 7018	E B5426H ₃ JX	ABS/BV/DNV/IRS/LRA/ IBR/BIS/NTPC/BHEL

KEY FEATURES :

- Basic type iron powder electrode
- Metal recovery approx. 115%
- All position capability
- Radiographic weld deposit
- Suitable for pipe welding in 5G & 6G positions

WELDING POSITION : 



AC (70 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Pressure vessels, Pipes
- Storage tanks
- Bridges, Heavy structures
- Joining steel of ASTM SA 414/414M Gr.C/D, SA 516/516M Gr.55/60, IS 2002, IS 2062

REDRYING CONDITION : 300°C for 1 hr (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.06	1.1	0.4	0.02	0.02
Specification	0.04-0.09	0.8-1.6	0.35-0.7	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact , J	
					-20°C	-30°C
Typical	As Welded	540	470	26	66	48
Specification		500-600	440-550	24-30	50-80	30-70

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	225	4	22
3.15 x 450	100-130	110	4	45
4.0 x 450	140-180	75	4	66
5.0 x 450	180-240	50	4	98

EQUIVALENT: GMAW wire: **Automig-70S-6** FCAW wire: **Automig-FC-71T-1, Automig-FC-121**




Covered Electrode for 500 MPa High Tensile Strength Steel

CLASSIFICATION :	EN ISO 2560-A	AWS A/SFA 5.1	IS 814	APPROVALS :
	E 42 2 B 32 H5	E 7018	E B5426H ₃ JX	ABS/BV/DNV/IRS/GL/LRA /IBR/BIS/NPCIL/MND

KEY FEATURES :

- Basic coated electrode
- Low hydrogen iron powder type
- Medium penetration
- High deposition rate
- Radiographic weld quality
- All position capability

WELDING POSITION : 

 AC (70 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Boilers, Pressure vessels
- Heavy structures subject to dynamic loading
- Ship building, Storage tanks
- Bridges, Pipe lines, Penstocks
- Joining IS 2002, 2062 steels

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.05	1.1	0.5	0.01	0.01
Specification	0.04-0.09	0.80-1.60	0.35-0.70	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at	
					-20°C	-30°C
Typical	As Welded	555	480	26	67	48
Specification		500-600	440-550	24-30	50-80	30-70

Hardness, 3 Layer: 160-200 BHN

Diffusible H₂ Content: <5 ml/100 gm

SPECIAL TESTS : HIC & SSCC (NACE)

CTOD at -10°C

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	225	4	22
3.15 x 450	100-130	110	4	45
4.0 x 450	140-180	75	4	66
5.0 x 450	180-240	50	4	98

EQUIVALENT: GMAW wire: **Automig-70S-6** FCAW wire: **Automig-FC-71T-1, Automig-FC-121**

X BOND

C-Mn STEEL (Low Hydrogen)

Welding Electrode for Structural Welding Application

CLASSIFICATION :	EN ISO 2560-A	AWS A/SFA 5.1	APPROVALS :
	E 38 2 B 32	E 7018	ABS/LRA/IBR/MND

KEY FEATURES :

- Basic coated electrode
- Low hydrogen iron powder type
- Tough and ductile weld
- Radiographic weld deposit
- Deposition efficiency upto 110-115%
- All position capability
- Pipe welding in 5G and 6G positions

WELDING POSITION : 



AC (70 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Structural welding
- Storage tanks
- Boilers, Pressure vessels
- Bridges, Pipes
- Joining steel ASTM SA 414/414M Gr.C/D/E, SA 516/516M Gr.55/60

REDRYING CONDITION : 100 - 150°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.07	1.0	0.5	0.02	0.02
Specification	0.10 max	1.60 max	0.75 max	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Typical	As Welded	525	440	26	55
Specification		490 min	400 min	22 min	27 min

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	231	4	22
3.15 x 450	100-130	111	4	45
4.0 x 450	140-180	75	4	66
5.0 x 450	180-240	50	4	98

EQUIVALENT: GMAW wire: **Automig-70S-6** FCAW wire: **Automig-FC-71T-1, Automig-FC-121**

TENALLOY

C-Mn STEEL (Low Hydrogen)

Welding Electrode with excellent toughness properties

CLASSIFICATION :	EN ISO 2560-A	AWS A/SFA 5.1	IS 814
	E 42 3 B 32	E 7018-1	E B5529H ₃ JX

KEY FEATURES :

- Basic type iron powder electrode
- All position capability including vertical down position
- Excellent toughness down to -46°C
- Suitable for pipe welding in 5G & 6G position
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Storage tanks, Pressure vessels
- Boilers, Bridges, Pipes
- Heavy structures subject to dynamic loading and mechanical restraint
- Suitable for ASTM SA 414/414M Gr.C/D, SA 516/516M Gr.55/60, IS 2002, IS 2062 steels

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.06	1.1	0.35	0.02	0.02
Specification	0.04-0.09	0.80-1.60	0.20-0.45	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -46°C, J
Typical	As Welded	575	490	26	42
Specification		520-640	450-540	24 min.	30-50

Hardness, 3 Layers: 200 BHN max.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg
2.5 x 350	60-90	5	4	20
3.15 x 450	90-140	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	180-230	5	4	20



Welding Electrode with Excellent Mechanical and Impact Properties at Low Temperature

CLASSIFICATION :	AWS A/SFA 5.1	IS 814	EN ISO 2560-A	APPROVALS :
	E 7018-1	E B5629H ₃ JX	E 42 4 B 32 H5	ABS/BV/DNV/IRS/ LRA/IBR/NPCIL/MND

KEY FEATURES :

- Basic coated iron powder type
- Suitable for pipe welding in 5G, 6G & 6GR positions
- Excellent toughness down to -45°C
- Radiographic weld deposit
- All position capability

WELDING POSITION : 



AC (90 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Storage tanks, pipes, boilers
- Bridges & heavy structures subject to dynamic loading
- Joining ASTM SA 414/414M Gr.C/D, SA 516/516M Gr.55/60, IS 2002, IS 2062 steels

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.06	1.4	0.3	0.02	0.02
Specification	0.04-0.09	0.80-1.60	0.20-0.45	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -45°C, J
Typical	As Welded	560	480	27	58
Specification		520-640	450-540	24 min.	40-70

Hardness, 3 Layer: 200 BHN max

Diffusible H₂ Content: <5 ml/100 gm

SPECIAL TEST : HIC & SSCC (NACE)

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	239	4	21
3.15 x 450	90-140	113	4	44
4.0 x 450	140-180	75	4	66
5.0 x 450	180-240	51	4	96



Welding Electrode for fabrication works with Superior Low Temperature Impact Properties

CLASSIFICATION :	AWS A/SFA 5.1	IS 814	EN ISO 2560-A	APPROVALS :
	E 7018-1	E B5629H ₃ JX	E 42 5 B 32 H5	ABS/BV/DNV/LRA/IBR

KEY FEATURES :

- Basic coated iron powder type
- Excellent toughness down to -60°C
- Radiographic weld deposit
- Suitable for pipe welding in 5G and 6G positions

WELDING POSITION : 



AC (70 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Storage tanks, pipes, boilers
- Bridges & heavy structures subject to dynamic loading
- Joining ASTM SA 414/414M Gr.C/D, SA 516/516M Gr.55/60/65/70, IS 2002, IS 2062 steels

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.06	1.3	0.3	0.01	0.01
Specification	0.04-0.09	0.80-1.60	0.20-0.45	0.015 max	0.015 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact , J	
					-46°C	-60°C
Typical	As Welded	550	470	28	56	34
Specification		520-640	450-540	24 min.	45-65	25-45

Hardness, 3 Layers: 200 BHN max.

Diffusible H₂ Content: <5 ml/100 gm

SPECIAL TEST : HIC and SSCC (NACE), CTOD at -10°C

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	239	4	21
3.15 x 450	90-140	113	4	44
4.0 x 450	140-180	75	4	66
5.0 x 450	180-240	51	4	96



Welding Electrode for joining High Tensile Steels

CLASSIFICATION :	EN ISO 2560-A	AWS A/SFA 5.1	IS 814	APPROVALS :
	E 42 3 B 32 H5	E 7018-1	E B5629H ₃ JX	MEETS NACE Requirements, ONGC/EIL, Spec GS8 Annexure 1A

KEY FEATURES :

- Extra low hydrogen iron powder type
- Weld metal resistant to cold and hot cracking and tri-axial stressing
- Medium Penetration
- Excellent toughness down to -46°C
- All position capability

WELDING POSITION : 



AC (90 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Carbon and low alloy steel fabrication where severe service condition exist
- Suitable for medium high tensile steels, heavy sections and restrained joints in high tensile steel
- Joining steels of ASTM 106 Gr.B (NACE quality), SA 414/414M Gr.D/E/F/G, SA 515/515M Gr.60/65, SA 516/516M Gr.60/65

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.06	1.1	0.3	0.01	0.01
Specification	0.04-0.09	0.90-1.40	0.15-0.50	0.012 max	0.015 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact, J	
					-30°C	-46°C
Typical	As Welded	550	465	26	70	52
Specification		510-580	420-520	24-30	50-100	30-60

Hardness, 3 Layer: 200 BHN max

Diffusible H₂ Content: <3 ml/100 gm

SPECIAL TESTS : HIC, SSCC, Hot Tensile Test at 200°C

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	281	4	18
3.15 x 450	90-140	132	4	38
4.0 x 450	140-180	85	4	58
5.0 x 450	180-240	55	4	89



Coated Welding Electrode with Excellent Sub Zero Temperature Properties

CLASSIFICATION : AWS A/SFA 5.1 IS 814
E 7018-G E B5629H₃JX

KEY FEATURES :

- Basic type iron powder electrode
- Deposition efficiency approx 110%
- Exhibit excellent impact at sub zero temperatures
- All position capability

WELDING POSITION : 



AC (90 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Ammonia storage tanks
- Horton spheres, Pressure vessels
- Si-Mn steels
- Steels containing Ni up to 1%
- For mild steel and heavy joints at sub-zero temperatures
- Joining ASTM SA 515/515M Gr.60/65, SA 516/516M Gr.60/65 steels

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.06	1.2	0.3	0.02	0.02
Specification	0.04-0.09	0.80-1.60	0.20-0.45	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact At -50°C, J
Typical	As Welded	550	480	27	50
Specification		510-600	425-540	24-30	40-70

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	235	4	21
3.15 x 450	90-140	120	4	41
4.0 x 450	140-180	75	4	67
5.0 x 450	180-250	49	4	102



Stick Welding Electrode with Excellent Mechanical and Impact Properties at Low Temperatures

CLASSIFICATION : DIN 8529 AWS A/SFA 5.5

E SY 42761 Ni B75 E 7018-G

KEY FEATURES :

- Heavy coated iron powder type
- Extremely high metallurgical purity
- C-1.2Mn-1Ni type weld deposit
- High impact at subzero temperatures

WELDING POSITION : 



DCEP

TYPICAL APPLICATIONS :

- A537 class 1 (modified)
- Si-Mn steel containing up to 1% Ni
- 15Mn Ni63 structural steel
- For heavy joints under restraint and subjected to dynamic loading
- Low temperature applications
- Structural steels, Boiler plates & Pipe steels
- Welding of fine grained structural steels with minimum yield strength of 420 MPA

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni
Typical	0.07	1.2	0.28	0.08	0.8
Specification	0.05-0.10	1.0-1.50	0.15-0.45	0.1 max	0.70 - 1.0
	Mo	Cu	S	P	
Typical	0.04	0.08	0.01	0.01	
Specification	0.06 max	0.10 max	0.015 max	0.015 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact, J		
					-20°C	-40°C	-50°C
Typical	As Welded	550	460	28	142	97	67
Specification		500 min	425 min	25 min	120 min	80 min	50 min

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
2.5 x 350	65-95	5	4	20
3.15 x 450	90-140	5	4	20
4.0 x 450	140-185	5	4	20
5.0 x 450	180-250	5	4	20



TENALLOY 16

C-Mn STEEL (Low Hydrogen)



Special Welding Electrode for Buffer Layer and Repair Welding

CLASSIFICATION :	EN ISO 2560-A	AWS A/SFA 5.1	IS 814	APPROVALS :
	E 42 3 B 12 H5	E 7016	E B5426H ₃ X	ABS/BV/DNV/IRS/LRA/IBR

KEY FEATURES :

- Basic coated low hydrogen electrode
- Ductile weld metal provide superior crack resistance
- All position capability
- Excellent impact properties down to -30°C
- Radiographic weld deposit

WELDING POSITION : 



AC (70 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Buffer layer before hardfacing
- Joining cast iron to mild steel
- Repair of cast iron
- Butt welding of rail ends
- Fixing of rails to mild steel girders

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.06	1.2	0.5	0.02	0.02
Specification	0.04-0.10	0.80-1.50	0.25-0.65	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact , J	
					27°C	-30°C
Typical	As Welded	560	475	27	160	63
Specification		510-620	440-550	24 min.	140-200	50-80

Hardness, 3 Layers: 200 BHN max.

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-80	287	4	17
3.15 x 450	90-120	133	4	37
4.0 x 450	130-170	86	4	58
5.0 x 450	180-230	54	4	91



Stick Electrode for difficult to weld and unknown steels

CLASSIFICATION :	EN ISO 2560-A	AWS A/SFA 5.1	IS 814
	E 38 3 B 12 H5	E 7016	E B5426H ₃ X

KEY FEATURES :

- Low hydrogen lime coated
- Highly ductile welds provide resistance to cracks
- Excellent impact properties at subzero temperatures

WELDING POSITION : 



AC (90 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Highly suitable for difficult to weld steels e.g. High carbon, Alloy, High sulphur, Free machining, Cast, Cold rolled steels and Armor plates
- As a buffer layer before hardfacing
- High carbon steel to mild steel
- Steels of unknown composition
- Suitable for ASTM SA 414/414M Gr.C/D/E

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.06	0.9	0.4	0.02	0.02
Specification	0.04-0.10	0.60-1.10	0.25-0.55	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact , J	
					27°C	-30°C
Typical	As Welded	520	450	28	164	68
Specification		500-550	400-470	24-32	150-200	50-80

Hardness, 3 Layer: 160 – 200 BHN

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-85	285	4	18
3.15 x 450	90-130	132	4	38
4.0 x 450	130-180	86	4	58
5.0 x 450	180-240	49	4	100



TENALLOY 16 SPL

C-Mn STEEL (Low Hydrogen)

Welding Electrode specially for Nace Quality Carbon Steel Welding

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.1

E 42 5 B 12 H5 E 7016-1H8R

KEY FEATURES :

- Medium coated basic electrode
- Moisture resistant coating
- Weld metal resistant to cold and hot cracking and tri-axial stressing
- Positional welding characteristics with medium coating ideal for full penetration root run in pipe welding
- DCEN preferred for root run welding of pipes

WELDING POSITION : 



AC (60 OCV)/ DCEP / DCEN

TYPICAL APPLICATIONS :

- One side welding of pipes
- Horton spheres, Penstocks
- Carbon steel and low alloy steel pressure vessels fabrications and where severe service conditions exist
- For NACE quality carbon steel pipes
- Off-shore process platform structures
- Medium, high tensile structural steels
- Heavy sections and restrained joints in high tensile structural steels

REDRYING CONDITION : 300°C for 2 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.07	1.2	0.3	0.01	0.01
Specification	0.05-0.10	1.0-1.40	0.15-0.48	0.012 max.	0.015 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -50°C, J
Typical	As Welded	550	470	25	52
Specification		510-600	420-530	24-29	40-60

Diffusible H₂ Content: <5 ml/100 gm

SPECIAL TEST : HIC & SSCC (NACE)

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	281	4	17
3.15 x 450	90-140	132	4	37
4.0 x 450	140-180	85	4	58
5.0 x 450	180-250	55	4	90



TENALLOY 16 G

C-Mn STEEL (Low Hydrogen)

Welding Electrode with Excellent Low Temperature Properties

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.5

E 38 3 1Ni B 12 H5 E 7016-G

KEY FEATURES :

- Basic type coating
- All position capability
- Radiographic quality weld
- Excellent mechanical properties at sub zero temperatures

WELDING POSITION : 



AC (70 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Joining ASTM SA 515 Gr.55, SA 516, Gr.55 pressure vessel steels subjected to intermediate & lower temperature applications
- Suitable for medium tensile and low alloy steels

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	S	P
Typical	0.07	1.0	0.5	0.8	0.02	0.02
Specification	0.10 max	0.8-1.20	0.75 max	0.5-1.0	0.03 max.	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact At -30°C, J
Typical	As Welded	540	450	28	58
Specification		500 min	400 min	26 min	35 min

Hardness, 3 Layers: 200 BHN max.

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	192	4	26
3.15 x 450	90-140	128	4	39
4.0 x 450	130-180	81	4	62
5.0 x 450	180-230	52	4	96

Stick Electrode for Mild Steel Welding

CLASSIFICATION : AWS A/SFA 5.1 IS 814
E 6020 E A4222X

KEY FEATURES :

- Medium-heavy coated
- High currents & travel speed recommended for economical welding
- Resistant to high stress & fatigue
- Best suited for flat and horizontal position
- Specially designed for mild steel welding for high strength requirement

WELDING POSITION : 



AC/DCEN

TYPICAL APPLICATIONS :

- Heavy structural work, machine base
- Pressure vessels, shipbuilding, truck chassis frames
- Bridges, cranes, locomotive fire boxes
- Excellent for continuous downhand or fillet welds

REDRYING CONDITION : 150-180°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.08	0.5	0.2	0.02	0.02
Specification	0.06-0.10	0.40-0.65	0.11-0.29	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 0°C, J
Typical	As Welded	490	430	27	70
Specification		460-550	370-480	24-28	50-100

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
3.15 x 450	90-140	132	4	38
4.0 x 450	140-200	78	4	64
5.0 x 450	180-220	50	4	100



Welding Electrode known for it's High Welding Speed

CLASSIFICATION : AWS A/SFA 5.1 IS 814
E 7014 E RR5222 JX

KEY FEATURES :

- An iron powder type
- Radiographic quality weld
- Ideal for vertical down welding

WELDING POSITION :   **AC/DCEN**

TYPICAL APPLICATIONS :

- Steel structures, Storage tanks
- Pipelines, Bridges
- Pressure vessels, Ships
- Joining ASTM SA 283 Gr.B/C/D steels

REDRYING CONDITION : 150°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.08	0.45	0.22	0.01	0.01
Specification	0.10 max	0.65 max	0.30 max	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 27°C, J
Typical	As Welded	560	450	25	78
Specification		510-600	415-490	22-28	60-100

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
3.15 x 450	100-140	128	4	39
4.0 x 450	150-200	81	4	62
5.0 x 450	200-250	50	4	100

TOPSTAR 140

C-Mn STEEL (High Efficiency)

Stick Welding Electrode for Mild Steel Structural Fabrication

CLASSIFICATION : AWS A/SFA 5.1 IS 814
E 7024 E RR 5242 KX

KEY FEATURES :

- Iron powder type
- Outstanding deposition rates
- Radiographic quality weld

WELDING POSITION : 



AC/DCEN

TYPICAL APPLICATIONS :

- Heavy steel structures, Storage tanks
- Pressure vessels, Ships
- Pipelines, Bridges
- Joining ASTM SA 283 Gr.A/B/C/D, SA 414/414M Gr.C/D/E steels

REDRYING CONDITION : 150°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.07	0.6	0.2	0.02	0.02
Specification	0.06-0.10	0.40-0.75	0.14-0.35	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 0°C, J
Typical	As Welded	550	460	27	65
Specification		500-600	420-500	24-28	50-100

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	80-120	192	4	26
3.15 x 450	150-170	86	4	58
4.0 x 450	200-240	56	4	89
5.0 x 450	250-290	31	4	161



Mild Steel Welding Electrode for Heavy Structural Welding

CLASSIFICATION : AWS A/SFA 5.1

E 7024-1

KEY FEATURES :

- Heavy coated iron powder type
- Very high deposition efficiency of approx. 140%
- Best suited for down hand butt & horizontal fillet welds
- Higher output & productivity

WELDING POSITION : 



AC/DCEP

TYPICAL APPLICATIONS :

- Heavy structures like Cranes, Bridge girders
- Earth moving equipments
- Ship building, Pressure vessels
- Thick plates in penstock pipe lines
- Heavy machinery parts, Boilers
- Joining ASTM SA 414/414M Gr.C/D/E SA 516/516M Gr.55/60

REDRYING CONDITION : 150°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.06	0.8	0.4	0.02	0.02
Specification	0.09max	1.25 max	0.2-0.6	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -20°C, J
Typical	As Welded	565	460	26	40
Specification		500 min	400 min	17 min	27 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 450	150-170	5	4	20
4.0 x 450	200-240	5	4	20
5.0 x 450	250-290	5	4	20

SILOX Fe

C-Mn STEEL (Special Purpose)


Electrode for Welding Hot Dip Galvanizing Baths

CLASSIFICATION : DIN 1913 IS 814
E 4300 A 525 E S4122

KEY FEATURES :

- Deposit pure iron with low impurities
- Low Silicon content
- Resistant to corrosion by molten Zinc
- Easy slag removal

WELDING POSITION : 

 **AC (50 OCV)/ DCEN**

TYPICAL APPLICATIONS :

- Welding and repairing of hot dip galvanizing baths
- Windows, door frames
- Filling holes, building up worn out parts not subjected to excessive wear

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.05	0.15	0.02	0.02	0.02
Specification	0.08 max.	0.10-0.30	0.03 max	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 27°C, J
Typical	As Welded	460	400	25	66
Specification		415-520	330-425	22-27	50-80

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
3.15 x 450	90-130	122	4	41
4.0 x 450	140-180	80	4	63
5.0 x 450	180-220	52	4	96



SILOX Fe LH

C-Mn STEEL (Special Purpose)

Hydrogen Controlled Electrode for Welding of Hot Dip Galvanizing Baths

KEY FEATURES :

- Basic type heavy coated
- Controlled Hydrogen content
- Deposit pure iron with low impurities
- Low Silicon content
- Strong & ductile weld
- Weld metal is resistant to corrosion by molten Zinc & Lead

WELDING POSITION : 



AC (70 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Welding and repairing of hot dip galvanizing baths

REDRYING CONDITION : 300 °C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.05	0.5	0.03	0.02	0.02
Specification	0.08 max	0.3-0.8	0.04 max	0.03 max	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 27°C, J
Typical	As Welded	475	400	25	64
Specification		440-520	350-445	22-27	50-80

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
3.15 x 450	90-130	128	4	39
4.0 x 450	140-180	82	4	61
5.0 x 450	180-220	51	4	98



Mild Steel Special Welding Electrode for Joining of Rails

KEY FEATURES :

- Basic type electrode
- Radiographic weld deposit
- Suitable for multi-pass welding

WELDING POSITION :



AC (50 OCV) /DCEP

TYPICAL APPLICATIONS :

- Butt welding of rails with tensile strength upto 1100 MPa

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.04	1.1	0.4	0.02	0.02
Specification	0.02-0.06	0.6-1.5	0.15-0.65	0.025 max.	0.025 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact, J	
					at 20°C	At -20°C
Typical	As Welded	590	450	26	140	95
Specification		530-630	420-500	24 min	120-180	60-120

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt. per carton, Kg	Carton/Box	Wt. per box, Kgs
4.0 x 450	160-200	5	4	20
5.0 x 450	180-240	5	4	20

Welding Electrode for Pipeline Welding

CLASSIFICATION :	EN ISO 2560-A	AWS A/SFA 5.1	APPROVALS :
	E 38 3 C 21	E 6010	ABS/LRA/IBR

KEY FEATURES :

- High cellulose coated
- Exhibits deep penetration and fast freezing
- All position operating characteristics
- Ideal for root pass and capping runs
- Radiographic quality weld

WELDING POSITION :   **DCEP**

TYPICAL APPLICATIONS :

- Cross country pipelines subject to dynamic loading and mechanical restraint
- Suitable for sour gas pipes
- Suitable for steel grades ASTM A106 Gr.A/B, API 5L X42 and for root pass of X56

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.15	0.5	0.4	0.01	0.01
Specification	0.10-0.20	0.40-0.70	0.20-0.50	0.015 max.	0.02 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact , J	
					-20°C	-30°C
Typical	As Welded	525	410	26	78	52
Specification		490-580	390-460	24-30	70-90	48-70

HARDNESS, 3 LAYER: 235 BHN max

SPECIAL TESTS : HIC & SSCC (NACE)

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Tin pack, Kg	Tin packs/Box	Net wt./Box, Kg.
2.5 x 350	50-90	6	3	18
3.15 x 350	80-140	6	3	18
4.0 x 350	120-180	6	3	18
5.0 x 350	160-200	6	3	18

Electrode for Welding Pipeline and Structural Fabrication

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.1
E 35 3 C 11 E 6011

KEY FEATURES :

- Cellulose type medium coated
- High melting speed
- All position operating characteristics
- Radiographic quality weld

WELDING POSITION :   **AC (65 OCV)/DCEP**

TYPICAL APPLICATIONS :

- Pipelines, Pressure vessels
- Shipbuilding, Storage tanks
- Structural fabrication, Truck frames
- Bridges, Maintenance welding
- Suitable for steel grades API 5L X42 and X46

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.12	0.5	0.2	0.01	0.01
Specification	0.08-0.16	0.30-0.60	0.12-0.30	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Typical	As Welded	520	420	27	58
Specification		450-550	355-480	24-30	50-100

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Tin pack, Kg	Tin packs/Box	Net wt./Box, Kg.
2.5 x 350	60-90	6	3	18
3.15 x 350	80-140	6	3	18
4.0 x 350	120-180	6	3	18
5.0 x 350	160-200	6	3	18

Electrode for Welding of High Strength Pipelines

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.5 **APPROVALS :**
E 42 2 Mo C 21 E 7010-G LRA

KEY FEATURES :

- High cellulose type coating
- Ideal for root pass and capping runs
- Best suited for vertical down stove-pipe technique
- Radiographic quality weld

WELDING POSITION :   **DCEP**

TYPICAL APPLICATIONS :

- Cross country pipelines subject to dynamic loading and mechanical restraint
- Best suited for site welding
- Suitable for pipe grades API 5L X42 to X60

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Mo	S	P
Typical	0.1	0.5	0.2	0.35	0.01	0.01
Specification	0.12 max	0.40-0.80	0.10-0.30	0.30-0.40	0.015 max.	0.015 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact , J	
					-20°C	-30°C
Typical	As Welded	555	470	24	44	38
Specification		530-595	450-500	22-27	40-50	30-50
Specification	PWHT:620°C for 1Hr	520-590	450-500	24-30	35-45	30-40

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Tin pack, Kg	Tin packs/Box	Net wt./Box, Kg.
2.5 x 350	60-90	6	3	18
3.15 x 350	80-140	6	3	18
4.0 x 350	120-180	6	3	18
5.0 x 350	160-200	6	3	18

Electrode for Welding Cross Country Pipelines

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.5
E 42 2 C 21 E 7010-P1

KEY FEATURES :

- Cellulose type coating
- Ideal for root pass and capping runs
- All position welding characteristics
- Welding with Stove-pipe technique
- Radiographic quality weld

WELDING POSITION :   **DCEP**

TYPICAL APPLICATIONS :

- Cross country pipelines subject to dynamic loading and mechanical restraint
- Joining ASTM SA-283 Gr.A/B/C/D, API 5L X42, X46, X52, X56, X60 and X65

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni
Typical	0.1	0.8	0.3	0.1	0.7
Specification	0.2 max.	1.2 max.	0.6 max.	0.3 max.	1.0 max.
	Mo	V	S	P	
Typical	0.1	0.05	0.02	0.02	
Specification	0.5 max.	0.1 max.	0.03 max.	0.03 max.	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Typical	As Welded	560	450	24	40
Specification		490 min.	415 min.	22 min.	27min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Tin pack, Kg	Tin packs/Box	Net wt./Box, Kg.
2.5 x 350	50-70	6	3	18
3.15 x 350	80-120	6	3	18
4.0 x 350	110-160	6	3	18
5.0 x 350	160-210	6	3	18

Electrode for Welding High Strength Pipelines

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.5 **APPROVALS :**
E 46 3 1Ni C 21 E 8010-G LRA

KEY FEATURES :

- Cellulose type coating
- Ideal for root pass and capping runs
- Recommended for hot passes
- Radiographic quality weld

WELDING POSITION :   **DCEP**

TYPICAL APPLICATIONS :

- Vertical down welding of high strength, medium and large diameter pipelines
- Suitable for high tensile pipe steels like API 5L X60, X65 and X70
- Welding of thin API 5L X80 pipes

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni
Typical	0.1	1.0	0.2	0.2	0.9
Specification	0.2 max.	0.6-1.2	0.05-0.3	0.1-0.3	0.75-1.0
	Mo	V	S	P	
Typical	0.05	0.05	0.01	0.01	
Specification	0.1 max.	0.1 max.	0.015 max.	0.015 max.	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact , J	
					-30°C	-45°C
Typical	As Welded	610	520	22	58	42
Specification		550-670	460-565	19-24	54 min.	30-50
Specification	PWHT:620°C for 1Hr	550-610	460-535	23-30	40 min.	40-50

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Tin pack, Kg	Tin packs/Box	Net wt./Box, Kg.
2.5 x 350	60-90	6	3	18
3.15 x 350	80-140	6	3	18
4.0 x 350	120-180	6	3	18
5.0 x 350	160-200	6	3	18

MOLYTEN

LOW ALLOY STEEL (High Temperature)

Welding Electrode for high temperature application.

CLASSIFICATION :	EN 1599	AWS A/SFA 5.5	APPROVALS :
	E Mo B 32 H5	E 7018-A1	ABS/ IBR/NPCIL

KEY FEATURES :

- Basic coated electrode
- Good creep rupture strength at elevated temperature up to 550°C
- High recovery electrode
- Preheat and PWHT at 620°C is required
- Radiographic quality welds
- All position capability

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding 0.5 Mo and 1 Cr - 0.5 Mo steels and similar composition steels
- High temperature and high pressure boilers
- Chemical industries, Oil refining industries, Turbine casting
- Suitable for 15Mo3, 16Mo3, 14Mo6
- Joining ASTM SA 182/182M Gr.F1, SA 204/204M Gr.A, SA 209/209M Gr.T1/T1A/T1B, SA 217/217M Gr.WCI

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Mo	S	P
Typical	0.06	0.6	0.4	0.5	0.01	0.02
Specification	0.05-0.09	0.50-0.90	0.25-0.55	0.40-0.65	0.03 max	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 20°C, J
Typical	PWHT: 620°C	550	460	27	165
Specification	for 1 hr.	510-610	425-520	25-30	140-200

Hardness, 3 Layer: 200 BHN max

Diffusible H₂ Content: <5 ml/100 gm

SPECIAL TESTS : Creep Rupture Test at 540°C - 50 MPa stress for min. 1000 hrs

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	250	4	20
3.15 x 450	100-140	115	4	43
4.0 x 450	140-180	78	4	63
5.0 x 450	190-250	53	4	93

EQUIVALENT : GTAW filler: Tigfil-70S-A1



MOLYTEN S PLUS

LOW ALLOY STEEL (High Temperature)

Special Welding Electrode for high temperature application.

CLASSIFICATION : EN 1599 AWS A/SFA 5.5
E Mo B 32 H5 E 7018-A1

KEY FEATURES :

- Basic type heavy coating
- Excellent high temperature creep resistance properties
- Deposition efficiency of 105%
- Preheat and PWHT at 620°C is required
- Radiographic quality welds

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding 0.5 Mo and 1 Cr - 0.5 Mo steels and similar composition steels used in pressure vessels, boilers and pipelines
- Application in chemical, oil refining industries and turbine casting
- Suitable for 15Mo3, 16Mo3, 14Mo6
- Joining ASTM SA 182/182M Gr.F1

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Mo	S	P
Specification	0.05-0.09	0.90 max	0.25-0.55	0.40-0.65	0.015 max	0.015 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 20°C, J
Specification	PWHT: 620°C for 1 hr.	600 min	470 min	22-28	27 min

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	250	4	20
3.15x 450	100-140	139	4	36
4.0 x 450	140-180	85	4	59
5.0 x 450	190-250	50	4	100

EQUIVALENT : GTAW filler: **Tigfil-70S-A1**




Cr-Mo alloyed Welding Electrode for elevated temperature creep resistance.

CLASSIFICATION :	EN 1599	AWS A/SFA 5.5	APPROVALS :
	E CrMo1 B 32 H5	E 8018-B2	ABS/IBR/NPCIL

KEY FEATURES :

- Basic coated iron powder electrode
- 1.25Cr-0.5Mo type weld deposit
- Resistant to creep and heat upto 550°C
- Preheat and interpass temperature of 150-200°C followed by PWHT
- Radiographic quality weld deposit
- Positional welding capability

WELDING POSITION : 

 **AC (70 OCV)/DCEP**

TYPICAL APPLICATIONS :

- Welding of 1.25Cr-0.5Mo, 1Cr-0.5Mo steels in refineries, power plants, chemical plants
- Pressure vessels and Boilers
- Cr and Cr-Mo bearing steels at elevated temperature service e.g. steam production plants, steam pipes
- Joining P4 materials e.g. ASTM SA 182/182M Gr.F2/F11/F12, SA 213/213M Gr.T11/T12, SA 335/335M Gr.P11/P12, SA 387/387M Gr.2/11/12
- Suitable for 13CrMo44, 15CrMo5, 15Cr3, 16MnCr5, 20MnCr5

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	S	P
Typical	0.06	0.8	0.5	1.3	0.6	0.02	0.01
Specification	0.05-0.09	0.50-0.90	0.25-0.60	1.0-1.50	0.40-0.65	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 27°C, J
Typical	PWHT: 690°C	615	525	24	68
Specification	for 1 hr.	560-680	470-600	22-28	50-100

Diffusible H₂ Content: <5 ml/100 gm

SPECIAL TESTS : Creep Rupture Test at 540°C - 150 MPa stress for min. 1848 hrs

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	219	4	23
3.15 x 450	100-140	106	4	47
4.0 x 450	140-180	75	4	66
5.0 x 450	190-250	50	4	98

EQUIVALENT : GMAW wire: **Automig-80S-B2**

GTAW filler: **Tigfil-80S-B2**



CROMOTEN PHT SPL

LOW ALLOY STEEL (High Temperature)

Basic coated Electrode for welding of 1.25 Cr-0.5 Mo creep resistant steel.

CLASSIFICATION : EN 1599 AWS A/SFA 5.5

E CrMo1 B 32 H5 E 8018-B2

KEY FEATURES :

- Basic type medium heavy coating
- Low alloy Cr-Mo weld deposit
- Necessary preheat and interpass required followed by PWHT at 690°C
- Excellent resistance to cracking and creep upto 600°C
- Radiographic quality weld deposit
- Positional welding capability

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of 1Cr-0.5Mo and similar creep resistant steels
- Repairing of high tensile castings
- For ASTM A 182 F2/F11/F12, A 387 2/11/12, A 355 P11/P12
- ASTM SA 387 Gr.11 plate, SA 335 P11 pipes
- In chemical and petrochemical industries to resist hydrogen attack, corrosion from sulphur bearing crude oil, stress corrosion cracking in sour environment
- Suitable for 13CrMo44, 15CrMo5 German steel

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	S	P	P+Sn
Typical	0.1	0.7	0.4	1.4	0.5	0.01	0.007	0.01
Specification	0.05-0.12	0.50-0.90	0.25-0.60	1.0-1.50	0.45-0.65	0.015 max	0.010 max	0.016 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -20°C, J
Typical	PWHT: 690°C	600	515	26	75
Specification	for 12 hrs	550 min	460 min	22-28	54 avg.

Hardness, 3 Layer: 200 BHN max

Diffusible H₂ Content: <5 ml/100 gm

SPECIAL TESTS : Creep Rupture Test at 540°C

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	250	4	20
3.15 x 450	100-130	113	4	44
4.0 x 450	140-180	77	4	64
5.0 x 450	190-230	11	4	98



CROMOTEN S PLUS

LOW ALLOY STEEL (High Temperature)

Low carbon Cr-Mo Electrode for welding creep resistant steel.

CLASSIFICATION : EN 1599 AWS A/SFA 5.5
E CrMo1L B 32 H5 E 7018-B2L

KEY FEATURES :

- Basic coated electrode
- Typical 1.2Cr-0.5Mo type deposit
- Excellent impact toughness at subzero temperature
- Resist creep upto 500°C
- Crack free and porosity free welds
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Suitable for similar composition creep resistant steels used for boilers, oil refineries, chemical and power plants
- Suitable for SA 199/199M Gr.T11
- SA 182/182M Gr.F2/F11/F12
- SA 213/213M Gr.T2/T11/T12
- SA 217/217M Gr.WC6
- SA 335/335M Gr.P2/P11/P12
- SA 387/387M Gr.2/11/12
- 13CrMo44, 15CrMo5

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	S	P
Typical	0.03	0.6	0.5	1.4	0.5	0.01	0.01
Specification	0.05 max	0.90 max	0.80 max	1.0-1.5	0.40-0.65	0.015 max	0.02 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -18°C, J
Typical	PWHT: 690°C	570	475	22	54
Specification	for 1 hrs	520 min	390 min	19 min	40 min

Hardness, 3 Layer: 220 BHN max

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg
2.5 x 350	60-90	5	4	20
3.15 x 450	100-120	5	4	20
4.0 x 450	130-170	5	4	20
5.0 x 450	180-220	5	4	20



CROMOTEN C

LOW ALLOY STEEL (High Temperature)

Basic Coated Electrode for welding 2.25 Cr-1Mo type creep resistant steel.

CLASSIFICATION :	EN 1599	AWS A/SFA 5.5	APPROVALS :
	E CrMo2 B 32 H5	E 9018-B3	ABS/IBR/NPCIL

KEY FEATURES :

- Basic coated
- Low alloy steel Cr-Mo deposit
- Resistant to creep and heat upto 600°C
- Ductile and crack resistant and heat treatable weld
- Radiography quality weld metal

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of 2.25Cr-0.5Mo and 2.25Cr-1Mo type creep resistant steels
- Cr-Mo and Cr-Mo-V bearing steels for high temperature applications
- Main steam pipes of boilers in electric power plant, Boiler super heaters
- Joining of P5A materials
- Suitable for 12CrMo9-10, 10CrSiMoV7 German steels
- Joining ASTM A 335 Gr.P22, A 387 Gr.22 materials
- Application in refineries, power plants, pressure vessels, boilers

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	S	P
Typical	0.08	0.6	0.4	2.4	1.0	0.02	0.02
Specification	0.05-0.09	0.45-0.75	0.20-0.65	2.0-2.5	0.9-1.2	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	PWHT: 690°C	660	580	22
Specification	for 1 Hr	625-740	540-640	20-24

Hardness, 3 Layer: 180-200 BHN

Diffusible H₂ Content: <5 ml/100 gm

SPECIAL TESTS : Creep Rupture Test at 600°C (100 MPa stress for min. 1000 hrs)

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	230	4	22
3.15 x 450	100-140	112	4	44
4.0 x 450	140-180	75	4	66
5.0 x 450	190-250	54	4	91



CROMOTEN C PHT BATCH

LOW ALLOY STEEL (High Temperature)

Basic type Electrode for welding 2.25 Cr - 1 Mo cast steels.

CLASSIFICATION : EN 1599 AWS A/SFA 5.5

E CrMo2 B 32 H5 E 9018-B3

KEY FEATURES :

- Basic type medium heavy coating
- Typical 2.25Cr-1Mo type weld
- Resistant to creep and heat upto 600°C
- Deposition efficiency of 105%
- Necessary preheat and interpass temperature need to be maintained
- All position capability

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of alloy cast steel grade GS-17CrMo55, GS-18CrMo9-10
- Low alloy steel steam boilers, super heaters, hydro-crackers and piping operating at service temperatures upto 600°C
- Repair of high tensile steel castings
- Welding of higher strength piping and forgings
- Equipment for oil refining industries

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	S	P
Typical	0.08	0.8	0.4	2.2	1.0	0.02	0.02
Specification	0.05-0.12	0.60-0.90	0.25-0.45	2.0-2.50	0.90-1.20	0.025 max	0.025 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 0°C, J
Typical	PWHT: 710°C	655	570	20	56
Specification	for 4 hr.	620 min	530 min	17-25	40 min

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	225	4	22
3.15 x 450	100-140	118	4	42
4.0 x 450	140-180	78	4	64
5.0 x 450	190-250	53	4	94

EQUIVALENT : GMAW wire: **Automig-90S-B3**

GTAW filler: **Tigfil-90S-B3**



CROMOTEN C S PLUS

LOW ALLOY STEEL (High Temperature)

Low Carbon Cr-Mo Type Creep Resistant Steel Electrode

CLASSIFICATION : EN 1599

AWS A/SFA 5.5

E CrMo2L B 12 H5

E 8018-B3L

KEY FEATURES :

- Basic coated electrode
- Low carbon Cr-Mo type deposit
- Weld metal is creep & heat resistant upto 600°C
- Weld deposit highly resistant to cracking
- Heat treatable weld deposit
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Best suited for joining 2.25 Cr-1 Mo creep resistant steels used in refineries, power plants, chemical plants, Pressure vessels and boilers
- Joining of P5A materials like SA 182/182M Gr.F22, German steels 12CrMo9-10, 10CrMo9-10, 10CrSiMoV7

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	S	P
Typical	0.03	0.5	0.4	2.2	1.0	0.008	0.01
Specification	0.05 max	0.45-0.75	0.20-0.65	2.0-2.5	0.9-1.2	0.015 max	0.02 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	PWHT: 690°C	600	525	20
Specification	for 1 hr.	550 min	460 min	17 min

Hardness, 3 Layer: 225 BHN max

Diffusible H2 Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	225	4	22
3.15 x 450	100-140	118	4	42
4.0 x 450	140-180	78	4	64
5.0 x 450	190-250	53	4	94



CROMOTEN D


LOW ALLOY STEEL (High Temperature)

Low hydrogen basic type Electrode for welding 5Cr-0.5 Mo steels.

CLASSIFICATION :	EN 1599	AWS A/SFA 5.5	APPROVALS :
	E CrMo5 B 32 H5	E 8018-B6	DNV/IBR

KEY FEATURES :

- Basic type iron powder electrode
- Low carbon 5Cr-0.5Mo type weld
- Weld deposit highly resistant to creep and heat upto 650°C
- Air hardenable weld
- Preheat and interpass should be maintained during welding
- All position capability

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of 5 Cr-0.5 Mo creep resistant steels and equivalent grades
- Application in refineries, chemical and power plants, pressure vessels, boilers
- Joining P5B materials e.g. SA 336/336M Gr.F5, SA 387/387MGr.5

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr
Typical	0.07	0.8	0.5	5.2
Specification	0.05-0.10	0.5-0.9	0.25-0.65	4.0-6.0
	Mo	Ni	S	P
Typical	0.5	0.1	0.02	0.02
Specification	0.45-0.65	0.40 max	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 27°C, J
Typical	PWHT: 740°C for 1 hr.	610	490	22	104
Specification		550-650	460-520	20-25	80-140

Hardness, 3 Layer: 225 BHN max

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	238	4	21
3.15 x 450	100-140	106	4	47
4.0 x 450	140-180	79	4	63
5.0 x 450	190-250	53	4	93

EQUIVALENT : GMAW wire: **Automig 80S-B6**

GTAW Filler : **Tigfil-80S-B6**



CROMOTEN D SPL

LOW ALLOY STEEL (High Temperature)

Basic coated low carbon 5Cr - 0.5 Mo type Welding Electrode.

CLASSIFICATION : EN 1599 AWS A/SFA 5.5

E CrMo5L B 32 H5 E 8018-B6L

KEY FEATURES :

- Basic coated electrode
- Low carbon Cr-Mo type weld
- An air-hardening material and require preheat and interpass temperatures of 175°C minimum during welding
- Excellent creep resistance upto 650°C
- Resistant to oxidation, heat, corrosion and wear
- All position capability

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of 5 Cr-0.5 Mo creep resistant steels and equivalent steels
- P5B materials and similar steels
- Application in petrochemical, refineries and power plants
- Welding tube, pipe and plate subjected to high temperature service, such as ASTM A213-T5 and A335-P5

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr
Typical	0.04	0.7	0.4	4.8
Specification	0.05 max	0.50-0.90	0.25-0.65	4.0-6.0
	Mo	Ni	S	P
Typical	0.6	0.1	0.01	0.01
Specification	0.45-0.65	0.40 max	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 27°C, J
Typical	PWHT: 740°C	650	580	24	108
Specification	for 1 hr.	620 min	530 min	20 min	80-140

Hardness, 3 Layer: 225 BHN max

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	238	4	21
3.15 x 450	100-140	106	4	47
4.0 x 450	140-180	79	4	63
5.0 x 450	190-250	53	4	93



CROMOTEN 9

LOW ALLOY STEEL (High Temperature)

Basic coated 9Cr type low alloy Welding Electrode.

CLASSIFICATION :	EN 1599	AWS A/SFA 5.5	APPROVALS :
	E CrMo9 B 32 H5	E 8018-B8	DNV

KEY FEATURES :

- Basic type heavy coating
- 9Cr type low alloy weld deposit
- Resistant to corrosion and hydrogen attack at high temperatures
- Air hardenable alloy
- Optimum combination of strength, toughness with heat resistance
- Radiographic quality weld deposit
- Positional welding capability

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Suitable for welding of 9% Cr type P5B materials in forging, pipes, tubes and casting form
- Welding of ferritic martensitic chrome steels
- For general corrosion and heat resistance application
- Application in Power plants, Oil refineries, Chemical and Petrochemical industries

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	S	P
Typical	0.08	0.6	0.4	9.2	1.1	0.01	0.02
Specification	0.05-0.10	0.50-1.0	0.20-0.70	8.0-10.0	0.85-1.20	0.025 max	0.025 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	PWHT: 740°C	605	495	22
Specification	for 1 hr	550-650	460-540	19-26

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
3.15 x 350	100-140	208	4	24
4.0 x 350	140-180	135	4	37
5.0 x 450	190-250	89	4	56

EQUIVALENT : GMAW wire: **Automig 80S-B8**

GTAW filler: **Tigfil-80S-B8**



CROMOTEN 9M

LOW ALLOY STEEL (High Temperature)

Basic coated 9Cr-1Mo-V-Nb type Welding Electrode.

CLASSIFICATION : EN 1599 AWS A/SFA 5.5 **APPROVALS :**
E CrMo91 B 32 H5 E 9018-B9 IBR

KEY FEATURES :

- Basic coated electrode
- 9Cr-1Mo-V-Nb type weld deposit
- Excellent strength and creep resistance at high temperature upto 600°C
- Addition of V and Nb increases the resistance to strain, corrosion and oxidation
- Radiographic quality weld deposit
- Positional welding capability

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Suitable for welding of Cr-Mo-V-Nb steels such as P91, T91 and F91
- Suitable for material 1.4903 and similar steel Grades
- For Turbine rotors, Thermoelectric power plants, Petrochemical plants

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	Ni	V
Typical	0.1	0.7	0.2	9.4	1.0	0.5	0.2
Specification	0.08-0.12	0.60-1.0	0.30 max	8.0-10.5	0.90-1.20	0.80 max	0.15-0.30
	Cu	Al	Nb	N	S	P	
Typical	0.1	0.04	0.06	0.04	0.006	0.005	
Specification	0.35 max	0.02-0.10	0.02-0.07	0.02-0.07	0.01 max	0.01 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 20°C, J
Typical	PWHT: 760°C	675	590	20	55
Specification	for 2 hr.	620-720	530-625	17-22	47 min

Hardness, 3 Layer: 240 BHN max

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	211	4	24
3.15 x 350	100-140	110	4	45
4.0 x 350	140-180	70	4	71
5.0 x 450	190-250	40	4	115

EQUIVALENT : GMAW wire: **Automig 90S-B9**

GTAW filler: **Tigfil-90S-B9**



CROMOTEN 9M-15

LOW ALLOY STEEL (High Temperature)

Hydrogen controlled basic coated electrode for welding P91 type creep resistant steel.

CLASSIFICATION :	EN 1599	AWS A/SFA 5.5
	E CrMo91 B 42 H5	E 9015-B9

KEY FEATURES :

- Basic coated low hydrogen electrode
- Nb and V modified 9Cr-1Mo weld deposit
- Good impact toughness at subzero temperatures
- Excellent strength and creep resistance at high temperature under prolong holding
- All positional capability
- Radiographic quality weld deposit

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Suitable for welding similar composition creep resistant steels such as P91, T91 and F91
- Welding of material 1.4903 and similar steel Grades
- Application in Petrochemical plants, Power plants, Boilers, Oil refineries

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	Ni
Typical	0.1	0.9	0.15	9.1	0.9	0.7
Specification	0.08-0.12	1.20 max	0.25 max	8.50-9.50	0.85-1.10	0.40-1.0
	V	Al	Nb	N	S	P
Typical	0.2	0.01	0.07	0.04	0.005	0.005
Specification	0.20-0.30	0.04 max	0.02-0.10	0.02-0.07	0.01 max	0.01 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact , J	
					0°C	-18°C
Typical	PWHT: 760°C	670	580	22	58	44
Specification	for 4 hrs	620 min	530 min	19 min	45 min	27 min

Hardness, 3 Layer: 220 BHN max

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg
2.5 x 350	50-80	5	4	20
3.15 x 350	90-120	5	4	20
4.0 x 350	110-160	5	4	20
5.0 x 450	140-190	5	4	20

EQUIVALENT : GMAW wire: **Automig 90S-B9**

GTAW filler: **Tigfil-90S-B9**



CROMOTEN 9M SPL


LOW ALLOY STEEL (High Temperature)

Low hydrogen Welding Electrode for elevated temperature heat and creep resistance

CLASSIFICATION : EN 1599 AWS A/SFA 5.5 **APPROVALS :**
E CrMo91 B 32 H5 E 9016-B9 IBR

KEY FEATURES :

- Basic coated electrode
- 9Cr-1Mo-V-Nb type weld deposit
- Excellent strength and creep resistance at high temperature under long term stresses
- Resist strain, corrosion and oxidation
- Exhibit excellent low temperature fracture toughness
- Preheat and interpass temperatures between 200-300°C
- Positional welding capability

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of high temperature 9% Chromium P91, T91 and F91 steels to provide improved long term creep properties
- Application in Power plants, Petrochemical plants, Oil refineries, Coal liquefaction and Gasification plants
- Fabrication of turbine and boilers e.g. turbine casings
- Welding of X10CrMoVNb9-1

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	Ni	V
Typical	0.1	0.6	0.15	8.9	1.0	0.7	0.2
Specification	0.08-0.12	1.2 max	0.25 max	8.5-9.5	0.85-1.1	0.4-1.0	0.2-0.3
	Cu	Al	Nb	N	S	P	
Typical	0.1	0.02	0.07	0.05	0.005	0.005	
Specification	0.25 max	0.04 max	0.02-0.1	0.02-0.07	0.01 max	0.01 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 18°C, J
Typical	PWHT: 760°C	675	590	20	56
Specification	for 2 hr.	620 min	530 min	19 min	45 min

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg
2.5 x 350	50-80	4	4	16
3.15 x 350	90-120	4	4	16
4.0 x 350	110-160	4	4	16
5.0 x 450	140-190	4	4	16

EQUIVALENT : GMAW wire: **Automig 90S-B9**

GTAW filler: **Tigfil-90S-B9**



CROMOTEN V

LOW ALLOY STEEL (High Temperature)

Rutile type Electrode best suited for creep resistance application upto 550°C.

CLASSIFICATION :	EN 1599	AWS A/SFA 5.5
	E Z R 12	E 8013-G

KEY FEATURES :

- Rutile coated electrode
- Typical 1.2Cr-0.5Mo-V type low alloy steel deposit
- Especially suited for pipe welding due to its easy striking characteristics
- Excellent resistance to creep upto 550°C
- All position capability
- Radiographic quality weld deposit

WELDING POSITION : 



AC (70 OCV)/DCEN

TYPICAL APPLICATIONS :

- Welding low alloy steel boilers and piping of Cr-Mo type operating at service temperatures upto 550°C
- Application in oil refineries, thermal and chemical plants
- For welding IS steel 07Cr90Mo55
- For boiler heads and spares of similar composition
- Suitable for ASTM SA-213 Gr.T2/T11/T12, SA-335 Gr.P2/P11/P12 and similar steels

REDRYING CONDITION : 120°C for ½ hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr
Typical	0.07	0.6	0.3	1.3
Specification	0.05-0.09	0.40-0.65	0.15-0.35	1.0-1.50
	Mo	V	S	P
Typical	0.5	0.25	0.02	0.01
Specification	0.40-0.65	0.20-0.40	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	PWHT: 690°C	610	530	26
Specification	for 1 hr.	570-680	490-600	20-28

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	227	4	22
3.15 x 450	100-130	117	4	42
4.0 x 450	140-180	76	4	65
5.0 x 450	190-240	45	4	111



CROMOTEN Ti

LOW ALLOY STEEL (High Temperature)

Rutile coated Electrode for welding of low alloy steel piping.

CLASSIFICATION : EN 1599 AWS A/SFA 5.5
E CrMo1 R 12 E 8013-G

KEY FEATURES :

- Rutile coated electrode
- Typical 1.2Cr-0.5Mo type low alloy steel deposit
- Resistance to creep upto 500°C
- Especially suited for pipe welding
- All position capability
- Radiographic quality weld deposit

WELDING POSITION : 



AC (70 OCV)/DCEN

TYPICAL APPLICATIONS :

- Welding low alloy steel boilers and piping of Cr-Mo type operating at service temperatures upto 500°C
- Application in oil refineries, thermal and chemical plants
- Suitable for P.No.3 Group No.1 and P.No.4 Group No.1 e.g. SA-182 Gr.F2/F11/F12, SA-199 Gr.T11 and similar steels
- For welding DIN 13CrMo44 steel

REDRYING CONDITION : 100°C for ½ hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	S	P
Typical	0.07	0.6	0.3	1.3	0.5	0.02	0.01
Specification	0.09 max	0.40-0.75	0.20-0.40	1.0-1.50	0.40-0.65	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	PWHT: 690°C	625	540	24
Specification	for 1 hr.	580-680	500-600	20-26

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	246	4	20
3.15 x 450	100-130	116	4	43
4.0 x 450	140-180	76	4	65
5.0 x 450	190-240	50	4	98



CROMOTEN C Ti

LOW ALLOY STEEL (High Temperature)

Rutile coated electrode for 2.25 Cr-1 Mo type creep resistant steel welding.

CLASSIFICATION : EN 1599 AWS A/SFA 5.5
E CrMo2 R 12 E 9013-G

KEY FEATURES :

- Rutile type coating
- Typical 2.25Cr-1Mo weld deposit
- High strength weld with resistance to creep upto 500°C
- Deposit is heat treatable and case hardenable
- Resistant to alkaline solutions
- Preheating and PWHT of base materials is necessary
- Best suited for root run welding of pipes in all position
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV)/DCEN

TYPICAL APPLICATIONS :

- Welding of 2.25Cr-0.5Mo and 2.25Cr-1Mo for boilers and piping operating at service temperatures upto 500°C
- Joining P5A materials e.g. SA-182 Gr.F22, SA-213 Gr.T22, SA-335 Gr.P22 and similar steels
- For welding DIN 10CrMo9-10, 12CrMo9-10, 10CrSiMoV7 steel
- Thermal and chemical plants, Oil refineries
- Welding high-strength joints on tempered steels

REDRYING CONDITION : 100°C for ½ hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	S	P
Typical	0.07	0.5	0.4	2.2	1.1	0.02	0.02
Specification	0.05-0.09	0.45-0.75	0.20-0.45	2.0-2.50	0.90-1.25	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	PWHT: 690°C for 1 hr.	675	590	23
Specification		625-740	540-640	20-24

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	240	4	21
3.15 x 450	100-140	115	4	43
4.0 x 450	140-180	74	4	68
5.0 x 450	190-240	45	4	111



TENALLOY 70 A

LOW ALLOY STEEL (Low Temperature)

Basic coated Electrode for welding 2.5% Ni steel.

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.5 **APPROVALS :**
E 46 6 2Ni B 32 H5 E 8018-C1 IBR/RDSO

KEY FEATURES :

- Basic coated electrode
- Ni-Mn type low alloy steel deposit
- Tough and crack free weld
- Excellent fracture toughness at subzero temperatures
- Radiographic quality weld
- All position capability

WELDING POSITION : 



AC (90 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of 2.5% Ni steel and similar low alloyed steel for impact at -60°C
- Suitable for ASTM SA 203/203M Gr.A/B
- Shipbuilding, Bridge structure
- In refineries, power plants e.g. Pressure vessels, Heat exchanger
- Cast steels, Low temperature steel pipes, Aluminium killed steels, Low Mn alloy steels

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	S	P
Typical	0.04	0.8	0.3	2.3	0.02	0.02
Specification	0.10 max	1.25 max	0.18-0.40	2.0-2.75	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -60°C, J
Typical	As Welded	610	515	26	57
Specification		560-650	460-550	24-30	30-80

Hardness, 3 Layer: 210 BHN max

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	240	4	21
3.15 x 450	100-140	114	4	44
4.0 x 450	140-180	75	4	66
5.0 x 450	190-250	49	4	102

EQUIVALENT : GMAW wire: **Automig 80S-Ni2**

GTAW filler: **Tigfil-80S-Ni2**



TENALLOY 70 B

LOW ALLOY STEEL (Low Temperature)

Low alloy Welding Electrode for Cryogenic application

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.5 **APPROVALS :**
E 46 6 3Ni B 32 H5 E 8018-C2 IBR

KEY FEATURES :

- Basic coated electrode
- Good impact toughness at subzero temperatures
- Ni-Mn type low alloy steel weld
- Radiographic weld deposit
- Positional welding capability

WELDING POSITION : 

 **AC (90 OCV)/DCEP**

TYPICAL APPLICATIONS :

- Welding of 3.5% Ni steel and equivalent alloy demanding toughness down to -75°C
- Application in refineries, power plants e.g. Pressure vessels & heat exchangers
- Recommended for fine grained steel used at low temperature
- Petrochemical and Cryogenic industries
- Suitable for ASTM SA 203/203M Gr.B/D/E

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	S	P
Typical	0.05	0.8	0.3	3.4	0.015	0.02
Specification	0.12 max	1.25 max	0.18-0.40	3.0-3.75	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -75°C, J
Typical	PWHT: 600°C	590	500	26	52
Specification	for 1 hr.	560-650	460-550	24-30	40 avg.

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
3.15 x 450	100-140	122	4	41
4.0 x 450	140-180	80	4	63
5.0 x 450	190-250	50	4	100



TENALLOY 70 BL

LOW ALLOY STEEL (Low Temperature)

Low alloy Welding Electrode for Cryogenic application.

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.5 **APPROVALS :**
E 38 9 3Ni 32 H5 E 7018-C2L IBR

KEY FEATURES :

- Basic type heavy coated electrode
- Low carbon low alloyed Ni-Mn weld deposit
- Weld deposit is highly ductile, tough
- Resist embrittlement at sub zero temperature
- Medium penetration with base metal
- Radiographic quality welds

WELDING POSITION : 



AC (90 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of 3.0-3.75% Ni steel
- Fabrication of parts subjected to low temperature service
- Suitable for ASTM SA 203 Gr. E steel
- Application in Refinery, Pressure vessels & valves, Petrochemical
- Locomotive main frames, truck & side frames

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	S	P
Specification	0.05 max	0.60-0.95	0.18-0.40	3.0-3.75	0.025 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -100°C, J
Specification	PWHT: 600°C for 1 Hr	490-580	410-510	25-32	40 avg.

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
3.15 x 450	100-140	122	4	41
4.0 x 450	140-180	80	4	63
5.0 x 450	190-250	50	4	100



TENALLOY 70 C

LOW ALLOY STEEL (Low Temperature)

Basic coated low alloy Welding Electrode for 1% Ni steel.

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.5 **APPROVALS :**
E 46 4 1Ni B 32 H5 E 8018-C3 ABS/IBR

KEY FEATURES :

- Basic coated electrode
- Typical Ni-Mo type welds
- Excellent fracture toughness at -40°C
- Superior crack resistance
- Radiographic quality welds
- All position capability

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of high tensile steel, 1% Ni steel and equivalent steels
- Storage tanks for low temperature
- Off shore platforms, bridge
- Application in refineries, power plants e.g. pressure vessels and
- heat exchangers, machinery

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Mo	S	P
Typical	0.08	1.0	0.3	1.0	0.3	0.01	0.02
Specification	0.05-0.09	0.80-1.25	0.20-0.45	0.80-1.10	0.20-0.35	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at - 40°C, J
Typical	As Welded	600	530	26	78
Specification		560-650	470-550	24-30	50-100

Hardness, 3 Layer: 200 BHN max

Diffusible H₂ Content: <5 ml/100 gm

SPECIAL TEST : HIC & SSCC (NACE)

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	227	4	22
3.15 x 450	100-140	116	4	43
4.0 x 450	140-180	77	4	64
5.0 x 450	190-250	49	4	102



TENALLOY 55

LOW ALLOY STEEL (Low Temperature)

Basic coated low alloy Electrode for welding 1% Ni steel.

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.5 **APPROVALS :**
E 46 5 1Ni B 12 H5 E 8018-G IBR

KEY FEATURES :

- Basic coated electrode
- Excellent fracture toughness down to -50°C
- Resist atmospheric corrosion
- Weld metal is tough & highly crack resistant
- Radiographic quality weld
- Suitable for positional welding

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Suitable for joining steels containing 1% Ni and 0.5% Cu
- Storage tanks, Pipes
- Pressure vessels, Boilers
- Bridges, Heavy structures

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	S	P
Typical	0.07	1.35	0.4	1.1	0.01	0.02
Specification	0.095 max	1.0-1.65	0.25-0.65	0.7-1.25	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -50°C, J
Typical	As Welded	610	570	25	62
Specification		560-680	470-590	24 min	50 avg.

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	227	4	22
3.15 x 450	100-140	113	4	44
4.0 x 450	140-180	76	4	65
5.0 x 450	190-250	49	4	100

EQUIVALENT : GMAW wire: **Automig 80S-Ni1**
FCAW wire: **Automig FC 81T1-Ni1**

GTAW filler: **Tigfil 80S-Ni1**



TENALLOY 60

LOW ALLOY STEEL (Low Temperature)

Welding Electrode for high tensile steel containing 1% Ni.

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.5 **APPROVALS :**
E 46 4 Z B 12 H5 E 8018-G LRA/ABS

KEY FEATURES :

- Basic coated electrode
- Ni-Mn type low alloy steel weld
- Excellent impact toughness down to -50°C
- Highly crack resistant welds
- Radiographic quality weld deposit
- All positional welding capability

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Pressure vessels, boilers
- Bridges, Heavy structures subject to
- dynamic loading and mechanical restraint
- Storage tanks, Pipes
- Joining steels containing 1% Ni
- Welding of ALDUR 45/60, ASTM SA-841/841M

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	S	P
Typical	0.08	1.5	0.3	0.6	0.02	0.02
Specification	0.05-0.10	1.40-1.85	0.20-0.48	0.45-0.80	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -50°C, J
Typical	As Welded	605	520	26	54
Specification		560-650	460-570	24 min	40 avg.

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	240	4	21
3.15 x 450	100-140	115	4	44
4.0 x 450	140-180	86	4	58
5.0 x 450	190-250	49	4	100



TENALLOY 16E SPL

LOW ALLOY STEEL (Low Temperature)

Welding Electrode with Excellent Sub Zero Temperature Properties

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.5
E 46 5 Mn1Ni B 12 H5 E 8016-G

KEY FEATURES :

- Basic type low hydrogen electrode
- Excellent impact properties at sub zero temperature
- Exhibits excellent mechanical properties in the as welded and post weld condition

WELDING POSITION : 



AC (70 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Welding of steels with high yield strength upto 450 MPa
- Welding and repairing high strength steels such as BS 4360-55 E/F

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	S	P
Typical	0.05	1.6	0.3	0.8	0.01	0.01
Specification	0.03-0.08	1.50-1.90	0.20-0.50	0.60-1.0	0.020 max.	0.025 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact At -51°C, J
Typical	As Welded	580	500	25	64
Specification		550 min	460 min	20 min.	47 avg.

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg
2.5 x 350	60-90	5	4	20
3.15 x 450	90-140	5	4	20
4.0 x 450	130-180	5	4	20
5.0 x 450	180-230	5	4	20



Electrode for welding high strength steel.

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.5 **APPROVALS :**
E 46 4 Z B 32 H5 E 8018-D3 IBR

KEY FEATURES :

- Medium-heavy coated electrode
- Mn-Mo type low alloy steel welds
- Exhibit good toughness at subzero temperatures
- All position capability
- Weld metal meets X-ray quality, ultrasonic and other code requirements
- Suitable for fully killed fine grained steels

WELDING POSITION : 



AC (90 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of Mn-Mo type steels and equivalent grades
- Penstocks, Pressure vessels
- Welding low alloy high strength steels in 540 MPa UTS range
- Earth moving equipments

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Mo	S	P
Typical	0.09	1.3	0.4	0.5	0.5	0.02	0.02
Specification	0.12 max	1.0-1.75	0.20-0.65	0.90 max	0.40-0.65	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -51°C, J
Typical	As Welded	605	510	24	45
Specification		560-660	460-560	22-28	30-80

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	208	4	24
3.15 x 450	90-140	108	4	46
4.0 x 450	140-180	73	4	68
5.0 x 450	180-250	47	4	106



Welding electrode depositing Mn-Mo type low alloy steel weld.

CLASSIFICATION :	EN ISO 2560-A	AWS A/SFA 5.5	APPROVALS :
	E 50 3 Z B 32 H5	E 9018-D1	IBR

KEY FEATURES :

- Basic coated electrode
- Typical Mn-Mo type weld deposit
- Excellent fracture toughness down to -50°C
- Suitable for welding fully killed fine grained steels
- Suitable preheat, interpass and PWHT is required depending on base metal composition
- All position capability
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of low alloy high tensile steels of typical UTS 650 MPa
- Penstocks, Earth moving equipments and other similar fabrications

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Mo	S	P
Specification	0.10 max	1.0-1.75	0.20-0.50	0.90 max	0.25-0.45	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -50°C, J
Specification	PWHT: 620°C for 1 hr.	600 min	530 min	17 min	40 avg.

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
3.15 x 450	100-140	109	4	46
4.0 x 450	140-180	78	4	64
5.0 x 450	190-250	49	4	102



Low alloyed Mn-Ni-Mo type Electrode for high tensile steel Welding.

CLASSIFICATION : EN 757

AWS A/SFA 5.5

APPROVALS :

E 55 4 Z B 32 H5

E 10018-D2

ABS

KEY FEATURES :

- Basic type electrode
- Mn-Ni-Mo type weld deposit
- High resistance to cracking and cold toughness at temperatures as low as -50 °C
- Suitable preheat, interpass and PWHT is necessary to achieve desired properties
- Radiographic weld deposit
- Positional welding capability

WELDING POSITION :



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of fully killed fine grained high tensile steels used for fabrication of penstock, earthmoving equipments
- Heavy structures under restraint
- Used for materials with minimum tensile strength of 690 MPa

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Mo	S	P
Typical	0.08	1.8	0.5	0.6	0.4	0.02	0.02
Specification	0.15 max	1.65-2.0	0.20-0.60	0.90 max	0.25-0.45	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at - 50°C, J
Typical	As Welded	725	640	19	56
Specification		690-790	600-700	16-24	40 avg.

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	242	4	21
3.15 x 450	100-140	112	4	44
4.0 x 450	140-180	74	4	67
5.0 x 450	190-250	49	4	100



TENALLOY 75

LOW ALLOY STEEL (High Strength)

Ni-Mn alloyed welding Electrode for high tensile steel.

CLASSIFICATION : EN 757 AWS A/SFA 5.5 **APPROVALS :**
E 55 4 Z B 32 H5 E 10018-M ABS/IBR

KEY FEATURES :

- Basic coated electrode
- Ni-Mn type weld deposit
- Moisture resistant coating
- Radiographic quality welds
- Suitable for positional welding

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of high tensile steels, heavy sections
- Earthmoving equipments and heavy structures
- Welding of USS T-1, NAXTRA 70, BH65 steels used for fabrication of penstocks

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Mo	S	P
Typical	0.08	1.6	0.5	2.1	0.4	0.02	0.02
Specification	0.05-0.10	1.30-1.80	0.25-0.60	1.25-2.50	0.50 max	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at - 50°C, J
Typical	As Welded	765	705	23	57
Specification		710 min	610 min	20 min	30-70

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	230	4	22
3.15 x 450	100-140	116	4	43
4.0 x 450	140-180	77	4	64
5.0 x 450	190-250	48	4	104



TENALLOY 80

LOW ALLOY STEEL (High Strength)

Welding Electrode for high strength steel with subzero impact.

CLASSIFICATION : EN 757 AWS A/SFA 5.5 **APPROVALS :**
E 69 4 Z B 32 H5 E 11018-M ABS

KEY FEATURES :

- Basic type coating
- Ni-Mn-Mo-Cr-V type electrode
- Excellent crack resistant
- Excellent toughness at subzero temperature
- Radiographic quality weld metal

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of high tensile steels like USS T-1, Fine grained steels like HY 80, HY 90, HY 100, NAXTRA 70
- Heavy structures under restraint
- Suitable for ASTM SA 225/225M Gr.C/D, SA 533/533M Gr.B/C/D, SA 543/543M Gr.B/C
- Penstocks, Earthmoving equipments

REDRYING CONDITION : 300°C for 2 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Mo
Typical	0.08	1.6	0.5	1.9	0.4
Specification	0.05-0.09	1.30-1.80	0.30-0.60	1.25-2.40	0.30-0.50
	Cr	V	S	P	
Typical	0.3	0.02	0.02	0.02	
Specification	0.20-0.40	0.05 max	0.03 max	0.03 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at - 50°C, J
Typical	As Welded	820	730	22	55
Specification		770-870	690-760	20-24	40 avg.

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	215	4	23
3.15 x 450	100-140	114	4	44
4.0 x 450	140-180	78	4	63
5.0 x 450	190-250	51	4	96
6.3 x 450	250-310	30	4	167



TENALLOY 80 HH SPL

LOW ALLOY STEEL (High Strength)


Extra low hydrogen low alloy Welding Electrode for high strength with subzero application.

CLASSIFICATION : EN 757 AWS A/SFA 5.5 **APPROVALS :**
E 69 4 Z B 32 H5 E 11018-M IBR

KEY FEATURES :

- Extra low hydrogen electrode
- Low alloy high tensile steel electrode
- Good impact toughness at -50°C
- All position capability
- Radiographic quality weld
- Suitable for welding fully killed fine grained steels

WELDING POSITION : 

 **AC (90 OCV)/DCEP**

TYPICAL APPLICATIONS :

- Penstocks, Earth moving equipments & other heavy steel fabrications made from high tensile steels
- Welding USS T-1 steel, Heat treated fine grained steels, NAXTRA 70, Hy80
- Suitable for ASTM SA 225/225M Gr.C/D, SA 533/533M Gr.B/C/D Class 2 and 3, SA 543/543M Gr.B/C Class 1 and 2, SA 612/612M, SA 738/738M Gr.A/B/C

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Cr
Typical	0.08	1.6	0.5	1.8	0.3
Specification	0.06-0.10	1.30-1.70	0.30-0.70	1.25-2.50	0.20-0.40
	Mo	V	S	P	
Typical	0.4	0.02	0.05	0.05	
Specification	0.30-0.50	0.05 max	0.012 max	0.012 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at - 50°C, J
Typical	As Welded	820	715	22	44
Specification		770-870	690-760	20-24	30-70

Diffusible H₂ Content: <3 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	215	4	23
3.15 x 450	90-140	113	4	44
4.0 x 450	140-180	78	4	63
5.0 x 450	180-250	51	4	96



TENALLOY 75 G

LOW ALLOY STEEL (High Strength)


Welding Electrode depositing high strength Ni-Cr-Mo type weld metal.

CLASSIFICATION : EN 757 AWS A/SFA 5.5
E 55 5 Z B 32 H5 E 10018-G

KEY FEATURES :

- Basic type coating
- Optimum combination of strength and impact toughness at low temperature
- Ni-Cr-Mo type weld deposit
- Radiographic quality weld deposit
- All position capability

WELDING POSITION : 

 **AC (70 OCV)/DCEP**

TYPICAL APPLICATIONS :

- Welding of grain refined steel and Ni steels
- Welding of DMR 249 Grade steels
- Storage tanks for liquefied gases like ammonia
- For heavy and highly restrained joints
- Distillers in coke oven batteries
- Petrochemical industries

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni
Typical	0.07	1.2	0.4	0.1	2.1
Specification	0.10 max	0.90-1.50	0.30-0.60	0.25 max	1.80-2.20
	Mo	V	S	P	
Typical	0.2	0.01	0.005	0.01	
Specification	0.30 max	0.02 max	0.010 max	0.015 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at - 50°C, J
Typical	As Welded	710	630	22	56
Specification		690 min	600 min	20 min	50-60

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg
2.5 x 350	70-110	2	8	16
3.15 x 450	90-140	2	8	16
4.0 x 450	150-200	2	8	16
5.0 x 450	180-250	2	8	16



TENALLOY 65


LOW ALLOY STEEL (High Strength)

Ni-Mn-Mo type low alloy steel Welding Electrode.

CLASSIFICATION : EN 757 AWS A/SFA 5.5
E 55 5 Z B 32 H5 E 9018-G

KEY FEATURES :

- Basic coated iron powder electrode
- Ni-Mn-Mo type weld deposit
- Good impact toughness at -60°C
- All position capability
- Radiographic quality weld
- Suitable for medium-high tensile structural steels, heavy sections

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of high tensile steels, Pressure vessels, Boilers and heavy structures subject to dynamic loading and mechanical restraint
- Suitable for joining SA 662/662M Gr.A/B/C

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Mo	S	P
Typical	0.06	1.4	0.3	1.4	0.3	0.02	0.02
Specification	0.09 max	1.20-1.70	0.20-0.45	1.10-1.60	0.25-0.40	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -60°C, J
Typical	As Welded	655	580	23	54
Specification		630-700	550-620	20-24	35-70

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
3.15 x 450	100-140	112	4	44
4.0 x 450	140-180	77	4	64
5.0 x 450	190-250	49	4	100



TENALLOY 65 SPL

LOW ALLOY STEEL (High Strength)

Ni-Mn-Mo type Electrode for welding high tensile steels.

CLASSIFICATION : EN 757 AWS A/SFA 5.5 **APPROVALS :**
E 55 4 Z B 32 H5 E 9018-G IBR

KEY FEATURES :

- Basic type electrode
- Low hydrogen Ni-Mn-Mo type weld
- Good impact toughness at -40°C
- Medium penetration with base metal
- All position capability
- Radiographic quality weld
- Suitable for high strength steels with
- UTS of 620-730 MPa

WELDING POSITION : 



AC (90 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of high tensile steels
- Oil refineries, Penstocks, Submarines
- Boilers, Power house construction
- Earth moving equipments and other similar heavy fabrications
- Root pass in HY-100 steel

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Mo	S	P
Typical	0.05	1.3	0.3	1.3	0.4	0.01	0.01
Specification	0.06 max	1.20-1.40	0.40 max	1.0-1.40	0.30-0.50	0.015 max	0.015 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -40°C, J
Typical	PWHT: 620°C	665	600	23	58
Specification	for 2 hrs.	620 min	530 min	17 min	27 min

Hardness, 3 Layer: 200 BHN max

Diffusible H₂ Content: <5 ml/100 gm

SPECIAL TESTS : Hot Tensile Test at 370°C – 610 MPa

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
3.15 x 450	90-140	114	4	44
4.0 x 450	140-180	74	4	68
5.0 x 450	180-250	48	4	104



TENALLOY 70

LOW ALLOY STEEL (High Strength)

Basic coated Electrode for welding high tensile structural steel.

CLASSIFICATION : EN 757 AWS A/SFA 5.5
E 55 2 Z B 32 H5 E 9018-G

KEY FEATURES :

- Basic coated electrode
- Ni-Mn type low alloy steel weld
- Optimum combination of strength and impact toughness
- Radiographic weld deposit
- Suitable for welding medium high tensile structural steels, heavy sections

WELDING POSITION : 



AC (90 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of High tensile steels
- Pressure vessels, Boilers and heavy structures
- Joining ASTM SA 662/662M Gr.A/B/C

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	S	P
Typical	0.08	1.4	0.5	0.6	0.02	0.02
Specification	0.05-0.09	1.20-1.60	0.40-0.70	0.50-0.75	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Typical	As Welded	660	590	26	60
Specification		630-700	550-620	22-26	40-70

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	232	4	22
3.15 x 450	100-140	111	4	45
4.0 x 450	140-180	76	4	65
5.0 x 450	190-250	49	4	100



TENALLOY 4130

LOW ALLOY STEEL (High Strength)

Low alloy Steel Electrode for welding AISI 4130 steel.

KEY FEATURES :

- Basic coated electrode
- Ni-Cr-Mo low alloy weld deposit
- Hardening and tempering is required to achieve desired properties
- Recommended preheat and interpass temperature is 200-315°C
- All position capability
- Radiographic quality weld

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Welding heat treatable alloy type AISI/SAE 4130 and 8630
- Suitable for steel casting with comparable hardening characteristics

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni
Range	0.12-0.25	1.0-1.80	0.25-0.75	1.0-1.80
	Cr	Mo	S	P
Range	0.5-1.0	0.20-0.50	0.020 max	0.025 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Range	PWHT: 871°C-Oil quenching Tempering at 621°C	800-1000	700-900	16 min
	PWHT: 871°C-Oil quenching Tempering at 510°C	1000-1200	900-1100	16 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
3.15 x 450	90-120	114	4	44
4.0 x 450	130-170	78	4	64
5.0 x 450	180-250	50	4	100



TENALLOY 125

LOW ALLOY STEEL (High Strength)

Low alloy steel Welding Electrode for joining Cr-Mo-V type cast steel.

CLASSIFICATION : DIN 8575 EN ISO 3580-A
E CrMoV 1 B E 1Cr Mo V B 22 H5

KEY FEATURES :

- Basic coated electrode
- Cr-Mo-V type low alloy weld deposit
- Suitable for welding similar composition cast steels
- The deposit is heat treatable
- All position capability
- Radiographic quality weld

WELDING POSITION :   **DCEP**

TYPICAL APPLICATIONS :

- Welding similar composition low alloy cast steels e.g. (GS-17CrMoV5-10)
- Suitable for material 1.7706
- Suitable for steel casting with comparable hardening characteristics

REDRYING CONDITION :300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo
Typical	0.14	0.6	0.4	1.3	1.2
Specification	0.12-0.15	1.0 max	0.40-0.50	1.20-1.50	1.0-1.30
	V	Ni	S	P	
Typical	0.2	0.2	0.01	0.01	
Specification	0.20-0.30	0.40 max	0.02 max	0.02 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 20°C, J
Typical	PWHT	715	620	20	82
Specification		630 min	500 min	16 min	27 min

PWHT : SR at 690°C for 2 hrs followed by water quenching after soaking at 940°C for 1hr and tempering at 720°C

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg
2.5 x 350	60-90	5	4	20
3.15 x 450	90-130	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	190-230	5	4	20



ULTRACORTEN III

LOW ALLOY STEEL (Weathering Steel)

Low alloy steel Electrode for welding weathering steels.

CLASSIFICATION : EN ISO 2560-A AWS A/SFA 5.5 **APPROVALS :**

E 46 2 Z B 32 E 8018-W2 ABS

KEY FEATURES :

- Basic type iron powder electrode
- Cr-Ni-Cu type low alloy steel welds
- High crack resistance under restraint
- Radiographic quality weld deposit
- Exhibits excellent atmospheric corrosion resistance compared to normal steels
- All position capability

WELDING POSITION : 



AC (70 OCV) / DCEP

TYPICAL APPLICATIONS :

- Welding of weathering steels e.g. CORTEN-A and CORTEN-B and their equivalents
- Bridges, Architectural structures, Exhaust gas flues, Chimneys
- Suitable for ASTM A36, A283 Gr.B/C

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr
Typical	0.06	1.0	0.6	0.5
Specification	0.10 max.	0.60-1.30	0.35-0.80	0.45-0.70
	Ni	Cu	S	P
Typical	0.7	0.6	0.02	0.02
Specification	0.40-0.80	0.30-0.75	0.03 max.	0.04 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -20°C, J
Typical	As Welded	605	520	22	66
Specification		560-660	480-570	19-26	50-100

Diffusible H₂ Content: <5 ml/100 gm)

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
3.15 x 450	100-140	113	4	44
4.0 x 450	140-180	79	4	63
5.0 x 450	190-250	49	4	102




Ni-Cr-Mo Welding Electrode for high tensile low alloy steel welding.

CLASSIFICATION :	EN 757	AWS A/SFA 5.5	APPROVALS :
	E 55 4 Z B 32 H5	E 9018-M	ABS

KEY FEATURES :

- Basic coated iron powder electrode
- Ni-Cr-Mo type weld metal
- Resistant to cracking
- Exhibit good toughness at subzero temperatures
- Weld metal is of X-ray quality
- All position capability
- Suitable for high tensile, low alloy steels

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Pressure vessels, Boilers
- Machinery parts, Rolling stocks
- High tensile weather proof steels
- Penstocks, Pipelines
- Suitable for joining NAXTRA 60 steels

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni
Typical	0.06	1.1	0.4	0.1	1.5
Specification	0.09 max	0.80-1.25	0.25-0.60	0.15 max	1.40-1.80
	Mo	V	S	P	
Typical	0.2	0.02	0.02	0.02	
Specification	0.35 max	0.05 max	0.03 max	0.03 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -51°C, J
Typical	As Welded	650	590	26	54
Specification		625-700	550-620	24-30	35-75

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Cartron	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	254	4	20
3.15 x 450	100-130	117	4	43
4.0 x 450	140-180	76	4	65
5.0 x 450	190-250	47	4	106



NIMOTEN PLUS

LOW ALLOY STEEL (Nimoten Series)

Ni-Cr-Mo Welding Electrode For High Strength Joining Application

CLASSIFICATION : AWS A/SFA 5.5
E 10016-G

KEY FEATURES :

- Basic coated electrode
- Ni-Cr-Mo type weld metal
- High tensile strength upto 780 MPa
- Weld metal is of X-ray quality
- All position capability
- Suitable for high tensile, low alloy steels

WELDING POSITION : 



AC (70 OCV) / DCEP

TYPICAL APPLICATIONS :

- Welding of high tensile steels
- Pressure vessels, Boilers
- Machinery parts
- Penstocks, Pipelines
- Suitable for joining NAXTRA 60 steels

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr
Typical	0.07	1.0	0.5	0.12
Specification	0.09 max.	0.80-1.25	0.25-0.60	0.15 max
	Ni	Mo	S	P
Typical	1.7	0.25	0.02	0.02
Specification	1.40-1.80	0.35 max.	0.03 max.	0.03 max.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	PWHT:620°C	735	625	19
Specification	for 1hr.	690-780	600-650	16-24

Diffusible H₂ Content: <5 ml/100 gm)

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	278	4	18
3.15 x 450	100-140	125	4	40
4.0 x 450	140-180	86	4	58
5.0 x 450	190-250	53	4	94
6.3 x 450	260-310	34	4	147



NIMOTEN PLUS 535

LOW ALLOY STEEL (Nimoten Series)

Low alloy steel Welding Electrode for application in steel mills and forging industries.

KEY FEATURES :

- Basic type medium-heavy coating
- Low alloy type weld metal
- Tensile strength over 950 Mpa
- Radiographic weld deposit
- All position capability
- Special application for joining and overlay work in steel mills and forging industry

WELDING POSITION : 



AC (90 OCV)/DCEP

TYPICAL APPLICATIONS :

- Filling die impressions in forging dies
- Automotive parts
- Certain grades of armour steel
- Ni-Cr-Mo steels in chemical plants
- Crack repair in Ni-Cr hot working dies
- High tensile steel machinery parts
- Parts of earth moving equipment
- Steam turbine rotors at 538°C
- Case hardening steel parts repair after removing hard zone

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni
Typical	0.08	1.4	0.2	2.8	2.1
Range	0.07-0.09	1.20-1.70	0.15-0.25	2.5-3.0	1.8-2.2
	Mo	V	S	P	
Typical	1.2	0.1	0.02	0.02	
Range	1.0-1.5	0.1-0.2	0.03 max	0.03 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	As Welded	735	625	19
Range		690-780	600-650	16-24

Hardness, 3 Layer: 260-330 BHN

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
3.15 x 450	100-130	127	4	39
4.0 x 450	140-180	86	4	58
5.0 x 450	190-230	53	4	94
6.3 x 450	260-320	34	4	147



NIMOTEN PLUS 535 A

LOW ALLOY STEEL (Nimoten Series)

Low alloy steel Welding Electrode for large hot working die repair.

KEY FEATURES :

- Medium-heavy coated electrode
- Low alloy steel weld deposit
- Tensile strength over 1100 MPa achievable
- Three layered hardness of over 320 BHN
- Radiographic weld deposit
- All position capability

WELDING POSITION :



AC (90 OCV)/DCEP

TYPICAL APPLICATIONS :

- For repair of large hot working dies
- All types of forging dies
- Crack repair in Ni-Cr hot working dies
- High tensile steel machinery parts
- Repair of case hardening steel part after removing the hard zones
- Suitable for repair of H11, H13 and DB-6 type die block material
- Parts of earth moving equipment
- Steam turbine rotors in service upto 538°C

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni
Typical	0.1	1.5	0.2	2.7	2.2
Range	0.07-0.12	1.20-1.70	0.15-0.25	2.4-2.8	1.8-2.4
	Mo	V	S	P	
Typical	1.3	0.15	0.02	0.02	
Range	1.0-1.5	0.1-0.2	0.03 max	0.03 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	As Welded	1080	935	20
Range		1000-1190	870-1040	16 min

Hardness, 3 Layer: 300-360 BHN

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/ Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
4.0 x 450	140-180	83	4	60
5.0 x 450	190-230	53	4	94
6.3 x 450	260-320	34	4	147



NIMOTEN PLUS 535 B

LOW ALLOY STEEL (Nimoten Series)

Low alloy steel Welding Electrode for repair of drop forging dies.

KEY FEATURES :

- Medium-heavy coated electrode
- Low alloy steel weld deposit
- Tensile strength over 1100 MPa achievable
- Three layered hardness upto 410 BHN
- Suitable preheat and PWHT required depending on base material type
- Radiographic weld deposit
- All position capability

WELDING POSITION :



AC (90 OCV)/DCEP

TYPICAL APPLICATIONS :

- For repair of large hot working dies specially drop forging dies
- Crack repair in Ni-Cr hot working dies
- High tensile steel machinery parts
- Parts of earth moving equipment
- Suitable for repair of H11, H13 and DB-6 type die block material
- Steam turbine rotors in service upto 538°C
- Repair of case hardening steel part after removing the hard zones

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni
Typical	0.1	1.4	0.2	2.8	2.1
Range	0.07-0.12	1.20-1.75	0.15-0.35	2.5-3.0	1.9-2.3
	Mo	V	S	P	
Typical	1.4	0.15	0.02	0.02	
Range	1.0-1.5	0.1-0.2	0.03 max	0.03 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	As Welded	1100	940	19
Range		1000-1190	870-1040	15 min

Hardness, 3 Layer: 300-410 BHN

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
4.0 x 450	140-180	79	4	63
5.0 x 450	190-230	32	4	156
6.3 x 450	260-320	28	4	179



SUPERINOX 1A


STAINLESS STEEL (Austenitic Steel)

Stainless steel electrode for joining 18/8 type stainless steels

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206	APPROVALS:
	E 19 9 R 12	E 308-16	E 19.9 R26	RDSO/NTPC

KEY FEATURES :

- Rutile based coating
- 19/10 type austenitic SS weld
- Resistant to cracking, corrosion and scaling upto 800°C
- Controlled ferrite content
- Smooth operating characteristics
- All position capability
- Radiographic weld quality

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding Cr-Ni steels represented by AISI 301, 302, 304 and 308
- Fabrication of boilers, reactors and turbines
- SS piping in refineries, oil and gas industries, chemical plants
- Build up application on SS surfaces of centrifugal pump impellers and shafts valve faces, seats etc.
- Suitable for material no. 1.4300, 1.4301, 1.4310, 1.4312, 1.4550, 1.4001, 1.4016, 1.4057

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.05	1.2	0.6	19.0	10.2	0.02	0.02
Specification	0.08 max	0.70-2.0	0.30-0.85	18.0-21.0	9.0-11.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	600	40	5
Specification		560-660	35-50	3-7

PARAMETERS - PACKING DATA :

Ø x L , mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	35-45	2	5	10
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10
5.0 x 300	150-180	2	5	10



SUPERINOX 1AH

STAINLESS STEEL (Austenitic Steel)

18/8 type stainless steel Electrode with improved strength and creep resistance

CLASSIFICATION : EN 1600	AWS A/SFA 5.4	APPROVALS :
E 19 9 R 12	E 308H-16	IRS

KEY FEATURES :

- Rutile coated electrode
- 19/10 type austenitic SS weld
- Enhanced carbon content provide improved tensile strength and creep resistance at elevated temperatures
- Controlled ferrite content for maximum cracking resistance
- Radiographic quality weld
- Suitable for all position except vertical down

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of AISI 304, 304H, 321H, 347H stainless steels
- Suitable for material no. 1.4301, 1.4948, 1.4878
- For petrochemical and nuclear industries for elevated temperature creep resistance application

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.07	1.5	0.6	19.5	10.2	0.02	0.02
Specification	0.04-0.08	0.70-2.50	0.30-0.80	18.0-21.0	9.0-11.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	605	37	4
Specification		550 min.	35 min.	3-7

Hardness, 3 layer: 220 BHN max

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10



SUPERINOX 1A-15


STAINLESS STEEL (Austenitic Steel)

Basic type Electrode for 18/8 type stainless steels

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 19 9 B 22	E 308-15	E 19.9 B20

KEY FEATURES :

- Basic type coating
- 19/10 type austenitic SS weld
- Resistant to cracking, corrosion and scaling upto 800°C
- Controlled ferrite content
- Radiographic weld quality
- All position capability
- Excellent welder appeal

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Welding Cr-Ni steels of AISI 301, 302, 304 and 308 types
- Build up application on SS surfaces of centrifugal pump impellers and shafts valve faces, seats etc
- For steels of difficult weldability such as certain armour steel grades.
- Suitable for material no. 1.4300, 1.4301, 1.4310, 1.4312, 1.4550, 1.4001, 1.4016, 1.4057

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.04	1.4	0.5	19.4	9.8	0.02	0.02
Specification	0.08 max	1.0-2.0	0.20-0.70	18.0-21.0	9.0-11.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	610	37	6
Specification		570-690	35-45	3-7

PARAMETERS - PACKING DATA :

Ø x L , mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-70	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10
5.0 x 300	150-180	2	5	10



KING STAINLESS 308L

STAINLESS STEEL (Austenitic Steel)

Stainless steel Electrode for welding of all 18/8 type stainless steel.

CLASSIFICATION : AWS A/SFA 5.4

E 308L-16

KEY FEATURES :

- Rutile type coating
- Smooth and stable arc
- Minimal Spatter
- Self peeling slag
- Excellent welder appeal
- All position capability
- Radiographic quality weld
- Results in welds of excellent corrosion and scaling resistance

WELDING POSITION : 



AC (50 OCV) /DCEP

TYPICAL APPLICATIONS :

- Welding Cr-Ni steels represented by AISI 301, 302, 304, 304L, 308 and 308L
- For cladding applications

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

C	Mn	Si	Cr	Ni	S	P
0.04 max	0.5-0.25	1.0 max	18.0-21.0	9.0-11.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

Condition	UTS, MPa	EL%
As Welded	520 min	35 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	35-45	2	5	10
2.5 x 350	55-75	2	5	10
3.15 x 350	85-100	2	5	10
4.0 x 350	110-140	2	5	10



BETANOX 308 PLUS

STAINLESS STEEL (Austenitic Steel)


Stainless steel Electrode for joining 304 type steels

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 19 9 R 13	E 308-17	E 19.9 R36

KEY FEATURES :

- Acid-Rutile based coating
- 19/10 type austenitic SS weld
- Controlled ferrite content
- Resistant to cracking, atmospheric corrosion and scaling upto 800°C
- Exhibits excellent creep strength

WELDING POSITION : 

 **AC (70 OCV) /DCEP**

TYPICAL APPLICATIONS :

- Welding Cr-Ni steels represented by AISI 301, 302, 304 and 308
- Fabrication of boilers, reactors and turbines
- SS piping in refineries, oil and gas industries, chemical plants
- Build up application on SS surfaces of centrifugal pump impellers and shafts valve faces, seats etc
- Suitable for material no. 1.4300, 1.4301, 1.4310, 1.4312, 1.4550, 1.4001, 1.4016, 1.4057

REDRYING CONDITION : 300°C for 2 hrs. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.04	1.4	0.6	19.6	10.1	0.02	0.02
Specification	0.07 max	0.50-2.0	1.0 max	18.0-21.0	9.0-11.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	605	38	4
Specification		550-650	35-50	3-7

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	50-75	2	5	10
3.15 x 350	60-100	2	5	10
4.0 x 350	100-140	2	5	10
5.0 x 350	150-180	2	5	10


19/10 type extra low carbon stainless steel Electrode

CLASSIFICATION : EN 1600	AWS A/SFA 5.4	IS 5206	APPROVALS:
E 19 9 L R 12	E 308L-16	E 19.9 LR26	NPCIL/IRS/MND

KEY FEATURES :

- Rutile based coating
- Extra low carbon 19/10 type austenitic weld
- Excellent corrosion and scaling resistance upto 800°C
- Controlled ferrite content for maximum cracking resistance
- Suitable for all position welding
- Radiographic quality weld deposit

WELDING POSITION : 

 **AC (70 OCV)/DCEP**

TYPICAL APPLICATIONS :

- Welding Cr-Ni steels represented by AISI 301, 302, 304, 304L, 308, 308L
- Fabrication of boilers, reactors and turbines
- Build up application on SS
- SS piping in refineries, oil and gas Industries, chemical plants
- Suitable for material no. 1.4300, 1.4301, 1.4310, 1.4312, 1.4550, 1.4001, 1.4016, 1.4057

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.03	1.2	0.5	19.5	10.0	0.02	0.02
Specification	0.04 max.	0.60-2.0	0.30-0.85	18.0-21.0	9.0-11.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	590	37	5
Specification		530-650	35-40	3-7

Hardness, 3 Layer: 150-200 BHN

SPECIAL TEST : IGC Test as per ASTM A262 Practice E, CVN Impact Test at subzero temperature

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	35-45	2	5	10
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10

EQUIVALENT : GMAW wire: **Miginox 308L** GTAW filler: **Tiginox 308L** FCAW wire: **Miginox FC 308L**



SUPERINOX 1C-15


STAINLESS STEEL (Austenitic Steel)

Basic coated 19/10 type stainless steel Electrode

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206	APPROVALS:
	E 19 9 L B 22	E 308L-15	E 19.9 LB20	BV

KEY FEATURES :

- Basic type coating
- Extra low carbon 19/10 type weld
- Resist inter-crystalline corrosion
- Exhibits good toughness properties
- Controlled ferrite content for maximum cracking resistance
- Excellent corrosion and scaling resistance upto 800°C
- Radiographic weld deposit

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Welding Cr-Ni steels represented by AISI 301, 302, 304, 304L, 308, 308L
- Dairy industry, chemical and fibre industry
- Suitable for material no. 1.4300, 1.4301, 1.4310, 1.4312, 1.4550, 1.4001, 1.4016, 1.4057

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.03	1.0	0.5	19.2	10.2	0.02	0.02
Specification	0.04 max.	0.60-2.0	0.20-0.70	18.0-21.0	9.0-11.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	625	38	5
Specification		570-690	35-45	3-7

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-70	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10



19/10 type stainless steel Electrode for cryogenic application

CLASSIFICATION : EN 1600	AWS A/SFA 5.4	IS 5206
E 19 9 L B 22	E 308L-15	E 19.9 LB20

KEY FEATURES :

- Basic coated electrode
- Extra low carbon 19/10 type weld
- Resist inter-crystalline corrosion
- Exhibit excellent toughness properties at sub zero temperatures
- Controlled ferrite content of 0 to 2 for cryogenic applications
- Excellent corrosion and scaling resistance at high temperatures
- Radiographic quality weld deposit

WELDING POSITION : 



TYPICAL APPLICATIONS :

- For cryogenic applications of AISI 302, 304, 304L steels
- Dairy industry, chemical and fibre industry
- Welding of 18/8 type steels represented by AISI 301, 302, 304, 304L, 308, 308L

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.03	1.0	0.5	19.2	10.2	0.02	0.02
Specification	0.04 max.	0.60-2.0	0.20-0.70	18.0-21.0	9.0-11.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	CVN Impact at -196°C, J	Ferrite No.
Typical	As Welded	580	37	52	1
Specification		520-660	35-40	30 min	0-2

Typical Lateral Expansion : 0.50 mm

SPECIAL TEST : IGC Practice E of ASTM A262

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10



BETANOX 308L PLUS

STAINLESS STEEL (Austenitic Steel)

Extra low carbon 19/10 type stainless steel Electrode with maximum cracking resistance

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 19 9 L R 13	E 308L-17	E 19.9 LR36

KEY FEATURES :

- Acid-Rutile based coating
- Extra low carbon 19/10 type austenitic weld deposit
- Resistant to cracking
- Excellent corrosion and scaling resistance upto 800°C
- Easy slag removal
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- Welding Cr-Ni steels such as AISI 301,302, 304, 304L, 308, 308L
- Fabrication of boilers, reactors and turbines
- Build up application on SS
- SS piping in refineries, oil and gas industries, chemical plants
- Suitable for material no. 1.4300, 1.4301, 1.4310, 1.4312, 1.4550, 1.4001, 1.4016, 1.4057

REDRYING CONDITION : 300°C for 2 hrs. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Cu	S	P
Typical	0.02	1.5	0.5	19.7	10.3	0.2	0.02	0.02
Specification	0.04 max	0.50-2.0	1.0 max	18.0-21.0	9.0-11.0	0.5 max	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	580	37	6
Specification		530-650	35-40	3-7

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	50-75	2	5	10
3.15 x 350	80-100	2	5	10
4.0 x 350	100-140	2	5	10
5.0 x 350	150-180	2	5	10


EQUIVALENT : GMAW wire:**Miginox 308L** GTAW filler:**Tiginox 308L** FCAW wire:**Miginox FC 308L**

Stainless steel Electrode for chemical-pitting resistance

CLASSIFICATION : EN 1600	AWS A/SFA 5.4	IS 5206	APPROVALS:
E 19 12 2 R 12	E 316-16	E 19.12.2 R26	RDSO

KEY FEATURES :

- Rutile type coating
- 19/12/Mo SS electrode
- Offers improved corrosion and pitting resistance in marine and industrial environment
- Controlled ferrite content for maximum cracking resistance
- Excellent welder appeal
- All position capability
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding Mo bearing austenitic alloys represented by AISI 316, 317
- Suitable for material no. 1.4401 and similar grades
- Welding of equipments in Chemical, Paper and pulp, Paint and dye industries

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.04	1.5	0.5	19.0	12.0	2.4	0.02	0.02
Specification	0.08 max.	1.0-2.5	0.3-0.9	17.0-20.0	11.0-14.0	2.0-3.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	595	36	6
Specification		530-650	30-40	4-8

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	35-45	2	5	10
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10



BETANOX 316 PLUS

STAINLESS STEEL (Austenitic Steel)


19/10/2 Mo type stainless steel Electrode for pitting resistance

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 19 12 2 R 13	E 316-17	E 19.12.2 R36

KEY FEATURES :

- Acid-Rutile based coating
- 19/10/2 Mo type SS electrode
- Offers improved corrosion and pitting resistance in marine and industrial environment
- Excellent slag removal
- Controlled ferrite content of 4-8 for maximum cracking resistance
- Resistant to variety of acids e.g. Sulphuric, Hydrochloric, Acetic, Phosphoric, Citric, Tartaric etc
- Radiographic quality weld deposit

WELDING POSITION : 

 **AC (70 OCV) /DCEP**

TYPICAL APPLICATIONS :

- Welding Mo bearing austenitic alloys represented by AISI 316, 317
- Suitable for material no. 1.4401 and similar grades
- Welding of equipments in Chemical, Paper and pulp, Paint and dye industries

REDRYING CONDITION : 300°C for 2 hrs. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.04	1.2	0.5	18.7	12.3	2.4	0.02	0.02
Specification	0.08 max	1.0-2.5	1.0 max	17.0-20.0	11.0-14.0	2.0-3.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	590	36	5
Specification		530-650	30-40	4-8

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	50-75	2	5	10
3.15 x 350	80-100	2	5	10
4.0 x 350	110-140	2	5	10
5.0 x 350	150-180	2	5	10



Stainless steel Electrode for high pitting resistance

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206	APPROVALS:
	E 19 12 3 L R 12	E 316L-16	E 19.12.2 LR26	NPCIL/IRS

KEY FEATURES :

- Rutile type coating
- Extra low carbon 19/13/Mo type weld
- High resistance against intergranular corrosion
- Resistant to SCC, hot cracking and chemical attack upto 850°C
- Offers improved corrosion and pitting resistance in marine and industrial environment
- Suitable for all position
- Radiographic quality weld

WELDING POSITION :   **AC (70 OCV)/DCEP**

TYPICAL APPLICATIONS :

- Welding Mo bearing austenitic alloys represented by AISI 316, 316L, 317, 317L, 318 types
- Welding of equipments in textile processing, Naval and Chemical environments, Paper and pulp, Paint and dye industries
- Joining similar grade wrought and cast material
- Cladding stainless steels Suitable for material no. 1.4401, 1.4404, 1.4406, 1.4408, 1.4429, 1.4435, 1.4436, 1.4437, 1.4571, 1.4580, 1.4583

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.03	1.1	0.5	18.7	12.8	2.5	0.02	0.02
Specification	0.04 max.	0.7-2.0	0.3-0.75	17.0-20.0	11.0-14.0	2.0-3.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	565	35	6
Specification		510-610	30-40	3-8

SPECIAL TEST : IGC practice E as per ASTM A262

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	35-45	2	5	10
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10

EQUIVALENT : GMAW wire: **Miginox 316L** GTAW filler: **Tiginox 316L** FCAW wire: **Miginox FC 316L**



BETANOX ZF


STAINLESS STEEL (Austenitic Steel)

Rutile type stainless steel Electrode for urea reactors

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 19 12 3 L R 12	E 316L-16	E 19.12.2 LR26

KEY FEATURES :

- Rutile type coating
- Extra low carbon 18/14/Mo type deposit provide resistance to intergranular corrosion
- Nearly zero ferrite content
- Excellent corrosion resistance at high temperature service
- Smooth operating characteristics
- All position capability
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Specially designed for Urea reactors and Chemical industries
- Welding of Mo bearing austenitic alloys such as AISI 316, 316L, 317, 317L, 318 types
- Suitable for material no. 1.4401, 1.4404, 1.4406, 1.4408, 1.4429, 1.4435, 1.4436, 1.4437, 1.4571, 1.4580, 1.4583

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.03	2.1	0.3	18.2	13.1	2.4	0.01	0.01
Specification	0.04 max	1.5-2.5	0.20-0.45	17.0-19.0	11.0-14.0	2.0-3.0	0.02 max	0.02 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	605	37	0.2
Specification		530-630	30-45	0.5 max

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10
5.0 x 300	150-180	2	5	10



Basic type stainless steel Electrode for urea reactors

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 19 12 3 L B 22	E 316L-15	E 19.12.2 LB20

KEY FEATURES :

- Basic type coating
- Extra low carbon 17/13/Mo type deposit provide resistance to intergranular corrosion
- Low ferrite content
- Excellent corrosion resistance at high temperature service
- Smooth arc characteristics
- Suitable for all position
- Radiographic quality weld

WELDING POSITION :



DCEP

TYPICAL APPLICATIONS :

- Specially designed for Urea reactors and Chemical industries
- Welding of Mo bearing austenitic alloys such as AISI 316, 316L, 317, 317L, 318 types
- Suitable for material no. 1.4401, 1.4404, 1.4406, 1.4408, 1.4429, 1.4435, 1.4436, 1.4437, 1.4571, 1.4580, 1.4583

REDRYING CONDITION 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.03	2.0	0.3	17.9	13.4	2.5	0.01	0.01
Specification	0.04 max	1.0-2.5	0.20-0.45	17.0-20.0	12.0-14.0	2.0-3.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	CVN Impact at -196°C, J	Ferrite No.
Typical	As Welded	580	36	45	1
Specification		530-630	32-42	27 min.	2 max

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10
5.0 x 300	150-180	2	5	10



BETANOX K SPL

STAINLESS STEEL (Austenitic Steel)

Special Electrode for urea reactors and chemical industries

KEY FEATURES :

- Rutile coated electrode
- Extra low carbon 17/13/5Mn/Mo type fully austenitic weld deposit
- Nearly zero ferrite content
- Excellent corrosion resistance at high temperature service
- Smooth operating characteristics
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Specially designed for Urea reactors and Chemical industries
- Welding of Mo bearing austenitic alloys such as AISI 316, 316L, 317, 317L, 318 types
- Suitable for material no. 1.4401, 1.4404, 1.4406, 1.4408, 1.4429, 1.4435, 1.4436, 1.4437, 1.4571, 1.4580, 1.4583

REDRYING CONDITION 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.04 max	5.0-7.0	0.30-0.80	17.0-18.5	11.0-14.0	2.0-3.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Specification	As Welded	550-650	35-45	0.5 max

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10
5.0 x 300	150-180	2	5	10

Special batches with modified chemistry to suit customer specifications are available.



BETANOX 316L PLUS

STAINLESS STEEL (Austenitic Steel)


Low carbon stainless steel Electrode for high pitting resistance

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 19 12 3 L R 13	E 316L-17	E 19.12.2 LR36

KEY FEATURES :

- Acid-Rutile based coating
- Extra low carbon 18/13/2.5Mo type weld deposit
- Offers improved corrosion and pitting resistance in marine and industrial environment
- Resist Stress Corrosion Cracking, Hot cracking, Chemical corrosion at high temperature
- Smooth arc characteristics
- Easy slag removal
- Radiographic quality weld deposit

WELDING POSITION : 

 **AC (70 OCV) /DCEP**

TYPICAL APPLICATIONS :

- Welding Mo bearing austenitic alloys such as AISI 316, 316L, 317
- Suitable for material no. 1.4401 and similar grades
- Welding of equipments in Chemical, Paper and pulp, Paint and dye industries

REDRYING CONDITION 300°C for 2 hrs. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.02	1.3	0.7	18.2	12.5	2.5	0.02	0.02
Specification	0.04 max	0.7-2.0	1.0 max	17.0-20.0	11.0-14.0	2.0-3.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	580	36	6
Specification		530-620	30-40	3-8

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	50-75	2	5	10
3.15 x 350	80-100	2	5	10
4.0 x 350	110-140	2	5	10
5.0 x 350	150-180	2	5	10

EQUIVALENT : GMAW wire: **Miginox 316L** GTAW filler: **Tiginox 316L** FCAW wire: **Miginox FC 316L**



SUPERINOX 2D

STAINLESS STEEL (Austenitic Steel)

Stainless steel Electrode for SCC and chemical resistance

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 19 12 3 L R 12	E 317L-16	E 19.12.3 LR26

KEY FEATURES :

- Rutile based coating
- Extra low carbon 19/13/Mo SS deposit
- Resist intergranular corrosion and cracking
- Resistant to SCC, hot cracking and chemical attack upto 850°C
- Radiographic quality weld
- Offers improved resistance to pitting and crevice corrosion
- Improved high temperature creep strength than 316 type
- Excellent welding characteristics
- Easy slag detachability
- Suitable for all position welding

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding Mo bearing austenitic alloys represented by AISI 316, 316L, 317
- Welding of chemical vessels, steel tube, steel strip and casting
- Cladding stainless steels
- Suitable for material no. 1.4401, 1.4404, 1.4406, 1.4408, 1.4429, 1.4435, 1.4436, 1.4437, 1.4571, 1.4580, 1.4583

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.03	1.5	0.5	19.0	12.7	3.4	0.02	0.02
Specification	0.04 max	1.0-2.5	0.3-0.75	18.0-21.0	12.0-14.0	3.0-4.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	590	36	6
Specification		550-620	30-40	4-9

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10



SUPERINOX 2B

STAINLESS STEEL (Austenitic Steel)

A stabilized 19/12/2Mo type stainless steel electrode for resistance to variety of conventional and organic acids

CLASSIFICATION : EN 1600 AWS A/SFA 5.4
E 19 12 3 Nb R 12 E 318-16

KEY FEATURES :

- Rutile type coating
- 19/12/2Mo/Nb type weld deposit
- Resistant to sulphuric acid and organic acids at operating temperature upto 400°C
- Shows good cracking resistance
- Smooth arc and least spatter
- Easily controlled slag
- Excellent bead appearance
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding unstabilized and stabilized austenitic SS of AISI 318, 316, 316Ti
- Suitable for material no. 1.4401, 1.4404, 1.4406, 1.4408, 1.4429, 1.4435, 1.4436, 1.4550, 1.4552, 1.4571, 1.4580
- Welding of chemical vessels and pipelines
- Suitable as buffer layer on unalloyed steels before joining to austenitic grades

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	Nb	S	P
Typical	0.04	1.4	0.5	18.7	12.4	2.5	0.4	0.02	0.02
Specification	0.08 max	1.0-2.5	0.3-0.9	17.0-20.0	11.0-14.0	2.0-3.0	6xC-1.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	590	35	6
Specification		550-650	30-40	3-8

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	35-45	2	5	10
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10



BETANOX 318 PLUS

STAINLESS STEEL (Austenitic Steel)

Stabilized 18/13/2 Mo type stainless steel Electrode

CLASSIFICATION : EN 1600 AWS A/SFA 5.4 IS 5206

E 19 12 3 Nb R 13 E 318-17 E 19.12.2 Nb R36

KEY FEATURES :

- Acid-Rutile based electrode
- Low carbon 18/13/Mo/Nb stabilized weld deposit
- Controlled ferrite prevent fissuring
- Resistant to stress corrosion and inter-crystalline corrosion cracking
- Good corrosion resistance to Sulphuric and organic acids
- Working temperatures upto 400°C
- Easy strike and re-striking
- Easy slag removal
- Radiographic quality welds

WELDING POSITION : 



AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- Welding of Nb and Ti stabilized SS such as AISI 316, 318 and equivalent grades
- Welding of equipments in chemical, paper and pulp, paint and dye industries
- Suitable for materials AISI 316L, 316Ti, 316Cb, 1.4301, 1.4401, 1.4404, 1.4435, 1.4436, 1.4437, 1.4541, 1.4550, 1.4571, 1.4580, 1.4581, 1.4583

REDRYING CONDITION : 300°C for 2 hrs. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	Nb	S	P
Typical	0.04	1.9	0.5	18.3	12.8	2.2	0.4	0.02	0.02
Specification	0.08 max	1.0-2.5	1.0 max	17.0-20.0	11.0-14.0	2.0-2.5	6xC-1.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	615	36	5
Specification		560-660	30-40	4-8

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	50-75	2	5	10
3.15 x 350	80-100	2	5	10
4.0 x 350	110-140	2	5	10
5.0 x 350	150-180	2	5	10



SUPERINOX 1B

STAINLESS STEEL (Austenitic Steel)

Nb stabilized stainless steel Electrode for highest resistance against intergranular corrosion

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206	APPROVALS:
	E 19 9 Nb R 12	E 347-16	E 19.9 Nb R26	IRS/NTPC

KEY FEATURES :

- Rutile based coating
- Resistance to cracking and embrittlement
- Resistance to intergranular corrosion and scaling upto 850°C
- 19/10/Nb stabilized weld deposit
- Smooth operating characteristics
- All position capability
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding stabilized Cr-Ni steels such as AISI 321, 321H, 347, 347H
- Fabrication of equipments in refineries, power plants, centrifugal pump impellers and shafts, valve faces, seats
- Fabrication of boiler and gas turbine
- Welding of stainless steel tanks, valves, pipes in food, chemical and petrochemical industries
- Suitable for material no. 1.4300, 1.4301, 1.4306, 1.4308, 1.4310, 1.4541, 1.4543, 1.4550, 1.4552, 1.4878, 1.6905

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	Nb	S	P
Typical	0.04	1.4	0.5	19.5	10.0	0.2	0.5	0.01	0.02
Specification	0.08 max	1.0-2.0	0.90 max	18.0-21.0	9.0-11.0	0.75 max	8xC-1.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	600	35	8
Specification		550-690	30-40	6-9

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	35-45	2	5	10
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10
5.0 x 300	150-180	2	5	10

EQUIVALENT : GMAW wire: **Miginox 347** GTAW filler: **Tiginox 347** FCAW wire: **Miginox FC 347**



BETANOX 347 PLUS

STAINLESS STEEL (Austenitic Steel)

19/10/Nb stabilized type stainless steel Electrode

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 19 9 Nb R 13	E 347-17	E 19.9 Nb R36

KEY FEATURES :

- Acid-Rutile based coating
- 19/10/Nb stabilized weld deposit
- Resistance to cracking
- Less susceptible to embrittlement
- Resistant to scaling upto 850°C
- Excellent resistance to intergranular corrosion due to Nb addition
- Easy slag removal
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- Welding stabilized Cr-Ni steels such as
- AISI 321, 321H, 347, 347H
- Fabrication of equipments in refineries,
- power plants, centrifugal pump impellers and shafts, valve faces, seats
- Fabrication of boiler and gas turbine
- Welding of stainless steel tanks, valves, pipes in food, chemical and petrochemical industries
- Suitable for material no. 1.4300, 1.4301, 1.4306, 1.4308, 1.4310, 1.4541, 1.4543, 1.4550, 1.4552, 1.4878, 1.6905

REDRYING CONDITION : 300°C for 2 hrs. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	Nb	S	P
Typical	0.05	1.6	0.4	19.3	9.8	0.2	0.5	0.02	0.02
Specification	0.08 max	1.0-2.0	1.0 max	18.0-21.0	9.0-11.0	0.75 max	8xC-1.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	615	34	8
Specification		550-690	30-40	6-9

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	50-75	2	5	10
3.15 x 350	80-100	2	5	10
4.0 x 350	110-140	2	5	10
5.0 x 350	150-180	2	5	10

EQUIVALENT : GMAW wire: **Miginox 347**

GTAW filler: **Tiginox 347**




A Stainless steel Electrode for dissimilar steel joining

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206	APPROVALS:
	E 23 12 R 12	E 309-16	E 23.12 R26	IBR

KEY FEATURES :

- Rutile type medium coating
- 23/12 type SS deposit
- Exhibit excellent corrosion and oxidation resistance upto 1100°C
- Highest resistance to cracking
- Low dilution on mild and low alloy steels due to higher alloy content
- All position capability
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Dissimilar joints between stainless steels and low alloy or carbon steels
- Welding of AISI 309 type steels
- Buffer layer on low alloy and carbon steels
- Joining corrosion resistant clad steels

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.05	1.6	0.5	23.6	12.9	0.02	0.02
Specification	0.10 max.	1.0-2.5	0.90 max	22.0-25.0	12.0-14.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	610	38	13
Specification		560-660	30 min.	12-15

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10
5.0 x 300	150-180	2	5	10



BETANOX 309 PLUS

STAINLESS STEEL (Dissimilar Steel Welding)

A Stainless steel Electrode for dissimilar steel joining

CLASSIFICATION : EN 1600	AWS A/SFA 5.4	IS 5206
E 23 12 R 13	E 309-17	E 23.12 R36

KEY FEATURES :

- Acid-Rutile based coating
- 23/12 type SS deposit
- Exhibit excellent corrosion and oxidation resistance upto 1100°C
- Resistant to cracking
- Low dilution on mild and low alloy steels due to higher alloy content

WELDING POSITION : 



AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- Dissimilar joints between stainless steels and low alloy or carbon steels
- Welding of AISI 309 type steels
- Buffer layer on low alloy and carbon steels
- Joining corrosion resistant clad steels

REDRYING CONDITION : 300°C for 2 hrs. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.05	1.5	0.6	24.2	12.8	0.02	0.02
Specification	0.10 max	1.0-2.5	0.90 max	22.0-25.0	12.0-14.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	640	37
Specification		590-710	30-40

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	50-75	2	5	10
3.15 x 350	80-100	2	5	10
4.0 x 350	110-140	2	5	10

BETANOX DL


STAINLESS STEEL (Dissimilar Steel Welding)

A low carbon stainless steel Electrode for buffer layer and dissimilar steel joining

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206	APPROVALS:
	E 23 12 L R 12	E 309L-16	E 23.12 LR26	IRS/NPCIL

KEY FEATURES :

- Rutile type coating
- High ferrite content for highest resistance to cracking
- Low dilution on mild and low alloy steels due to higher alloy content
- Extra low carbon 23/12 type deposit
- Exhibit excellent corrosion and oxidation resistance upto 1100°C
- Suitable for all position
- Radiographic quality welds

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Dissimilar joints between stainless steels and low alloy or carbon steels
- Welding of AISI 309, 309L type steels
- For buffer layer on low alloy and carbon steels
- Joining corrosion resistant clad steels

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.03	1.7	0.5	23.9	13.2	0.02	0.02
Specification	0.04 max	1.0-2.5	0.90 max	22.0-25.0	12.0-14.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	560	36	12
Specification		520-600	30-40	10-15

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10
5.0 x 300	150-180	2	5	10

EQUIVALENT : GMAW wire: **Miginox 309L** GTAW filler: **Tiginox 309L** FCAW wire: **Miginox FC 309L**



BETANOX D Cb

STAINLESS STEEL (Dissimilar Steel Welding)

A Stainless steel Electrode depositing 23/12/Nb alloy

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 23 12 Nb R 12	E 309 Nb-16	E 23.12 Nb R26

KEY FEATURES :

- Rutile coated electrode
- Deposit is 23/12/Nb stabilized
- Low dilution on mild and low alloy steels due to higher alloy content
- Intergranular corrosion and oxidation resistance upto 1100°C
- Suitable for all position
- Radiographic weld quality

WELDING POSITION :



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of AISI 309, 309 Nb stabilized steels
- Dissimilar joints between 347 type and low alloy or carbon steels
- Buffer layer on low alloy and carbon steels
- Joining corrosion resistant clad steels

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Nb	Cu	S	P
Typical	0.05	1.4	0.5	23.3	13.0	0.8	0.2	0.02	0.02
Specification	0.10 max	1.0-2.5	0.90 max	22.0-25.0	12.0-14.0	0.7-1.0	0.5 max	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	600	36
Specification		560-660	30-40

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10
5.0 x 300	150-180	2	5	10



BETANOX 309 Cb PLUS

STAINLESS STEEL (Dissimilar Steel Welding)

A Nb stabilized 23/12 type stainless steel Electrode for dissimilar steel joining

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 23 12 Nb R 13	E 309Nb-17	E 23.12 Nb R36

KEY FEATURES :

- Acid-Rutile based coating
- 23/12/Nb stabilized SS deposit
- Resistant to cracking
- Low dilution on mild and low alloy steels due to higher alloy content
- Resist intergranular corrosion
- Superior strength and oxidation resistance upto 1100°C
- Easy slag removal
- Radiographic quality weld deposit

WELDING POSITION : 



AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- Welding of AISI 309, 309 Nb type steels
- Dissimilar joints between 347 type and low alloy or carbon steels
- Buffer layer on low alloy and carbon steels before deposition of 18/8 type stabilized weld metal
- Joining corrosion resistant clad steels

REDRYING CONDITION : 300°C for 2 hrs. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Nb	Cu	S	P
Typical	0.04	1.0	0.5	23.4	12.7	0.8	0.2	0.02	0.02
Specification	0.10 max	0.5-2.5	0.90 max	22.0-25.0	12.0-14.0	0.7-1.0	0.5 max	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	620	35
Specification		570-690	30-40

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	50-75	2	5	10
3.15 x 350	80-100	2	5	10
4.0 x 350	110-140	2	5	10



BETANOX D Mo

STAINLESS STEEL (Dissimilar Steel Welding)

A Stainless steel Electrode depositing 23/12/2.5Mo alloy

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 23 12 2 R 12	E 309Mo-16	E 23.12.2 R26

KEY FEATURES :

- Rutile coated electrode
- High ferrite content ensures maximum cracking resistance
- Mo addition provides high strength and corrosion resistance
- Deposit is 23/12/2.5Mo type
- Excellent corrosion and oxidation resistance upto 1100°C
- Suitable for all position
- Radiographic quality welds

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of AISI 309 Mo type steels
- Dissimilar joints between 316 type and low alloy or carbon steels
- Buffer layer on low alloy and carbon steels before deposition of 316 type weld metal

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.06	1.7	0.6	23.5	12.8	2.4	0.02	0.02
Specification	0.10 max	1.0-2.5	0.90 max	22.0-25.0	12.0-14.0	2.0-3.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	650	36	14
Specification		590-710	30-40	12-15

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10
5.0 x 300	150-180	2	5	10

EQUIVALENT : GMAW wire: **Miginox 309Mo**

GTAW filler: **Tiginox 309Mo**



BETANOX 309 Mo PLUS

STAINLESS STEEL (Dissimilar Steel Welding)

A Stainless steel Electrode depositing 23/12/2.5 Mo alloy

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 23 12 2 R 13	E 309Mo-17	E 23.12.2 R36

KEY FEATURES :

- Acid-Rutile based coating
- Deposit is 23/12/2.5Mo type
- High ferrite content ensures maximum cracking resistance
- Easy slag removal
- Mo addition provides high strength and corrosion resistance
- Excellent corrosion and oxidation resistance upto 1100°C
- Radiographic quality weld deposit

WELDING POSITION : 



AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- Welding of AISI 309 Mo type steels
- Dissimilar joints between 316 type and low alloy or carbon steels
- Buffer layer on low alloy and carbon steels before deposition of 316 type weld metal

REDRYING CONDITION : 300°C for 2 hrs. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	Cu	S	P
Typical	0.06	1.7	0.6	23.5	12.8	2.4	0.2	0.02	0.02
Specification	0.12 max	0.5-2.5	0.90 max	22.0-25.0	12.0-14.0	2.0-3.0	0.5 max	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	630	37	14
Specification		590-710	30-40	12-15

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	50-75	2	5	10
3.15 x 350	80-100	2	5	10
4.0 x 350	110-140	2	5	10

EQUIVALENT : GMAW wire: **Miginox 309Mo**

GTAW filler: **Tiginox 309Mo**



BETANOX D MoL


STAINLESS STEEL (Dissimilar Steel Welding)

Extra low carbon stainless steel Electrode depositing 23/12/2.5Mo alloy

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 23 12 2 L R 12	E 309LMo-16	E 23.12.2 LR26

KEY FEATURES :

- Rutile coated electrode
- Extra low carbon 23/12/2.5Mo type weld deposit
- Low carbon ensures resistance to intergranular corrosion and cracking
- Mo addition provides high strength
- Excellent corrosion and oxidation resistance at elevated temperatures
- All position capability
- Radiographic quality welds

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of AISI 316, 316L type steels
- Buffer layer on low alloy and carbon steels to improve corrosion and wear resistance
- Joining difficult to weld steels
- Dissimilar joints between austenitic stainless steels containing Mo and low alloy or carbon steels

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.03	1.6	0.6	23.2	12.7	2.5	0.02	0.02
Specification	0.04 max	1.0-2.5	0.3-0.7	22.0-25.0	12.0-14.0	2.0-3.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	600	37
Specification		520 min.	30 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10
5.0 x 300	150-180	2	5	10



SUPERINOX 312

STAINLESS STEEL (Dissimilar Steel Welding)

A versatile super high strength stainless steel Electrode for dissimilar joining and repair Welding

CLASSIFICATION : EN 1600	AWS A/SFA 5.4	IS 5206
E 29 9 R 12	E 312-16	E 29.9 R26

KEY FEATURES :

- Rutile type medium heavy coating
- 30/10 type SS deposit
- High strength weld with excellent resistance to cracking, fissuring and oxidation
- Two phase structure with high ferrite
- Quiet and stable arc
- Low spatter, Smooth weld bead
- Easy slag detachability
- All position welding capability
- Radiographic quality weld

WELDING POSITION :



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding difficult to weld steels ex. high C hardenable tool, die and spring steels, 13% Mn steels, free cutting steels, high temperature steels, cast steels
- Repair of worn out parts and underlay before hardfacing
- Dissimilar joints between stainless and high carbon steels and unknown steels
- Suitable for problematic steels with higher strength such as pressing dies, trimming tools, armor plates

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.06	1.5	0.5	29.4	9.8	0.02	0.02
Specification	0.15 max	0.7-2.0	0.3-0.9	28.0-32.0	8.0-10.5	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	760	29
Specification		700-860	22 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-80	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10
5.0 x 300	150-180	2	5	10

BETANOX C

STAINLESS STEEL (Heat Resisting)

Stainless steel Electrode for high temperature oxidation resistance

CLASSIFICATION : EN 1600	AWS A/SFA 5.4	IS 5206
E 25 20 R 12	E 310-16	E 25.20 R26X

KEY FEATURES :

- Rutile coated electrode
- 25/20 type SS deposit
- Excellent resistance to cracking and fissuring
- Provides excellent stability and oxidation resistance upto 1150°C
- Excellent arc stability
- Low spatter loss
- Easy slag removal
- Suitable for all position
- Radiographic quality weld deposit

WELDING POSITION :



AC (70 OCV) / DCEP

TYPICAL APPLICATIONS :

- Joining difficult to weld steels such as armor plates and ferritic stainless steels as well as dissimilar steels
- Furnace parts, Annealing boxes, Carburizing pots, Gas turbine combustion chamber parts, hydrogenation and polymerization plant
- Welding of AISI 310 and similar steel
- Cladding side of stainless steels and dissimilar steels
- Suitable for materials 1.4710, 1.4713, 1.4745, 1.4762, 1.4823, 1.4832, 1.4837, 1.4840, 1.4841, 1.4845, 1.4846, 1.4848, 1.4849

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.1	1.5	0.5	27.0	21.0	0.02	0.02
Specification	0.08-0.12	1.0-2.5	0.3-0.7	25.0-28.0	20.0-22.5	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	600	37
Specification		560-660	30 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10
5.0 x 300	150-180	2	5	10



BETANOX 310 PLUS

STAINLESS STEEL (Heat Resisting)

Stainless steel Electrode resistant to high temperature oxidation

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 25 20 R 13	E 310-17	E 25.20 R36X

KEY FEATURES :

- Acid-Rutile based coating
- 25/20 SS type deposit
- Provides excellent stability and high temperature oxidation resistance upto 1150°C
- Excellent resistance to cracking and fissuring
- Stable arc and low spatter loss
- Easy slag removal
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- Joining difficult to weld steels such as armor plates and ferritic stainless steels as well as dissimilar steels
- Furnace parts, Annealing boxes and carburizing pots, Gas turbine combustion chamber parts, hydrogenation and polymerization plant
- Welding of AISI 310 and similar grades
- Cladding side of stainless steels and dissimilar steels
- Suitable for materials 1.4710, 1.4713, 1.4745, 1.4762, 1.4823, 1.4832, 1.4837, 1.4840, 1.4841, 1.4845, 1.4846, 1.4848, 1.4849

REDRYING CONDITION : 300°C for 2 hrs. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.1	1.7	0.6	26.7	21.4	0.02	0.02
Specification	0.08-0.15	1.0-2.5	0.75 max	25.0-28.0	20.0-22.5	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	610	37
Specification		550-650	30 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	50-75	2	5	10
3.15 x 350	80-100	2	5	10
4.0 x 350	110-140	2	5	10



High alloyed stainless steel Electrode for elevated temperature application

CLASSIFICATION : AWS A/SFA 5.4

E 320-15

KEY FEATURES :

- Basic coated electrode
- 20/33/2/CuNb stabilized fully austenitic weld
- High strength and excellent oxidation resistance upto 1200°C
- Resistance to corrosion in sulphuric acid, mineral and organic acids
- Smooth and uniform weld beads
- Low spatter loss
- Radiographic quality weld

WELDING POSITION :



DCEP

TYPICAL APPLICATIONS :

- Welding AISI 310 type, HV-9A stainless steel, Carpenter 20Cb-3, Alloy 20
- Repairing of castings of similar composition
- For chemical industries handling sulphuric acids and their salts

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni
Typical	0.05	1.7	0.5	20.2	33.7
Specification	0.07 max	1.0-2.5	0.9 max	19.0-21.0	32.0-36.0
	Mo	Cu	Nb	S	P
Typical	2.4	3.4	0.6	0.02	0.02
Specification	2.0-3.0	3.0-4.0	8xC-1.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded.	620	36
Specification		560-670	30-40

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-75	2	5	10
3.15 x 300	80-100	2	5	10
4.0 x 300	110-140	2	5	10
5.0 x 300	150-180	2	5	10

BETANOX 20/25/5/Cu

STAINLESS STEEL (Heat Resisting)

High alloyed stainless steel Electrode with superior corrosion resistance properties

CLASSIFICATION : EN 1600

AWS A/SFA 5.4

IS 5206

E 20 25 5 Cu N L R 12

E 385-16

E 20.25.5 LCu R 26

KEY FEATURES :

- Rutile based semi basic coating
- Low carbon 20/25/5/Cu type fully austenitic deposit
- Recommended for highly corrosive conditions in the chemical industries, sea water desalinization plants
- Resistant to pitting and crevice corrosion in chloride bearing media
- Radiographic quality weld deposit
- Resist intergranular corrosion and sulfide stress corrosion cracking
- Scaling resistance upto 1200°C and operating temperatures upto 400°C
- Smooth arc and medium penetration
- Least spatter and easy slag removal
- Finely rippled smooth bead

WELDING POSITION :



AC (70 OCV) / DCEP

TYPICAL APPLICATIONS :

- Welding of 904L, HV-9A, HV-9 stainless steel and similar alloys for high temperature and/or high corrosion service
- Welding of 904L steel to other grades of stainless steel
- Welding of austenitic stainless steels with enhanced corrosion resistance to reducing media
- Suitable for materials 1.4539, 1.4439, 1.4537, 1.4505, 1.4506, 1.4531, 1.4536, 1.4573, 1.4585, 1.4586

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni
Typical	0.02	1.5	0.4	20.4	25.2
Specification	0.03 max	1.0-2.5	0.9 max	19.5-21.5	24.0-26.0
	Mo	Cu	S	P	
Typical	4.7	1.6	0.01	0.01	
Specification	4.2-5.2	1.2-2.0	0.02 max	0.02 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	575	37
Specification		540-600	30-50

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-70	2	5	10
3.15 x 300	70-100	2	5	10
4.0 x 300	90-130	2	5	10
5.0 x 300	140-180	2	5	10



BETACHROME N

STAINLESS STEEL (Plain Chrome Series)

Stainless steel Electrode for maintenance and repair Welding of difficult to weld steel

CLASSIFICATION : EN 1600 IS 5206
E 18 8 Mn B 12 E 18.8 Mn B45

KEY FEATURES :

- Basic coated synthetic electrode
- 18/8/5Mn type austenitic weld deposit
- Excellent heat resistant properties upto 900°C
- Work hardenable alloy with excellent crack resistance
- Deposit has high plasticity
- Smooth arc characteristics
- Suitable for all position

WELDING POSITION : 



AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- For joining austenitic Mn (12%) steel to mild steel
- Surfacing Mn steel, Crane wheels
- Joint welding between unalloyed or low alloyed steels with high alloyed steels or cast steels
- For buffer layer on difficult steels before hardfacing
- Welding steel with difficult weldability
- Armour plates, Steel castings, Crusher cones, Crusher hammers

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.1	5.5	0.6	18.6	9.7	0.02	0.02
Specification	0.12 max	5.0-7.0	0.40-0.80	18.0-21.0	9.0-10.5	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	610	37
Specification		560-670	30-40

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	110-120	2	5	10
3.15 x 350	160-170	2	5	10
4.0 x 350	210-230	2	5	10
5.0 x 350	250-300	2	5	10



BETACHROME ND

STAINLESS STEEL (Plain Chrome Series)

Basic type stainless steel Electrode for joining and surfacing of austenitic Mn steel

CLASSIFICATION :	EN 1600	IS 5206
	E 18 8 Mn B 22	E 18.8 Mn B20

KEY FEATURES :

- Basic coated electrode
- 18/8/5Mn type austenitic weld deposit
- Excellent heat resistant properties upto 900°C
- Radiographic quality weld
- Work hardenable alloy with excellent crack resistance
- Excellent arc characteristics
- Suitable for all position

WELDING POSITION : 



TYPICAL APPLICATIONS :

- For joining austenitic Mn (12%) steel to mild steel
- Surfacing Mn steel, Crane wheels
- Joint welding between unalloyed or low alloyed steels with high alloyed steels or cast steels
- For buffer layer on difficult steels before hardfacing
- Welding steel with difficult weldability
- Armour plates, Crusher cones, Crusher hammers, Rail crossings, Shovel bucket teeth

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	S	P
Typical	0.08	5.7	0.7	19.5	9.4	0.01	0.01
Specification	0.12 max	5.0-7.0	0.30-0.80	18.0-21.0	8.5-11.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	600	36
Specification		560-670	30-40

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	50-75	2	5	10
3.15 x 350	80-110	2	5	10
4.0 x 350	110-150	2	5	10
5.0 x 350	150-200	2	5	10



BETACHROME ND SPL

STAINLESS STEEL (Plain Chrome Series)

18/8/5Mn type Electrode for joining high tensile Armour steel and hardox steel

CLASSIFICATION :	EN 1600	IS 5206
	E 18 8 Mn B 12	E 18.8 Mn B20

KEY FEATURES :

- Basic type semi-synthetic electrode
- Medium-heavy coated
- 18/8/5Mn type austenitic weld deposit
- Work hardenable alloy
- Excellent crack resistance combined with superior toughness properties
- Minimum spatter losses
- Easy slag detachability
- Suitable for all position

WELDING POSITION : 



AC (90 OCV)/DCEP

TYPICAL APPLICATIONS :

- Specially designed for joining high tensile Armour steel, Bullet proof steel, Hardox 400, Hardox 500
- Fabrication of ICVBMP-11/T-72 tanks
- Joining and laying buffer layers on difficult to weld steel before hard facing
- Austenitic Mn steel (Hadfield steel) to mild steel joining
- Repairing cracks in austenitic Mn steel parts e.g. Shovel bucket teeth, Stone crushers, Hammers, Points and Crossings

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	Cu	S	P
Typical	0.06	6.5	0.6	20.2	10.2	0.7	0.4	0.01	0.02
Specification	0.12 max	5.0-7.0	0.30-0.80	18.0-22.0	8.5-11.2	0.50-0.80	0.75 max	0.025 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	CVN Impact at 27°C, J
Typical	As Welded	650	37	105
Specification		560-770	30-40	95 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	50-75	2	5	10
3.15 x 350	80-110	2	5	10
4.0 x 350	110-150	2	5	10
5.0 x 350	150-200	2	5	10



BETACHROME 13Cr

STAINLESS STEEL (Plain Chrome Series)

Martensitic stainless steel Electrode for general corrosion and heat resistance application

CLASSIFICATION : EN 1600 AWS A/SFA 5.4
E 13 B 22 E 410-15

KEY FEATURES :

- Basic coated electrode
- Typical 13Cr martensitic alloy
- Proper preheating and stress relieving required to avoid hardening
- Air hardenable weld deposit
- Stable arc and low spatter loss
- All position capability
- Radiographic quality weld

WELDING POSITION : 



TYPICAL APPLICATIONS :

- For welding ferritic martensitic chrome steels and steel castings
- For general corrosion and heat resisting applications
- Cladding of exhaust valves
- For cutlery, pump parts, castings, oil refinery equipments
- Suitable for 1.4000, 1.4002, 1.4006, 1.4021, 1.4024 and AISI 410/420 steel

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	Cu	S	P
Typical	0.07	0.6	0.4	12.8	0.3	0.1	0.1	0.02	0.02
Specification	0.10 max	1.0 max	0.20-0.65	11.0-13.5	0.7 max	0.5 max	0.5 max	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	PWHT:740°C	570	27
Specification	for 1 hr	520 min	20 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	50-70	2	5	10
3.15 x 350	80-120	2	5	10
4.0 x 350	130-160	2	5	10
5.0 x 350	170-220	2	5	10



BETACHROME 13/4

STAINLESS STEEL (Plain Chrome Series)

Stainless steel Electrode for surfacing and Welding corrosion resisting Cr steels

KEY FEATURES :

- Basic coated synthetic electrode
- Typical 13Cr/4Ni deposit
- Suitable for martensitic-ferritic Cr steels
- Excellent arc characteristics
- Easy slag removal
- Smooth and uniform weld beads
- All position welding capability
- Radiographic quality weld

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Suitable for surfacing of steel casting
- Welding of similar composition steels
- Guide vanes and runners
- Similar corrosion resisting Cr steels and steel castings

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.05	0.6	0.4	13.3	3.9	0.5	0.02	0.02
Specification	0.07 max	0.3-0.9	0.15-0.60	12.0-14.0	3.5-4.5	0.40-0.65	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS, MPa	EL%
Range	PWHT:580°C for 8 hrs	850-950	720 min.	16 min
Range	PWHT:1050°C for 4 hrs Tempering:610°C For 10 hrs	800-900	600 min.	16 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	60-80	2	5	10
3.15 x 350	80-120	2	5	10
4.0 x 350	110-160	2	5	10
5.0 x 350	150-190	2	5	10

BETACHROME 13/4 LB

STAINLESS STEEL (Plain Chrome Series)

Stainless steel Electrode depositing high strength martensitic alloy.

CLASSIFICATION : EN 1600 AWS A/SFA 5.4

E 13 4 B 22 E 410 Ni Mo-15

KEY FEATURES :

- Basic type non-synthetic electrode
- Medium-heavy coated
- High strength combined with excellent toughness and cracking resistance
- Preheat and PWHT recommended
- Martensitic type alloy resistant to corrosion, erosion, pitting and impact
- Smooth arc characteristics
- Easy slag removal
- All position welding capability
- Radiographic quality weld

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Welding of ASTM CA 6NM casting or similar materials as well as light gauge 410, 410S and 405 base metals
- Welding of extra low carbon castings and forgings of similar composition and surfacing applications
- Surfacing of turbine blades, high pressure valves
- Repair of runners, valve seats, pulp and paper plant equipment
- German castings/forgings type G-X5CrNi13.4 and G-5CrNi13.6, VIRGO 104 casting/forging

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.04	0.8	0.5	11.7	4.8	0.5	0.01	0.02
Specification	0.05 max	0.6-0.9	0.30-0.60	11.0-12.5	4.5-5.0	0.40-0.60	0.025 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 0°C, J
Typical	PWHT:600°C	880	725	18	55
Specification	for 2 hrs	790-990	600 min.	14-21	40 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	60-80	2	5	10
3.15 x 350	80-120	2	5	10
4.0 x 350	110-160	2	5	10
5.0 x 350	150-200	2	5	10

EQUIVALENT : GMAW wire: **Miginox 410NiMo**

GTAW filler: **Tiginox 410NiMo**



BETACHROME 17Cr

STAINLESS STEEL (Plain Chrome Series)

Ferritic stainless steel Electrode for joining and surfacing application

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4
	E 17 B 22	E 430-15

KEY FEATURES :

- Basic coated electrode
- Typical 17Cr ferritic alloy
- Proper preheating and PWHT will achieve desired properties
- Air hardenable weld deposit
- Excellent arc stability and low spatter
- All position welding capability
- Radiographic quality weld

WELDING POSITION : 



TYPICAL APPLICATIONS :

- For welding ferritic martensitic chrome steels and steel castings of similar composition
- For general corrosion and heat resisting applications
- Cladding of exhaust valves
- Joining and cladding of 17Cr alloy
- For cladding where temperature and corrosion resistance is necessary
- For cutlery, pump parts, castings, oil refinery equipments
- Suitable for material 1.4057, 1.4740, 1.4742, 1.4059 and AISI 430 steel

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.06	0.6	0.4	17.3	0.2	0.2	0.02	0.02
Specification	0.10 max	1.0 max	0.15-0.60	15.0-18.0	0.6 max	0.75 max	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	PWHT:780°C	560	27
Specification	for 2 hrs	490 min	20 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	60-100	2	5	10
3.15 x 350	80-120	2	5	10
4.0 x 350	130-160	2	5	10
5.0 x 350	170-220	2	5	10



BETACHROME 17/4

STAINLESS STEEL (Plain Chrome Series)

Special Electrode for surfacing and Welding of stainless steel casting

KEY FEATURES :

- Basic coated electrode
- Proper preheating and PWHT is required
- to achieve desired mechanical properties
- Typical 17Cr/4Ni/1Mo weld deposit
- Stable arc and low spatter
- All position welding capability
- Radiographic quality weld deposit

WELDING POSITION :



DCEP

TYPICAL APPLICATIONS :

- Suitable for welding of stainless steel
- castings of similar composition
- Automotive body moulding, Oil burner
- parts, Surfacing valve seats

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.08	0.5	0.6	17.4	4.5	1.1	0.02	0.02
Specification	0.05-0.10	0.20-0.60	0.30-0.80	16.0-18.5	3.5-5.0	0.90-1.20	0.03 max	0.04 max

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
2.5 x 350	50-70	2	5	10
3.15 x 350	80-120	2	5	10
4.0 x 350	130-180	2	5	10
5.0 x 350	170-220	2	5	10



BETANOX 4462

STAINLESS STEEL (Duplex SS)

Duplex stainless steel Electrode for high strength and pitting resistance

CLASSIFICATION :	EN 1600	AWS A/SFA 5.4	IS 5206
	E 22 9 3 N L R 22	E 2209-16	E 22.9.3 LR23

KEY FEATURES :

- Rutile type non-synthetic coating
- Austenitic-ferritic type weld deposit
- Excellent combination of high strength and resistance to chloride induced SCC and pitting
- Can be applied for operating temperature upto 200°C
- Suitable for all position
- Uniform and fine ripples
- Radiographic quality weld

WELDING POSITION :



DCEP

TYPICAL APPLICATIONS :

- Welding of 2205, 2209 type duplex stainless steels and similar composition
- Pipelines transporting chloride bearing products and sour gases
- Cladding on carbon and low alloy steels
- Cast pumps, Valve bodies and sea water handling equipment
- For chemical equipments, heat exchangers, off-shore platforms
- Suitable for materials 1.4417, 1.4460, 1.4462, 1.4362, 1.4162

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	N	S	P
Typical	0.03	1.3	0.5	22.0	9.2	2.9	0.15	0.02	0.02
Specification	0.04 max	1.0-2.0	0.90 max	21.5-23.5	8.5-10.5	2.5-3.5	0.1-0.2	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	CVN Impact, at -40°C, J	Ferrite No.	PREN
Typical	As Welded	735	25	50	32	42
Specification		700-780	20 min.	40 min.	30-35	35 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-70	2	5	10
3.15 x 300	70-90	2	5	10
4.0 x 300	90-140	2	5	10
5.0 x 300	140-180	2	5	10

EQUIVALENT : GMAW wire: **Miginox 2209** GTAW filler: **Tiginox 2209** FCAW wire: **Miginox FC 2209**



BETANOX 2553

STAINLESS STEEL (Duplex SS)

A high strength super duplex stainless steel Electrode for pitting resistance

CLASSIFICATION : EN 1600 AWS A/SFA 5.4

E 25 9 3Cu N L R12 E 2553-16

KEY FEATURES :

- Rutile coated non-synthetic electrode
- Super duplex stainless steel deposit
- Exhibit excellent high strength
- Improved resistance to pitting, corrosive attack and to stress corrosion cracking
- Duplex microstructure consists of austenitic-ferritic matrix
- Easy slag removal
- All position capability
- Radiographic quality weld

WELDING POSITION : 

 **AC (70 OCV) /DCEP**

TYPICAL APPLICATIONS :

- Welding of duplex and super duplex stainless steels and similar grades
- Pumps and valves, corrosion resisting parts, process equipment for use in offshore oil and gas industries
- Pulp, paper and textile industries, chemical and petrochemical plant
- Suitable for materials 1.4515, 1.4517, ASTM A 240, A 351, A 890 Gr. 1A/1B

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	Cu	N	S	P
Typical	0.04	1.1	0.5	25.7	7.7	3.5	1.9	0.15	0.02	0.02
Specification	0.05 max	0.5-1.5	1.0 max	24-27	6.5-8.5	2.9-3.9	1.5-2.5	0.1-0.2	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.	PREN
Typical	As Welded	790	21	47	52
Specification		760 min.	15 min.	30-55	40 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-70	2	5	10
3.15 x 300	70-90	2	5	10
4.0 x 300	90-140	2	5	10
5.0 x 300	140-180	2	5	10



BETANOX 2594

STAINLESS STEEL (Duplex SS)

Basic coated 25/9/4 type super duplex stainless steel Electrode

CLASSIFICATION : EN 1600 AWS A/SFA 5.4

E 25 9 4 N L B 22 E 2594-15

KEY FEATURES :

- Basic coated non-synthetic electrode
- Austenitic-ferritic duplex micro structure
- Excellent high strength combined with improved resistance to pitting and SSC in chloride environment
- Super duplex SS weld with N addition
- Weld metal characteristics similar to super duplex wrought and cast alloys
- Easy slag removal
- Uniform and fine ripples
- Radiographic quality weld

WELDING POSITION : 



DCEP

TYPICAL APPLICATIONS :

- Welding of super duplex stainless steels UNS S 32750, S 32760, SFA 2507, Zeron 100 and Casting alloys e.g. ASTM A890 Gr.5A
- Suitable for materials 1.4410, 1.4460, 1.4462, 1.4463
- Pipe work systems, flow lines, risers, manifolds, process equipment for use in offshore oil and gas industries, chemical and petrochemical plant
- Also to be used on duplex 2205 grade

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	Cu	N	S	P
Typical	0.03	1.2	0.6	25.9	9.2	4.0	0.3	0.23	0.02	0.02
Specification	0.04 max	0.5-2.0	1.0 max	24-27	8.0-10.5	3.5-4.5	0.75 max	0.2-0.3	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	CVN Impact, J		PREN
				+20°C	-20°C	
Typical	As Welded	880	27	52	35	50
Specification		760 min.	15 min.	40 min.	27 min.	40 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-80	2	5	10
3.15 x 300	70-110	2	5	10
4.0 x 300	90-140	2	5	10
5.0 x 300	130-180	2	5	10



BETANOX 2595-16

STAINLESS STEEL (Duplex SS)

Rutile type Electrode for Welding super duplex stainless steels

CLASSIFICATION : EN 1600 AWS A/SFA 5.4

E 25 9 4 N L R 12 E 2595-16

KEY FEATURES :

- Rutile type non-synthetic coating
- Super duplex SS weld deposit
- Resistant to pitting, chemical attack and chloride containing media
- Tungsten provides resistance against hot cracking
- Ni and N ensures good toughness properties and freedom from weld cracking in highly restrained joints
- Easy slag detachability
- Suitable for all position
- Radiographic quality weld

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of super duplex stainless steels such as UNS S32550, S32750, S32760 (wrought) and UNS J93370, J93380, J93404, CD4MCuN (cast)
- Can be used to weld standard duplex stainless steel such as UNS S31803 and UNS S32205, carbon and low alloy steels to duplex steels as well

REDRYING CONDITION 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo
Typical	0.03	1.2	0.7	25.4	9.5	3.4
Specification	0.04 max	2.5 max	1.2 max	24.0-27.0	8.0-10.5	2.5-4.5
	W	Cu	N	S	P	
Typical	0.7	1.0	0.23	0.02	0.02	
Specification	0.40-1.0	0.4-1.5	0.2-0.3	0.025 max	0.03 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.	PREN
Typical	As Welded	835	27	51	54
Specification		760 min.	15 min.	40-60	40 min.

SPECIAL TESTS : Meets Pitting Corrosion Resistance at 25°C and 30°C as per ASTM G-48

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-80	2	5	10
3.15 x 300	70-110	2	5	10
4.0 x 300	90-140	2	5	10
5.0 x 300	130-180	2	5	10



BETANOX 2595-15

STAINLESS STEEL (Duplex SS)

Basic type Electrode for Welding super duplex stainless steels

CLASSIFICATION : EN 1600 AWS A/SFA 5.4

E 25 9 4 N L B 22 E 2595-15

KEY FEATURES :

- Basic type non-synthetic coating
- Super duplex SS deposit
- High strength and freedom from weld cracking in highly restrained joints
- Presence of Tungsten ensures highest resistance to hot cracking
- Improved resistance against pitting, chemical attack and chloride environment e.g. sea water
- Low spatter losses
- Easy slag detachability
- Radiographic quality weld

WELDING POSITION : 



DCEP

TYPICAL APPLICATIONS :

- Welding of super duplex stainless steels such as UNS S32550, S32750, S32760 (wrought) and UNS J93370, J93380, J93404, CD4MCuN (cast)
- Can be used to weld standard duplex stainless steel such as UNS S31803 and UNS S32205, carbon and low alloy steels to duplex steels as well

REDRYING CONDITION 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo
Typical	0.03	1.4	0.7	25.6	9.4	3.6
Specification	0.04 max	2.5 max	1.2 max	24-27	8.0-10.5	2.5-4.5
	W	Cu	N	S	P	
Typical	0.6	0.9	0.24	0.02	0.02	
Specification	0.40-1.0	0.40-1.5	0.2-0.3	0.025 max	0.03 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.	PREN
Typical	As Welded	840	28	53	55
Specification		760 min.	15 min.	40-60	40 min.

SPECIAL TESTS : Meets Pitting Corrosion Resistance at 25°C and 30°C as per ASTM G-48

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-80	2	5	10
3.15 x 300	70-110	2	5	10
4.0 x 300	90-140	2	5	10
5.0 x 300	130-180	2	5	10

Non Machinable Electrode for General Reclamation and Repair of Cast Iron

CLASSIFICATION : AWS A/SFA 5.15 IS 5511
E St E Fe B26

KEY FEATURES :

- Low hydrogen type electrode
- Ni free non machinable deposit
- Improved crack resistivity
- Strong and rigid joint between cast iron parts
- Excellent colour match to cast iron
- Preheating is recommended for heavy and complicated sections
- Ideal as a base layer to seal contaminations

WELDING POSITION : 



AC (45 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Welding of cast iron parts for all types of general reclamation or repair work
- Repairing foundry defects
- Guards on machine tools
- Cast iron furnace equipment
- Sealing oil-soaked cast iron parts
- Motor and generator housings
- Joining cast iron to mild steel
- Suitable for thin and thick sections

REDRYING CONDITION : 250°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P	Fe
Typical	0.1	0.5	0.1	0.03	0.03	Bal.
Specification	0.15 max.	0.30-0.60	0.15 max	0.04 max	0.04 max	Bal.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	3 Layer, Hardness, BHN
Specification	As Welded	240-290

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg
2.5 x 350	60-90	5	4	20
3.15 x 450	100-140	5	4	20
4.0 x 450	140-190	5	4	20
5.0 x 450	190-250	5	4	20

Monel Alloy Electrode for Cast Iron Repair and Welding

CLASSIFICATION : AWS A/SFA 5.15

E NiCu-B

KEY FEATURES :

- Graphite based coating
- Monel type weld deposit
- Machinable weld
- Minimum dilution ensures shallow but sufficient depth of fusion
- No need of preheating

WELDING POSITION : 



AC (45 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Repair of cast iron castings
- Well suited for Gears, machinery parts, Pump bodies
- Rebuilding worn surfaces
- Joining cast iron to steel
- Correcting machining errors on castings

REDRYING CONDITION : 150°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Ni	Fe	Mn	Si	S	Cu
Typical	0.4	65.0	4.2	1.6	0.4	0.01	Bal.
Specification	0.35-0.55	60.0-70.0	3.0-6.0	2.30 max	0.75 max	0.025 max	Bal.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	Hardness(3 Layer), BHN
Specification	As Welded	200 max

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg
2.5 x 300	45-60	1	10	10
3.15 x 300	90-110	1	10	10
4.0 x 300	120-150	1	10	10

High Nickel Electrode for Repair and Welding of Cast Iron The Cold Way

CLASSIFICATION : AWS A/SFA 5.15

E Ni-CI

KEY FEATURES :

- Graphite based coating
- High Ni alloyed electrode
- Minimum base metal dilution and penetration
- Electrode welds cast iron the cold way
- Soft, ductile and machinable weld with adequate strength
- No need of preheating even for large complicated castings
- Easy and intimated fusion with all grades of cast iron

WELDING POSITION : 



AC (45 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Repair of broken heavy castings, machine bases, motor blocks, sprockets, valve bodies, impellers, pump casting and gears
- Joining and build up of grey cast iron and malleable iron
- Joining cast iron to steel
- Correcting machining errors on castings
- Suitable for thin walled grey cast iron
- Sliding tables for machine tools
- Building up on cast iron parts exposed to corrosive liquids

REDRYING CONDITION : 150°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Ni	Fe	Mn	Si	S	Cu	Al
Typical	1.2	91.5	3.0	1.0	2.0	0.02	0.7	0.5
Specification	2.0 max	85.0 min	8.0 max	2.5 max	4.0 max	0.03 max	2.5 max	1.0 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	3 Layer, Hardness, BHN
Specification	As Welded	140-180

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg
2.5 x 300	45-65	1	10	10
3.15 x 300	70-90	1	10	10
4.0 x 300	100-120	1	10	10

Ni-Fe Type Electrode for Repair and Welding of Cast Iron

CLASSIFICATION : AWS A/SFA 5.15 IS 5511
E NiFe-CI E Ni Fe G16

KEY FEATURES :

- Ni-Fe type machinable electrode
- Dense, soft and ductile weld with adequate strength
- Porosity free welding
- Controlled dilution and penetration
- No need of preheating for large heavy castings

WELDING POSITION : 



AC (45 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Repair of broken heavy castings
- Welding and repairing of all cast iron components
- Pump casting and gears, Cast iron dies, Gear boxes, Gear teeth
- Transmission housings, Couplings
- Foundry defects, Machine build up
- Best suited for welding of Nodular graphite iron, Malleable iron subject to heavy wear
- Joining cast iron to steel
- Correcting machining errors on castings

REDRYING CONDITION : 150°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Ni	Fe	Mn	Si	S	Cu	Al
Typical	1.1	52.0	Bal.	1.2	1.5	0.02	0.5	0.3
Specification	2.0 max	45.0-60.0	Bal.	2.5 max	4.0 max	0.03 max	2.5 max	1.0 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	Hardness (3 Layer), BHN
Specification	As Welded	150-190

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg
2.5 x 300	40-70	1	10	10
3.15 x 300	70-110	1	10	10
4.0 x 300	90-120	1	10	10

Special Welding Electrode For Nodular And Malleable Cast Iron

KEY FEATURES :

- Low heat input electrode
- Ni-Fe type weld deposit
- Tough and machinable deposit with adequate strength and hardness
- Sound and porosity free welding
- Controlled penetration ensure good bonding
- No preheating required even for large complicated castings
- Perfect color match with base metal

WELDING POSITION : 



AC (45 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Special electrode for repair welding of Nodular and Malleable cast iron
- Building up worn out cast iron parts
- Rectification of machining errors on castings
- Repair of broken heavy castings
- Excellent for joining cast iron to steel
- Foundry defects such as shrinkage, cavities, blow holes, missing sections
- Gear boxes, Gear teeth, Valve body
- Couplings, Sprockets
- Cast iron dies, Machine bases
- Pumps and Differential housings
- General welding of very heavy sections

REDRYING CONDITION : 150°C for 1 hr. (Also available in vacuum packed condition)

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	Hardness (3 Layer), BHN
Range	As Welded	150-200

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg
2.5 x 300	40-70	1	10	10
3.15 x 300	70-110	1	10	10
4.0 x 300	90-120	1	10	10



ZEDALLOY 250

HARD FACING (Moderate - Abrasion Impact)

Hardfacing Electrode for moderate Abrasion - Impact Condition

ALLOY BASIS :

Low Carbon Low Chromium

KEY FEATURES :

- Rutile coated electrode
- Weld deposit resistant to moderate and impact
- Air hardenable machinable deposit
- Good resistance against rolling and sliding friction
- Recommended buffer layer of Tenalloy-16 on hard base materials

WELDING POSITION :   



AC (80 V) / DCEN





TYPICAL APPLICATIONS :

- Gears, Pinion teeth
- Track links, Tram tyres
- Sugarcane crushers
- Gear wheels, Hammers
- Wobblers, Chassis
- Rollers, Sprockets
- Pulleys, Shafts
- Couplings, Spindles
- Excavators, Axles
- Rail points and crossings

REDRYING CONDITION : 110°C for ½ hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 Layer HRc (BHN)
As Welded	23-27 (240-260)

Machinability	Abrasion Resistance	Impact Resistance	Corrosion Resistance
			

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 450	100-140	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	180-220	5	4	20

Physical Properties: With increase in number of squares, property improves

ZEDALLOY 350

HARD FACING (Moderate - Abrasion Impact)

Hardfacing Electrode for Moderate Abrasion - High Impact Application

ALLOY BASIS :

Low Carbon Medium Chromium

APPROVALS :

RDSO

KEY FEATURES :

- Rutile coated electrode
- Air hardenable deposit
- Machinable with carbide tools
- High weld metal recovery
- Good combination of abrasion and impact properties
- Resistant to friction
- Recommended buffer layer of Tenalloy-16 on hard base materials

WELDING POSITION :



AC (80 V) / DCEN

TYPICAL APPLICATIONS :

- Excavators, Conveyor parts
- Supporting rollers of Kiln tyres
- Wobbler ends, Cams
- Gear shafts
- Plough shares
- Shear blades
- Girth gears in cement and power plants

REDRYING CONDITION : 110°C for ½ hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 Layer HRc (BHN)
As Welded	35-40 (330-380)

Machinability



Abrasion Resistance



Impact Resistance



Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 450	100-140	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	180-220	5	4	20

Physical Properties: With increase in number of squares, property improves



ZEDALLOY 350 LH

HARD FACING (Moderate - Abrasion Impact)

Basic type hardfacing Electrode for Moderate Abrasion - High Impact

ALLOY BASIS :

Low Carbon Medium Chromium

KEY FEATURES :

- Basic coated electrode
- Air hardenable deposit
- Machinable with carbide tools
- Resistant to friction
- Good combination of abrasion and toughness
- Recommended buffer layer of Tenalloy-16 on hard base materials

WELDING POSITION :



AC (100 V) / DCEP

TYPICAL APPLICATIONS :

- Conveyor parts
- Supporting rollers of Kiln tyres
- Brake shoes, Gear shafts
- Wobbler ends
- Excavators, Plough shares
- Cold punching dies
- Shear blades
- Cog wheels

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 Layer HRc (BHN)
As Welded	36-39 (340-360)

Machinability



Abrasion Resistance



Impact Resistance



Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 450	100-140	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	180-220	5	4	20

Physical Properties: With increase in number of squares, property improves



Hardfacing Electrode for High Abrasion-Medium Impact and Metal to Metal Wear Resistance

ALLOY BASIS :

Medium Carbon Medium Chromium

KEY FEATURES :

- Rutile type heavy coating
- Air hardenable crack free deposit
- Non machinable
- Resistant to metal to metal wear
- Resistance against high stress abrasion and impact
- Impact resistance increases after tempering

WELDING POSITION : 



AC (70 V) / DCEP

TYPICAL APPLICATIONS :

- Shear blades
- Tamping tools
- Crane wheel
- Ingot tongs
- Forming dies
- Cutting tools
- Pug mill screws
- Pulverizer hammers

REDRYING CONDITION : 110°C for ½ hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 layer HRc (BHN)
As Welded	47-55 (450-550)

Machinability

Abrasion Resistance

Impact Resistance

Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 450	100-120	5	4	20
4.0 x 450	130-170	5	4	20
5.0 x 450	180-240	5	4	20

Physical Properties: With increase in number of squares, property improves



ZEDALLOY 550

HARD FACING (Moderate - Abrasion Impact)

Hardfacing Electrode for Resistance against High Abrasion and Moderate Impact

ALLOY BASIS :

Medium Carbon High Chromium

KEY FEATURES :

- Rutile coated electrode
- Air hardenable deposit
- Non machinable
- Resistant to spalling and cracking
- Resistance against high stress abrasion and friction
- Can withstand moderate impact
- Recommended buffer layer of Tenalloy-16 on hard base materials

WELDING POSITION : 



AC (80 V) / DCEN




TYPICAL APPLICATIONS :

- Dis-integrator hammers
- Excavator teeth, Shear blades
- Bulldozer blades, Bucket lip
- Metal cutting and forming tools
- Crane wheels, Caterpillar treads
- Cane cutting knives

REDRYING CONDITION : 110°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 layer HRc (BHN)
As Welded	54-56 (540-580)

Machinability	Abrasion Resistance	Impact Resistance	Corrosion Resistance
			

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 450	100-130	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	180-220	5	4	20

Physical Properties: With increase in number of squares, property improves



ZEDALLOY 550 LH

HARD FACING (Moderate - Abrasion Impact)

Basic Type Hardfacing Electrode For Resistance Against High Abrasion And Moderate Impact

ALLOY BASIS :

Medium Carbon High Chromium

KEY FEATURES :

- Basic type coating
- Air hardenable non machinable weld
- Recommended buffer layer of Tenalloy-16 on hard base materials
- Resistance against high stress abrasion and friction
- Can withstand moderate impact
- Resistant to spalling and cracking

WELDING POSITION :



AC (100 V) / DCEP




TYPICAL APPLICATIONS :

- Crushers and hammers
- Excavator teeth
- Shear blades
- Metal to mineral wear application
- Crane wheels, Caterpillar treads
- Bulldozer blades, Bucket lip
- Bamboo chipper knives
- Dis-integrator hammers

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 layer HRc (BHN)
As Welded	54-57 (540-590)

Machinability	Abrasion Resistance	Impact Resistance	Corrosion Resistance
			

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 450	100-130	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	180-220	5	4	20

Physical Properties: With increase in number of squares, property improves



Basic type hardfacing Electrode for Extreme Abrasion

ALLOY BASIS :

Medium Carbon High Chromium with Molybdenum

KEY FEATURES :

- Basic type heavy coating
- Extremely hard non machinable deposit
- Deposit can be finished by grinding
- High hardness in single layer
- Suitable for high carbon and high sulphur steels
- Can withstand mild impact

WELDING POSITION : 



AC (70 V) / DCEP

TYPICAL APPLICATIONS :

- Drilling bits, Punches, Dies
- Crane wheels, Shear blades
- Crushers, Hammers
- Paper cutting knives, Mine rails
- Oil expeller worms
- Conveyor parts

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 1 layer HRc (BHN)
As Welded	58 (600)

Machinability

Abrasion Resistance

Impact Resistance

Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 450	100-140	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	180-220	5	4	20

Physical Properties: With increase in number of squares, property improves



ZEDALLOY 600 B

HARD FACING (Moderate - Abrasion Impact)

Hardfacing Electrode for Extreme Abrasion and Friction

ALLOY BASIS :

Medium Carbon High Chromium with Mo and V

KEY FEATURES :

- Basic type electrode
- Extra hard and sound weld
- Non machinable deposit
- Deposit can be finished by grinding
- Can be operated in horizontal position
- High hardness in single layer
- Can withstand mild impact
- Recommended buffer layer of Betachrome-N on austenitic Mn steels

WELDING POSITION :



AC (70 V) / DCEP

TYPICAL APPLICATIONS :

- Excavator parts, Bucket teeth
- Cane cutting knives
- Metal cutting and forming tools
- Caterpillar treads
- Crusher hammers and jaws
- Disintegrator hammers
- Shear blades
- Conveyor buckets and screws

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 1 layer HRc (BHN)
As Welded	55-58 (560-600)

Machinability

Abrasion Resistance

Impact Resistance

Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 450	100-140	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	180-230	5	4	20
6.3 x 450	230-280	5	4	20

Physical Properties: With increase in number of squares, property improves



ZEDALLOY 12 Mn

HARD FACING (High Impact - Work Hardenable)

Work Hardenable Alloy for High Impact Applications

ALLOY BASIS :

High Carbon High Manganese

KEY FEATURES :

- Basic type coating
- Easily machinable
- Crack free and sound weld
- Recommended buffer layer of Betachrome-N on mild and low alloy steels
- Typical 12% Mn deposit
- Exhibit excellent work hardening characteristics under severe impact conditions
- Ideal for gouging type abrasion wear

WELDING POSITION :



AC (70V)/DCEP

TYPICAL APPLICATIONS :

- Rock crushing jaws
- Cement grinding rings
- Mn steel rails
- Suitable for build-up and cushioning
- Dredger bucket teeth
- Austenitic Mn steel castings
- Hammers
- Crusher mantles

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 Layer HRc (BHN)
As Welded	16 (200)
Work Hardened	52 (500)

Machinability



Abrasion Resistance



Impact Resistance



Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 450	100-140	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	180-230	5	4	20
6.3 x 450	230-290	5	4	20

Physical Properties: With increase in number of squares, property improves



ZEDALLOY 16 Mn

HARD FACING (High Impact - Work Hardenable)

Work hardenable alloy for severe Impact and Moderate Abrasion

ALLOY BASIS :

High Carbon High Manganese with Nickel

KEY FEATURES :

- Basic type heavy coated electrode
- Modified austenitic Mn steel deposit
- Good machinability
- Crack free and sound weld
- Work hardening characteristics
- Very high resistance to deformation
- Typical 16% Mn deposit
- For superior impact and moderate abrasion resistant overlays
- Recommended buffer layer of Betachrome-N/ND on mild and low alloy steels

WELDING POSITION :  



AC (70V)/DCEP





TYPICAL APPLICATIONS :

- Bucket teeth, wobblers
- Crusher rollers and jaws
- Pulveriser hammers and beaters
- Austenitic Mn steel rails and casting
- Chain links, Sprockets
- Crusher hammers and mantles
- Suitable for buildup and cushioning
- on Mn steels and alloy steels

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 Layer HRc (BHN)
As Welded	16 (200)
Work Hardened	52 (500)

Machinability	Abrasion Resistance	Impact Resistance	Corrosion Resistance
			

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 450	100-140	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	180-230	5	4	20
6.3 x 450	230-290	5	4	20

Physical Properties: With increase in number of squares, property improves



ZEDALLOY 16 Cr

HARD FACING (High Impact - Corrosion Resistance)

Work Hardenable Alloy for Impact – Abrasion – Corrosion Resistance

ALLOY BASIS :

Medium Carbon High Chromium with Manganese

KEY FEATURES :

- Basic coated electrode
- Machinable and crack free deposit
- Work hardening characteristics
- Typical 16% Cr deposit
- Specially formulated for resistance against impact, abrasion and corrosion

WELDING POSITION : 



AC (100V) /DCEP

TYPICAL APPLICATIONS :

- Dipper teeth and lips
- Coal mining cutters, Rock crusher
- Pulveriser plows, Pump housing
- Conveyor rolls
- Austenitic Mn steel rails and castings
- Dredger cutter teeth, Buckets
- Ideal for buffer layer before hardfacing on mild, carbon, low alloy and austenitic Mn steels

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 Layer HRc (BHN)
As Welded	16 (200)
Work Hardened	52 (500)

Machinability



Abrasion Resistance



Impact Resistance



Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 350	90-120	5	4	20
4.0 x 350	130-160	5	4	20
5.0 x 350	170-220	5	4	20

Physical Properties: With increase in number of squares, property improves



ZEDALLOY 20 Cr

HARD FACING (High Impact - Corrosion Resistance)

Work Hardenable Alloy for Impact – Abrasion – Corrosion Resistance

ALLOY BASIS :

Low Carbon High Chromium with Nickel

KEY FEATURES :

- Basic type work hardenable electrode
- High hardness under severe impact conditions
- Machinable and crack free deposit
- Typical 20% Cr deposit
- Semi austenitic alloy
- Exhibit good combination of impact, abrasion and corrosion resistance

WELDING POSITION : 



AC (100 V) / DCEP

TYPICAL APPLICATIONS :

- Screw flight
- Sand pump impellers
- Conveyor rolls, Truck chains
- Pulveriser plows, Pump housing
- Coal mining cutters
- Scarifier teeth, Rock crusher
- Ideal for buffer layer before hardfacing

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES:

Condition	Hardness, 3 Layer HRc (BHN)
As Welded	25 (250)
Work Hardened	55 (550)

Machinability



Abrasion Resistance



Impact Resistance



Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 350	100-140	5	4	20
4.0 x 350	140-180	5	4	20
5.0 x 350	180-220	5	4	20

Physical Properties: With increase in number of squares, property improves

Hardfacing Alloy for metal to Metal wear, Abrasion and Impact Resistance

ALLOY BASIS :

High Carbon High Molybdenum

KEY FEATURES :

- Basic type electrode
- Optimum resistance against metal to metal wear, abrasion and impact
- Air hardenable
- Non machinable weld
- Preheating is required when used on hardenable steels

WELDING POSITION :


AC (100 V) / DCEP

TYPICAL APPLICATIONS :

- Blanking and Forming dies
- Cutting tools
- Mining tools
- Shear blades
- Hog & Chipper knives
- Wood working tools
- Rolling mill guides
- Ingot fitting tongs

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 layer HRc (BHN)
As Welded	58 (600)

Machinability
Abrasion Resistance
Impact Resistance
Corrosion Resistance

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 350	100-130	5	4	20
4.0 x 350	140-180	5	4	20
5.0 x 350	180-200	5	4	20

Physical Properties: With increase in number of squares, property improves



ZEDALLOY BELL

HARD FACING (Abrasion - Corrosion)

Hardfacing Alloy for Elevated Temperature Abrasion - Corrosion Resistance

ALLOY BASIS :

Medium Carbon High Molybdenum-Nickel

KEY FEATURES :

- Basic type electrode
- Special alloying to improve impact resistance and red hardness
- Crack free weld in heavy build up
- Resistant to severe abrasion and corrosion at elevated temperature
- No drop in hardness even at 500°C due to secondary hardening

WELDING POSITION : 



AC (100 V) / DCEP

TYPICAL APPLICATIONS :

- Blast furnace Bells & Hoppers
- Steel mill equipments
- Tong pins, Hot shears
- Metallurgical plants

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 layer HRc (BHN)	
As Welded	At Room Temp	52-55 (500-550)
	At 500°C	> 55 (>550)

Machinability

Abrasion Resistance

Impact Resistance

Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 350	90-110	5	4	20
4.0 x 350	110-180	5	4	20
5.0 x 350	160-220	5	4	20
6.3 x 350	210-280	5	4	20

Physical Properties: With increase in number of squares, property improves

ZEDALLOY VB

HARD FACING (High Abrasion)

Alloyed Cast Iron Electrode for Hardfacing

ALLOY BASIS :

High Carbon Medium Chromium

KEY FEATURES :

- Basic type coating
- Non machinable alloyed cast iron deposit
- Deposit surface does not deteriorate through furrowing, local plastic flow and micro cracking
- Weld deposit can withstand severe abrasion, moderate impact and metal to metal wear
- Resistant to scratching and grinding abrasion

WELDING POSITION :  



AC (100 V) / DCEP

TYPICAL APPLICATIONS :

- Concrete Mixer Blades
- Muller Tyres, Dippers
- Screw Conveyors
- Plough Shares
- Cement Die Rings
- Oil Expeller Worms
- Scraper Blades
- Excavator Teeth

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 layer HRc (BHN)
As Welded	58 (600)

Machinability

Abrasion Resistance

Impact Resistance

Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 450	90-110	5	4	20
4.0 x 450	110-140	5	4	20
5.0 x 450	140-180	5	4	20

Physical Properties: With increase in number of squares, property improves



Hardfacing Electrode for Extreme Wear Resistance

ALLOY BASIS :

Very High Carbon-Chromium

KEY FEATURES :

- Basic type coating
- High Carbon and Cr content in the weld metal
- Non machinable deposit
- Exhibit good corrosion resistance
- High volume fraction of primary carbides offer excellent wear resistance up to 1000°C
- Apply one or two layer to avoid cracking

WELDING POSITION :



AC (100 V) / DCEP

TYPICAL APPLICATIONS :

- Coke chutes, Screws
- Cultivator shovels, Plough shares,
- Mining, Agriculture, Earth moving and Sand blasting equipments
- Edge runner scrapers
- Conveyors, Grinding rings
- Cement clinker crushing rollers
- In Ceramic industries

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES:

Condition	Hardness, 3 Layer HRc (BHN)
As Welded	58 (600)

Machinability

Abrasion Resistance

Impact Resistance

Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 350	90-120	5	4	20
4.0 x 350	120-160	5	4	20
5.0 x 350	160-200	5	4	20

Physical Properties: With increase in number of squares, property improves



Hardfacing Electrode for Abrasion and Corrosion Resistance at Elevated Temperature

ALLOY BASIS :

Very High Carbon-Chromium with Nickel

KEY FEATURES :

- Basic type super heavy coated electrode
- Non machinable deposit
- Retains hardness at high temperature
- Resist severe abrasion and corrosion at elevated temperature
- Apply one or two layer to avoid cracking

WELDING POSITION :



DCEP

TYPICAL APPLICATIONS :

- Blast furnace parts e.g. bells and hoppers
- Sinter plant disintegrators
- Steel mill equipment
- Cement clinker crushing rollers
- Coke chutes
- Coke pusher shoes
- Hardfacing applications on mild, carbon and low alloy steels in metallurgical and chemical industries

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 Layer HRc (BHN)	
As Welded	At Room Temp	55-57 (550-580)
	At 500°C	40 (370)

Machinability

Abrasion Resistance

Impact Resistance

Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 350	100-140	5	4	20
4.0 x 350	140-180	5	4	20
5.0 x 350	180-220	5	4	20

Physical Properties: With increase in number of squares, property improves

Special Hardfacing Electrode for Spot Arcing of Sugar Mill Rollers

ALLOY BASIS :

Very High Carbon-Chromium

KEY FEATURES :

- Basic type super heavy coating
- Special design to resist heavy loads produced during cane crushing in sugar mills
- Electrode strikes easily even on wet mill rollers
- Non machinable deposit
- Deposits hemispherical dots on the rolls which imparts better grip during cane crushing
- Faster build up due to high deposition rate

WELDING POSITION :



AC (100 V) / DCEP

TYPICAL APPLICATIONS :

- For Spot-Arc building/roughening Sugar mill rolls, chilled cast iron rolls
- Reclamation of Sand mixing blades, Scrapers, Screw flights, Mixing paddles

PHYSICAL PROPERTIES:

Condition	Hardness HRc (BHN)
As Welded	55-57 (550-580)

Machinability

Abrasion Resistance

Impact Resistance

Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 450	110-130	5	4	20
4.0 x 450	160-210	5	4	20
5.0 x 450	220-280	5	4	20

Physical Properties: With increase in number of squares, property improves



Hardfacing Electrode for High Temperature Abrasion Resistance

ALLOY BASIS :

High Carbon High Chromium with Molybdenum

KEY FEATURES :

- Basic type heavy coating
- Non machinable deposit
- Retains hardness at high temperature
- Excellent Resistance to Severe Abrasion up to 500°C and Moderate Impact

WELDING POSITION :



AC (70 V) / DCEP

TYPICAL APPLICATIONS :

- Rolling mill guides
- Coal crushing hammers
- Conveyor screws
- Mixer blades & scrapers
- Coal pulverisers

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, HRc (BHN)
As Welded	58(600)

Machinability

Abrasion Resistance

Impact Resistance

Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 350	120-150	5	4	20
4.0 x 350	160-200	5	4	20
5.0 x 350	200-250	5	4	20

Physical Properties: With increase in number of squares, property improves



ZEDALLOY CoCr-A

HARD FACING (High Temperature Oxidation - Impact - Abrasion)

Cobalt Based Alloy resistant to High Temperature Oxidation and Thermal Shock

ALLOY BASIS :

Cobalt Base High Carbon-Chromium

KEY FEATURES :

- Rutile coated electrode
- Machinable weld deposit
- Retains hardness up to 600°C
- Resistant to Metal to Metal Wear, High temperature Oxidation and Mechanical and Thermal Shocks

WELDING POSITION : 



AC (80 V) / DCEN

TYPICAL APPLICATIONS :

- Valves, Valve seats
- Sealing surfaces
- Hot pressing tools
- Conveyer screws
- Hot shear blades, Knives
- Dies and cutting edges in chemical, rubber, oil, sugar industries and Steel mills

REDRYING CONDITION : 200°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, HRc (BHN)	
As Welded	At Room Temp	35-40 (320-370)
	At 600°C	33 (310)

Machinability



Abrasion Resistance



Impact Resistance



Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 350	100-140	5	4	20
4.0 x 350	140-180	5	4	20
5.0 x 350	180-220	5	4	20

Physical Properties: With increase in number of squares, property improves

Hardfacing Electrode for Resistance against Sliding Abrasion

ALLOY BASIS :

Low Carbon Manganese Alloy

KEY FEATURES :

- Basic coated electrode
- Good machinability
- Tough weld metal can withstand hard blows
- Suitable for medium hardness hardfacing with high resistance to abrasion by sliding and rolling action

WELDING POSITION :



DCEP

TYPICAL APPLICATIONS :

- Hardfacing on rails, joints & rail crossing with a tensile strength upto 900 MPa
- Wheels, Track surfaces, Pulleys
- Crane tracks, Gear components
- Suitable for build up applications

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 Layer HRc (BHN)
As Welded	30-35 (275-325)

Machinability



Abrasion Resistance



Impact Resistance



Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 350	100-140	5	4	20
4.0 x 350	150-200	5	4	20
5.0 x 350	200-260	5	4	20

Physical Properties: With increase in number of squares, property improves

Hardfacing Electrode for High Wear and Impact Application

ALLOY BASIS :

Low Carbon Low Chromium

KEY FEATURES :

- Basic type heavy coating
- Possible to deposit heavy build up without the need of buffer layers
- Machining only with sintered hard metal tipped tools
- Highly wear resistant overlays can withstand impact & shock
- Recommended buffer layer of Betachrome-N/ND on crack sensitive steels

WELDING POSITION :



AC (70 V) / DCEP

TYPICAL APPLICATIONS :

- Rebuilding rail crossing and switch points, Wheel flanges
- Wear parts of Dredgers
- Striking tools, Dies, Tyres
- Slide surfaces subjected to heavy wear
- Polygon edges, Bearing surfaces
- Lower dies & punches

REDRYING CONDITION :

300°C for 1 hr.

REBAKING CONDITION :

300-350°C for 2 hrs.

PHYSICAL PROPERTIES :

Condition	Hardness, 3 Layer HRc (BHN)
As Welded	40-45 (370-420)

Machinability



Abrasion Resistance



Impact Resistance



Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
3.15 x 350	100-135	5	4	20
4.0 x 350	120-180	5	4	20
5.0 x 350	170-240	5	4	20

Physical Properties: With increase in number of squares, property improves

Monel Electrode for joining and surfacing of nickel copper alloys

CLASSIFICATION : EN ISO 14172 AWS A/SFA 5.11
E Ni 4060 E NiCu-7

KEY FEATURES :

- Monel electrode
- Low iron in the deposit exhibit maximum corrosion resistance
- Medium penetration weld
- Easily machinable deposit in as welded and stress relieved condition
- Passes 180° bend test on monel alloy 400 plate

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Welding monel to itself, to stainless steels or carbon steels
- Overlaying on steel to obtain a corrosion resistant surface
- Welding of ASTM B127/163/164/165
- Refineries, Off shore, Foundries, Chemical and Fertilizer plants
- Heat exchanger, Pressure vessel and Column manufacturing units
- Food, Pumps and Valves manufacturing units

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Fe	Ti	S	P	Cu
Typical	0.05	2.0	0.4	65.0	1.5	0.7	0.01	0.01	Bal.
Specification	0.08 max	1.0-3.0	0.20-0.80	62.0-68.0	1.0-2.5	0.30-1.0	0.015 max	0.02 max	Bal.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	535	34
Specification		490-590	30-40

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	40-80	1	10	10
3.15 x 300	80-110	1	10	10
4.0 x 300	110-140	1	10	10

EQUIVALENT : GMAW wire : **Automig NiCu-7**


GTAW filler: **Tigfil NiCu-7**

Coated stick Electrode depositing almost pure nickel

CLASSIFICATION : EN ISO 14172 AWS A/SFA 5.11
E Ni 2061 E Ni-1

KEY FEATURES :

- Basic type coating
- Low carbon pure Ni deposit
- Medium penetration weld
- Extremely strong and ductile weld metal
- Resistant to cracking and oxidation
- Low iron level ensure maximum corrosion resistance
- Positional welding capability

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Welding of wrought and cast form of commercially pure Ni (99.5%)
- Welding of Nickel 200 and 201
- Suitable for ASTM B160/161/162/163
- For dissimilar welding between Nickel 200/201 and various iron-base and nickel-base alloys
- Overlay on carbon and low alloy steel
- Applications in Refineries, Heat exchanger, Pressure vessel, Pumps and valves, Cryogenics, Chemical plants, Caustic handling equipments, Food processing equipments
- Used for handling corrosive alkalis and halides

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Fe	S	P
Specification	0.10 max	0.75 max	0.75 max	0.02 max	0.03 max
	Si	Cu	Al	Ti	Ni
Specification	1.25 max	0.25 max	1.0 max	1.0-4.0	92.0 min

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	410 min	20 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-75	1	10	10
3.15 x 300	90-110	1	10	10
4.0 x 300	100-140	1	10	10

EQUIVALENT : GMAW wire: **Automig Ni-1**

GTAW filler: **Tigfil Ni-1**

Nickel based Electrode for high oxidation resistance

CLASSIFICATION : EN ISO 14172 AWS A/SFA 5.11
E Ni 6092 E NiCrFe-2

KEY FEATURES :

- Basic type coating
- Ni-Cr-Fe type deposit
- Ductile weld resistant to cracking
- Outstanding strength and resistance to oxidation at high temperature
- Application from cryogenic to 820°C
- Resistant to embrittlement and creep at high temperatures upto 820°C
- Versatile product for dissimilar joining
- Positional welding capability
- For overlay applications minimum three layers must be deposited

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Welding of wrought and cast form of Ni-Cr-Fe alloys
- Joining carbon, SS or low alloy steel or combinations of any of them
- Welding of ASTM E163/166/167/168, Alloy 600/601
- Joining Ni based alloys to steel
- Fabrication of Corrosion resistant tanks, Furnace components
- Applications in Refineries, Foundries, Heat exchanger, Pressure vessel manufacturing, Chemical plants

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Fe	S	P	Si
Specification	0.10 max	1.0-3.5	12.0 max	0.02 max	0.03 max	0.75 max
	Cu	Cr	Nb+Ta	Mo	Ni	
Specification	0.50 max	13.0-17.0	0.5-3.0	0.5-2.5	62.0 min.	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	550 min.	30 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	40-60	1	10	10
3.15 x 300	60-80	1	10	10
4.0 x 300	100-140	1	10	10

Basic coated Nickel based Electrode for inconel alloy Welding

CLASSIFICATION : EN ISO 14172 AWS A/SFA 5.11
E Ni 6182 E NiCrFe-3

KEY FEATURES :

- Basic type coating
- Ni-Cr-Fe type deposit
- Ductile weld resistant to thermal shocks and hot cracking
- Outstanding strength and resistance to corrosion from normal to high temperatures
- Application from cryogenic to 480°C
- Positional welding capability
- For overlay applications minimum three layers must be deposited

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Welding of wrought and cast form of Ni-Cr-Fe alloys to themselves and to carbon steels
- Joining carbon, SS or low alloy steel or combinations of any of them
- Welding of ASTM E163/166/167/168, Inconel 600 and similar nickel alloys
- Joining Ni based alloys to steel
- Welding in harsh, corrosive condition e.g. desalination, petrochemical and power generation plants
- Application in temperature critical conditions such as furnace equipment and pipe work

REDRYING CONDITION 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Fe	S	P	Si
Specification	0.10 max	5.0-9.5	10.0 max	0.015 max	0.03 max	1.0 max
	Cu	Cr	Nb+Ta	Ti	Ni	
Specification	0.50 max	13.0-17.0	1.0-2.5	1.0 max	59.0 min.	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	550 min.	30 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	40-60	1	10	10
3.15 x 300	60-80	1	10	10
4.0 x 300	100-140	1	10	10



NICALLOY Mo-3

NON FERROUS (Ni Alloys)

Ni-Cr-Mo alloyed Electrode for nickel alloy Welding

CLASSIFICATION : EN ISO 14172 AWS A/SFA 5.11
E Ni 6625 E NiCrMo-3

KEY FEATURES :

- Basic coated electrode
- Ni based high Cr-Mo-Nb deposit
- Scale resistant in low sulphur atmosphere upto 1100°C
- Resistance to general corrosion, pitting, crevice and stress corrosion cracking in severe chloride media
- High creep strength

WELDING POSITION : 



DCEP

TYPICAL APPLICATIONS :

- Joining and surfacing Ni alloys, austenitic steel, austenitic ferritic joints
- Welding of ASTM E163/166/167/168, Inconel 625, Incoloy 825, Alloy 20
- Overlay cladding where similar chemical composition is required on the clad side
- Suitable for material 2.4856, 1.4876

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Fe	S	P
Specification	0.10 max	1.0 max	7.0 max	0.02 max	0.03 max
	Si	Cr	Nb+Ta	Mo	Ni
Specification	0.75 max	20.0-23.0	3.15-4.15	8.0-10.0	55.0 min.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	760 min.	30 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-70	1	10	10
3.15 x 300	70-95	1	10	10
4.0 x 300	90-120	1	10	10

EQUIVALENT : GMAW wire: **Automig NiCrMo-3**

GTAW filler: **Tigfil NiCrMo-3**



NICALLOY Mo-4

NON FERROUS (Ni Alloys)

Nickel based Welding Electrode for harsh environment application

CLASSIFICATION : EN ISO 14172 AWS A/SFA 5.11
E Ni 6276 E NiCrMo-4

KEY FEATURES :

- Basic type coating
- Resistant to abrasion, impact, corrosion and high temperatures
- Resistant to contaminated mineral acids, chloride containing media and chlorine-contaminated media
- Ni based Cr-Mo-W alloyed deposit
- Excellent resistance against Pitting and Crevice corrosion
- Can resist wet chlorine gas and strong oxidizers such as ferric and cupric chlorides

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Welding of alloy C-276 and similar composition steels
- Suitable for material 2.4819 (NiMo16Cr15W)
- Dissimilar joints between nickel alloys, stainless and low alloy steels
- Application in chemical plants with highly corrosive conditions
- For surfacing press tools, punches, forge dies, hot-stripping tools, pump rotors, valves
- Surfacing on low alloy steels

REDRYING CONDITION : 250-300°C for 2-3 hrs.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Fe	S	P	Si
Specification	0.02 max	1.0 max	4.0-7.0	0.03 max	0.04 max	0.20 max
	Cu	Co	Cr	Mo	W	Ni
Specification	0.50 max	2.5 max	14.5-16.5	15.0-17.0	3.0-4.0	Bal.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	690 min.	25 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-70	1	10	10
3.15 x 300	70-95	1	10	10
4.0 x 300	90-120	1	10	10

EQUIVALENT : GMAW wire: **Automig NiCrMo-4**

GTAW filler: **Tigfil NiCrMo-4**



NICALLOY Mo-5


NON FERROUS (Ni Alloys)

Coated Welding Electrode depositing Ni-Cr-Mo-W alloy

CLASSIFICATION : EN ISO 14172 AWS A/SFA 5.11
E Ni 6275 E NiCrMo-5

KEY FEATURES :

- Basic coated
- Ni based Cr-Mo-W alloyed deposit
- Works smoothly with negligible spatter
- Low dilution with base metal
- Gives 150% weld metal recovery
- Reduces carbon diffusion at high temperature

WELDING POSITION : 



AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- High grade welding of high Mo nickel base alloys e.g. Inconel 625/800
- Hardfacing on machine components and tools subjected to corrosion and heat
- Suitable for welding/surfacing of tong jaws of the slab handling cranes
- Joining Cr-Ni steels high in Mo
Surfacing steel clad with a Ni-Cr-Mo alloy

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Fe	S	P	Si
Specification	0.03-0.08	0.4-1.0	4.0-7.0	0.03 max	0.03 max	0.20-0.90
	Cu	Co	Cr	Mo	W	Ni
Specification	0.30 max	2.5-3.5	14.5-16.5	15.0-18.0	3.0-4.5	60.0-78.0

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	690-790	30-40

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
3.15 x 300	90-120	1	10	10
4.0 x 300	140-180	1	10	10
5.0 x 300	180-240	1	10	10


Nickel based Electrode for LNG storage systems

CLASSIFICATION :	EN ISO 14172	AWS A/SFA 5.11
	E Ni 6620	E NiCrMo-6

KEY FEATURES :

- Basic coated electrode
- Weld metal is highly resistant to hot cracking, stress corrosion cracking and thermal shock
- Recommended for low temperature and cryogenic steels like 9% Ni steels
- Carbon diffusion at high temperature during heat treatment of dissimilar joints is largely reduced
- Weld metal meets highest quality requirements
- Good performance on AC and DC

WELDING POSITION : 

 **AC (70 OCV)/DCEP**

TYPICAL APPLICATIONS :

- Joining 9% Nickel steel for cryogenic applications, especially LNG storage systems
- Welding of ASTM SA 553 Class 1 and SA 353 Class 1 steels
- High grade welding of high Mo nickel base alloys as well as Cr-Ni-Mo steels with high Mo content
- Joining Ni base alloys to steel, stainless/heat resistant cryogenic steels and alloys

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Fe	S	P	Si
Specification	0.10 max	2.0-4.0	4.0-8.0	0.015max	0.015 max	1.0 max
	Cu	Nb+Ta	Cr	Mo	W	Ni
Specification	0.50 max	0.5-2.0	12.0-17.0	5.0-9.0	1.0-2.0	55.0 min

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	CVN Impact at -196°C, J	Lateral Expansion, mm
Specification	As Welded	620 min	35 min	50 min	0.50 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-95	1	10	10
3.15 x 300	80-120	1	10	10
4.0 x 300	120-160	1	10	10



NICALLOY Mo-10

NON FERROUS (Ni Alloys)

Nickel base Electrode for C-22 material joining

CLASSIFICATION : EN ISO 14172 AWS A/SFA 5.11
E Ni 6022 E NiCrMo-10

KEY FEATURES :

- Basic coated non synthetic electrode
- Weld metal is of C-22 type
- Offers excellent corrosion resistance in oxidizing and reducing media
- Spectacular resistance to stress corrosion cracking, pitting and crevice corrosion
- Resistant to corrosion against acetic hydride, acetic and phosphoric acids, hot contaminated sulphuric and other contaminated oxidizing mineral acids
- Versatile product for the chemical, power, petroleum and marine industries

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Joining materials of the same nature, e.g. material 2.4602 (NiCr21Mo14W) and these materials with low alloyed steels such as for surfacing on low alloy steels
- Welding components in chemical processes handling highly corrosive media
- Dissimilar joints between Ni-Cr-Mo alloys and stainless, carbon or low alloy steels
- Overlay cladding on carbon, low alloy and stainless steels
- Digesters and paper making equipment, Scrubbers for flue gas desulphurization

REDRYING CONDITION : 250-300°C for 2-3 hrs.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Fe	S	P	Si
Specification	0.02 max	1.0 max	2.0-6.0	0.015max	0.030 max	0.20 max
	Cu	Co	Cr	Mo	W	Ni
Specification	0.50 max	2.5 max	20.0-22.5	12.5-14.5	2.5-3.5	Bal.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	690 min	25 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	50-70	1	10	10
3.15 x 300	70-95	1	10	10
4.0 x 300	90-120	1	10	10

NICALLOY Mo-12

NON FERROUS (Ni Alloys)

Nickel base Electrode for application from cryogenic to elevated temperature

CLASSIFICATION : EN ISO 14172 AWS A/SFA 5.11
E Ni 6627 E NiCrMo-12

KEY FEATURES :

- Basic coated electrode
- Weld metal is highly resistant to hot cracking, stress corrosion cracking and thermal shock
- Works smoothly with negligible spatter
- Reduces carbon diffusion at high temperature
- Recommended for high temperature and creep resisting steels

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Joining Cr-Ni-Mo austenitic steel to duplex stainless steels and 9% Ni steel for cryogenic applications, forging dies for service applications from -200°C to 1000°C
- High grade welding of high Mo Nickel base alloys e.g. Inconel 625/800 as well as Cr-Ni-Mo steels with high Mo content
- Joining of A 240, A 107, A 182, A 249, A 276, A 312, A 358, A 473

REDRYING CONDITION : 250-300°C for 2-3 hrs.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Fe	S	P	Si
Specification	0.03 max	1.0-2.20	5.0 max	0.02max	0.025 max	0.25-0.65
	Cu	Cr	Nb+Ta	Mo	Ni	
Specification	0.5 max	20.5-22.5	1.0-2.8	8.8-10.0	Bal.	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	CVN Impact at -196°C, J	Lateral Expansion, mils
Specification	As Welded	650-750	35 min	35-60	30-50

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	70-100	1	10	10
3.15 x 300	110-140	1	10	10
4.0 x 300	130-170	1	10	10



Aluminum Welding Electrode for joining wrought and cast 4043 type alloy.

CLASSIFICATION : AWS A/SFA 5.3 DIN 1732
E 4043 EL Al Si 5

KEY FEATURES :

- Special coated electrode
- Keep short arc to avoid burn through and excessive spattering
- Electrode dia. should roughly be equivalent to plate thickness
- Provide high melting rate
- Slag residues should be thoroughly removed to obtain non corrosive weld
- Section thickness above 8 mm should be preheated to min. 200°C

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Fabrication and repair of wrought and cast Al alloys with Si upto 7%
- Welding of similar grade Al alloys in the form of pipe, plate, forging and casting

REDRYING CONDITION : Keep electrodes dry.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	Si	Fe	Zn	Cu	Ti	Al
Typical	5.0	0.2	0.05	0.2	0.1	Bal.
Specification	4.5-6.0	0.80 max	0.10 max	0.30 max	0.20 max	Bal.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded.	145	6
Specification		100-175	4-8

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
2.5 x 350	60-90	1	5	5
3.15 x 350	80-110	1	5	5
4.0 x 350	110-150	1	5	5

EQUIVALENT : GMAW wire: **Automig-4043**

GTAW filler: **Tigfil-4043**

Aluminium Welding Electrode for joining and repair of 4047 type alloy

CLASSIFICATION : DIN 1732

EL Al Si 12

KEY FEATURES :

- Aluminium alloy with typical 12% Si
- Special coating to reduce moisture pickup
- Electrode dia. should roughly be equivalent to plate thickness
- Provide high melting rate
- Slag residues should be thoroughly removed to obtain non corrosive weld
- Section thickness above 8 mm should be preheated to min. 200°C

WELDING POSITION :



DCEP

TYPICAL APPLICATIONS :

- Welding and repair of cast Al alloys containing more than 7% Si
- Engine blocks, Gear box units, Automotive parts
- Window frames, Tubes, Furniture
- Al alloys such as G-AlSi 12, G-AlSi 12 (Cu), G-AlSi 10Mg, G-AlSi 10Mg (Cu)

REDRYING CONDITION : Keep electrodes dry.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	Si	Fe	Al
Typical	11.2	0.2	Bal.
Specification	9.0-12.0	0.50 max	Bal.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded.	195	5.5
Specification		180 min.	4-8

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
2.5 x 350	60-90	1	5	5
3.15 x 350	80-110	1	5	5
4.0 x 350	110-150	1	5	5

Stick Electrode specially for the Welding of copper and bronze

CLASSIFICATION : AWS A/SFA 5.6 IS 8666
E CuSn-A E CuSn-A

KEY FEATURES :

- Copper-Tin electrode
- Due to high heat conductivity of Cu alloys, preheat of 260-370°C is recommended for heavy sections
- Typical 93% Cu-6% Sn deposit
- No preheat is required on thin sections and ferrous base material

WELDING POSITION : 



TYPICAL APPLICATIONS :

- Welding of Copper or Bronze to steel
- Impeller blades, Valve seats
- Brass, Galvanized iron, Malleable Iron
- Ship propellers, Bearings, Bushings
- Cast iron welding where colour match is not necessary
- Joining dissimilar metals such as mild steel to phosphorus bronze and brass

REDRYING CONDITION : 300°C for 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	Cu	Sn	P
Typical	94.8	5.0	0.2
Specification	92.0-96.0	4.0-6.0	0.10-0.35

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	275	24
Specification		240 min.	20 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	40-70	1	10	10
3.15 x 300	80-110	1	10	10
4.0 x 300	110-160	1	10	10



Continuous Welding Consumables (Wires & Fluxes)

GMAW/GTAW/FCAW
Submerged ARC Welding
Flux Cored ARC Welding (FCAW)

AUTOMIG 70S-6

COPPER COATED C-Mn STEEL GMAW FILLER WIRE FOR 500 MPA TENSILE STRENGTH STEEL

CLASSIFICATION : EN ISO 14341-A

AWS A/SFA 5.18

APPROVALS:

G 42 3 C G3Si1

ER70S-6

ABS/BV/DNV/IRS/IBR/LRA/NPCIL

G 46 3 M G3Si1

MND/RDSO/BHEL

KEY FEATURES :

- C-Mn steel solid wire
- Uniform copper coating
- Smooth wire feeding
- Can be use with 100% CO₂, Ar+CO₂
- Higher level of de-oxidizers makes it suitable for applications where dirt, rust or mill-scale is present
- Radiographic quality weld

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
Co ₂	12-18	10-20
80Ar+20CO ₂	17-22	10-20

TYPICAL APPLICATIONS :

- Construction and mining equipment
- Pressure vessels, LPG Cylinders
- Root pass pipe welding, Tanks, Structural steel components
- Railcar construction and repair, Frame fabrication
- Thin sheet metal, Auto body
- Farm implements, Steel casings
- High-speed robotic, automatic and semi-automatic welding applications
- Shaft build up, General fabrication

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	S	P	Cu*
Specification	0.07-0.14	1.40-1.60	0.80-1.0	0.025 max	0.025 max	0.50 max

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

Condition		Shielding Gas	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Specification	As Welded	100% CO ₂	500-600	420-480	22 min	47 min
Specification	As Welded	80Ar + 20CO ₂	550-650	480-540	24 min	47 min

Hardness, 3 Layer: 200 BHN max (irrespective of type of gas used) With mixed gas mechanical properties will be higher.

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool	MIGPAC DRUM, Kg
0.8	18 – 26	135 – 230	15	100 / 250
0.9	18 – 28	165 – 300	15	100 / 250
1.0	18 – 30	185 – 350	15	100 / 250
1.2	20 – 32	200 – 375	15	100 / 250
1.6	24 – 35	275 – 500	15	100 / 250

Also sold as Automig 1

EQUIVALENT :

SMAW Electrode: **Supabase X Plus** FCAW Wire: **Automig FC 71T-1, Automig FC 121**

TIGFIL 70S-6

C-Mn STEEL SOLID FILLER ROD

CLASSIFICATION : EN ISO 636-A

AWS A/SFA 5.18

APPROVALS :

W 42 5 W3Si1

ER 70S-6

-

KEY FEATURES :

- C-Mn steel filler rod
- Uniform copper coating
- Controllable weld pool
- Radiographic quality weld

WELDING POSITION :


DCEN

Shielding Gas: Ar

Gas Flow Rate, LPM : 8-15

TYPICAL APPLICATIONS :

- Root pass pipe welding
- Thin sheet metal, Auto body
- Farm implements, Steel casings
- Collision repair, Pressure vessels
- Application in high pressure piping for shipbuilding, petro chemical and nuclear power plant

STORAGE / HANDLING :

Keep dry during storage and handling

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	S	P	Cu*
Specification	0.07-0.14	1.40-1.60	0.80-1.0	0.025 max	0.025 max	0.50 max

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -50°C, J
Specification	As Welded	500-640	420 min	22 min	27 min

PACKING DATA :

Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
1.6 x 1000	5	4	20
2.0 x 1000	5	4	20
2.5 x 1000	5	4	20

TIGFIL 70S-2

TRIPLE DEOXIDIZED COPPER COATED C-Mn STEEL FILLER ROD

CLASSIFICATION : EN ISO 636-A

AWS A/SFA 5.18

APPROVALS :

W 42 3 W2Ti

ER 70S-2

ABS/DNV/LRA/NPCIL/IBR

KEY FEATURES :

- Triple deoxidized copper coated C-Mn steel filler rod
- Excellent choice for welding over rust and mill scale
- High quality, high toughness welds
- Radiographic quality weld

WELDING POSITION :



DCEN

Shielding Gas: Ar

Gas Flow Rate, LPM : 8-15

TYPICAL APPLICATIONS :

- Welding of Pressure vessel, Boilers involving unalloyed and micro-alloyed structural steels with specified UTS upto 520 MPa
- High quality pipe welding of mild and medium tensile steels
- Best suited for single side, melt through welding

STORAGE / HANDLING :

Keep dry during storage and handling

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Ti	Zr	Al	Cu*	S	P
Specification	0.07 max	0.90-1.40	0.40-0.70	0.05-0.15	0.02-0.12	0.05-0.15	0.50 max	0.030 max	0.025 max

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Specification	As Welded	500 min	420 min	22 min	28 min

PACKING DATA :

Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
1.6 x 1000	5	4	20
2.0 x 1000	5	4	20
2.5 x 1000	5	4	20
3.2 x 1000	5	4	20
4.0 x 1000	5	4	20

TIGFIL 70S-2 SPL

TRIPLE DEOXIDIZED COPPER COATED C-Mn STEEL FILLER ALLOY MEETS IMPACT AT -46°C

CLASSIFICATION : EN ISO 636-A

AWS A/SFA 5.18

APPROVALS :

W 42 5 W2Ti

ER 70S-2

ABS/BV/IBR

KEY FEATURES :

- Triple deoxidized C-Mn steel filler rod with very low impurities
- Uniform copper coating
- Strong, tough and ductile weld metal
- Meets impact requirement at -46°C
- Radiographic weld quality

WELDING POSITION :



DCEN

Shielding Gas: Ar

Gas Flow Rate, LPM : 8-15

TYPICAL APPLICATIONS :

- Welding NACE pipes- type A106 Gr.B or equivalent material
- Recommended for root runs of pipes and tubes for offshore application
- Pressure vessels, Boilers involving unalloyed and micro-alloyed structural steels with specified UTS upto 520 MPa

STORAGE / HANDLING :

Keep dry during storage and handling

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Ti	Zr	Al	Cu*	S	P
Specification	0.07 max	0.90-1.40	0.40-0.70	0.05-0.15	0.02-0.12	0.05-0.15	0.50 max	0.010 max	0.015 max

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -46°C, J
Specification	As Welded	500 min	420 min	22 min	28 min

Hardness, 3 Layers : 210 BHN max

Diffusible H2 Content: <5 ml/100 gm

SPECIAL TESTS :

HIC and SSCC (NACE)

PACKING DATA :

Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
1.6 x 1000	5	4	20
2.0 x 1000	5	4	20
2.5 x 1000	5	4	20
3.2 x 1000	5	4	20
4.0 x 1000	5	4	20

AUTOMIG 70S-G

COPPER COATED GMAW SOLID WIRE FOR WELDING C-Mn STEEL

CLASSIFICATION : EN ISO 14341-A AWS A/SFA 5.18

G 42 3 C G4Si1 ER70S-G
G 46 3 M G4Si1

KEY FEATURES :

- C-Mn steel GMAW solid wire
- Uniform copper coating
- Smooth wire feeding
- Can be use with 100% CO₂, Ar+CO₂
- Suitable for applications where dirt, rust or mill-scale is present
- All Position Welding capability
- Radiographic quality weld

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
Co ₂	12-18	10-20
80Ar+20CO ₂	17-22	10-20

TYPICAL APPLICATIONS :

- Pressure vessels, LPG Cylinders
- Construction and mining equipment
- Pipe and Structural steel welding
- Thin sheet metal, Auto body
- General fabrication
- Farm implements, Steel casings
- High-speed robotic, automatic and semi-automatic welding applications

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	S	P	Cu*
Specification	0.07-0.14	1.80-1.90	0.80-1.15	0.025 max	0.025 max	0.35 max

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

Condition		Shielding Gas	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Specification	As Welded	100% CO ₂	520-620	420-480	22 min	47 min
Specification	As Welded	80Ar + 20CO ₂	560-660	480-540	24 min	47 min

Hardness, 3 Layer: 210 BHN max (irrespective of type of gas used) With mixed gas mechanical properties will be higher.

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool	MIGPAC DRUM, Kg
0.8	16-20	50-150	15	100 / 250
0.9	18-22	80-200	15	100 / 250
1.0	18-24	120-220	15	100 / 250
1.2	20-30	150-330	15	100 / 250
1.6	24-32	250-500	15	100 / 250

AUTOMIG 70S-A1 / TIGFIL 70S-A1

A COPPER COATED LOW ALLOY WIRE

CLASSIFICATION : EN ISO 21952-A AWS A/SFA 5.28 **APPROVALS :**

Automig 70S-A1: G MoSi
 Tigfil 70S-A1: W MoSi

ER 70S-A1 -
 ER 70S-A1 IBR/BHEL

KEY FEATURES :

- Copper coated low alloy GMAW wire and rod
- Typical 0.5Mo content
- Smooth feeding and stable arc under optimum welding conditions
- Increase strength at elevated temperature
- Weld deposit highly resistant to cold cracking
- Shiny welds of radiographic quality

WELDING POSITION :



GMAW: DCEP
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar/1-5O ₂ or Ar/CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding creep resistant 0.5% Mo steels and fine grained steels with service temperatures up to 500°C
- High temperature and high pressure boilers
- Suitable for 15Mo3, 16Mo3, 14Mo6
- Welding low alloy steels such as type ASTM A335 grade P1 and similar materials
- Pipe line and crane construction as well as in structural steel engineering

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Mo	S	P	Cu*
Specification	0.08-0.12	0.90-1.30	0.30-0.70	0.40-0.60	0.020 max	0.020 max	0.35 max

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Specification	PWHT: 620°C for 1 hr	520 min	420 min	22 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig 70S-A1	Ø, mm		Kg/Spool	
	1.2		15	
	1.6		15	
Tigfil 70S-A1	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Molyten**

AUTOMIG 80S-B2 / TIGFIL 80S-B2

1.25Cr-0.5Mo COPPER COATED LOW ALLOY WIRE FOR HIGH TEMPERATURE APPLICATION

CLASSIFICATION : EN ISO 21952-A	AWS A/SFA 5.28	APPROVALS :
Automig 80S-B2: G CrMo1Si	ER80S-B2	IBR
Tigfil 80S-B2: W CrMo1Si	ER80S-B2	IBR/NTPC/BHEL

KEY FEATURES :

- Copper coated low alloy steel solid filler wire & rod
- Uniform copper coating
- Deposit notch free welds with excellent mechanical properties
- Typical 1.25 Cr-0.5 Mo weld deposit
- Careful control of pre-heat, interpass temperature & PWHT is essential to avoid cracking
- Radiographic quality weld

WELDING POSITION :



GMAW: DCEP
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar/1-5O ₂ or Ar/CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of 0.5Cr-0.5Mo, 1Cr-0.5Mo and 1.25Cr-0.5Mo steel pipes, plates and castings
- Elevated temperature and corrosive service applications in Refineries, Petrochemicals & fertilizers plant
- Can be used for joining dissimilar combinations of Cr-Mo and Carbon steels
- Suitable for ASTM A 199-76, A 200-75, A 213-76D, A 335 Gr.P11, A 369-76, A 387 Gr.B, DIN 15CrMo3

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Mo	Cu*	S	P
Specification	0.07-0.12	0.40-0.70	0.40-0.70	1.20-1.50	0.40-0.65	0.35 max	0.025 max	0.025 max

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Specification	PWHT: 620°C for 1 hr	550 min	470 min	19 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig 80S-B2	Ø, mm		Kg/Spool	
	1.2		15	
	1.6		15	
Tigfil 80S-B2	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Cromoten**

AUTOMIG 90S-B3 / TIGFIL 90S-B3

2.25Cr-1Mo COPPER COATED LOW ALLOY WIRE FOR CREEP RESISTANCE

CLASSIFICATION :	EN ISO 21952-A	AWS A/SFA 5.28	APPROVALS :
Automig 90S-B3:	G CrMo2Si	ER90S-B3	IBR
Tigfil 90S-B3:	W CrMo2Si	ER90S-B3	IBR/NPCIL/BHEL

KEY FEATURES :

- Copper coated low alloy steel solid filler wire & rod
- Uniform copper coating
- Deposit notch free welds with excellent mechanical properties
- Typical 2.25 Cr-1 Mo weld deposit
- Superior strength and toughness after PWHT
- Radiographic quality weld

WELDING POSITION :



GMAW: DCEP
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar/1-5O ₂ or Ar/CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of 2.25Cr-0.5Mo and 2.25Cr-1Mo type creep resistant steels
- Joining ASTM A 335 Gr.P22, A 387 Gr.22 materials
- Refineries, Petrochemicals and fertilizers plant
- Joining of P5A materials
- Cr-Mo and Cr-Mo-V bearing steels for high temperature applications
- Suitable for 12CrMo9-10, 10CrSiMoV7 German steels

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Mo	Cu*	S	P
Specification	0.07-0.12	0.40-0.70	0.40-0.70	2.30-2.70	0.90-1.20	0.35 max	0.025 max	0.025 max

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Specification	PWHT: 690°C for 1 Hr	620 min	540 min	17 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig 90S-B3	Ø, mm		Kg/Spool	
	1.2		15	
	1.6		15	
Tigfil 90S-B3	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Cromoten C**



AUTOMIG 80S-B6 / TIGFIL 80S-B6

5Cr-0.5Mo COPPER COATED LOW ALLOY WIRE FOR CREEP RESISTANCE

CLASSIFICATION :	EN ISO 21952-A	AWS A/SFA 5.28	APPROVALS :
Automig 80S-B6:	G CrMo5Si	ER80S-B6	-
Tigfil 80S-B6:	W CrMo5Si	ER80S-B6	-

KEY FEATURES :

- Copper coated low alloy steel solid filler wire and rod
- Uniform copper coating
- Recommended pre-heat and interpass temperature 350-450°C
- Typical 5 Cr-0.5 Mo weld deposit
- Air hardenable alloy resistant to creep at elevated temperature upto 650°C
- Radiographic quality weld

WELDING POSITION :	Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
	GMAW: Ar/1-5O ₂ or Ar/CO ₂	15-22	10-20
	GTAW: Ar	10-15	-



GMAW: DCEP
GTAW: DCEN

TYPICAL APPLICATIONS :

- Welding of 5 Cr-0.5 Mo creep resistant steels and equivalent grades
- Application in power generation, ammonia synthesis plants and petrochemical industries
- Joining P5/T5 materials of similar composition
- Joining P5B materials e.g. SA 336/336M Gr.F5, SA 387/387M Gr.5

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Mo	Ni	Cu*	S	P
Specification	0.10 max	0.60 max	0.50 max	4.60-6.0	0.45-0.65	0.60 max	0.35 max	0.025 max	0.025 max

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Specification	PWHT: 745°C for 1 hr	560 min	470 min	17 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig 80S-B6	Ø, mm		Kg/Spool	
	1.2		15	
Tigfil 80S-B6	1.6		15	
	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Cromoten D**

AUTOMIG 80S-B8 / TIGFIL 80S-B8

9Cr-1Mo COPPER COATED LOW ALLOY WIRE FOR ELEVATED TEMPERATURE CREEP RESISTANCE

CLASSIFICATION :	EN ISO 21952-A	AWS A/SFA 5.28	APPROVALS :
Automig 80S-B8:	G CrMo9	ER80S-B8	-
Tigfil 80S-B8:	W CrMo9	ER80S-B8	-

KEY FEATURES :

- Copper coated low alloy steel solid filler wire & rod
- Uniform copper coating
- Careful control over pre-heat, interpass temperature required
- Typical 9 Cr-1 Mo weld deposit
- Air hardenable alloy highly resistant to elevated temperature creep and heat
- Radiographic quality weld

WELDING POSITION :   **GMAW: DCEP**
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar/1-5O ₂ or Ar/CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of 9Cr-1Mo type and equivalent materials in pipe and tube forms
- Welding of ferritic martensitic chrome steels
- For general corrosion and heat resistance application
- Joining P9/T9 materials of similar composition
- Application in Power plants, Oil refineries, Chemical and Petrochemical industries

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Mo	Ni	Cu*	S	P
Specification	0.10 max	0.40-0.70	0.50 max	8.0-10.5	0.80-1.20	0.50 max	0.35 max	0.025 max	0.025 max

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Specification	PWHT: 745°C for 1 hr	550 min	470 min	17 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig 80S-B8	Ø, mm		Kg/Spool	
	1.2		15	
Tigfil 80S-B8	1.6		15	
	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Cromoten 9**

AUTOMIG 90S-B9 / TIGFIL 90S-B9

MODIFIED 9Cr-1Mo-V-Nb COPPER COATED LOW ALLOY WIRE

CLASSIFICATION : EN ISO 21952-A

AWS A/SFA 5.28

APPROVALS :

Automig 90S-B9: G CrMo91

ER90S-B9

-

Tigfil 90S-B9: W CrMo91

ER90S-B9

-

KEY FEATURES :

- Copper coated low alloy steel solid filler wire & rod
- Typical 9Cr-1Mo-V-Nb type weld deposit
- Uniform copper coating
- Smooth wire feeding
- Offers improved long term creep properties
- Radiographic quality weld

WELDING POSITION :



GMAW: DCEP
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar+5CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Suitable for welding of Cr-Mo-V-Nb steels such as P91, T91 and F91
- Suitable for material 1.4903, SA 387 Gr.91, SA 213 T91, SA 335 P91
- For heavy wall components such as headers, main steam piping and turbine rotors in power generating plants

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Mo	Ni	V
Specification	0.07-0.13	1.20 max	0.15-0.50	8.0-10.50	0.85-1.20	0.80 max	0.15-0.30
	Cu*	Al	Nb	N	S	P	
Specification	0.20 max	0.04 max	0.02-0.10	0.03-0.07	0.010 max	0.010 max	

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	PWHT: 760°C for 2 Hrs	620 min	410 min	16 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig 90S-B9	Ø, mm		Kg/Spool	
	1.2		15	
	1.6		15	
Tigfil 90S-B9	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Cromoten 9M**

AUTOMIG 80S-Ni1 / TIGFIL 80S-Ni1

COPPER COATED 1% Ni ALLOYED WIRE FOR LOW TEMPERATURE IMPACT PROPERTIES

CLASSIFICATION : EN ISO 14341-A EN ISO 636-A AWS A/SFA 5.28 **APPROVALS :**

Automig 80S-Ni1: G 46 4 M G3Ni1 - ER80S-Ni1 -
 Tigfil 80S-Ni1: - W 46 4 W3Ni1 ER80S-Ni1 IBR

KEY FEATURES :

- Copper coated low alloy steel solid filler wire & rod
- Typical 1%Ni-Mn alloy
- Uniform copper coating
- Medium strength weld deposit gives high impact at -45°C
- Radiographic quality weld

WELDING POSITION :



GMAW: DCEP
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar/1-5O ₂ or Ar/CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of 1% Ni steels
- Welding fine grained and low alloyed Ni steels
- Welding of steels for application at subzero temperature

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Ni	Mo	Cu*	S	P
Specification	0.12 max	1.25 max	0.40-0.80	0.80-1.10	0.35 max	0.35 max	0.025 max	0.025 max

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -45°C, J
Specification	As Welded	550 min	480 min	24 min	28 min

Hardness, 3 Layer: 210 BHN max (irrespective of type of gas used)

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig 80S-Ni1	Ø, mm		Kg/Spool	
	1.2		15	
	1.6		15	
Tigfil 80S-Ni1	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Tenalloy 70C**

AUTOMIG 80S-Ni2 / TIGFIL 80S-Ni2



COPPER COATED LOW ALLOY WIRE FOR -60°C IMPACT APPLICATION

CLASSIFICATION : EN ISO 14341-A EN ISO 636-A AWS A/SFA 5.28 **APPROVALS :**

Automig 80S-Ni2: G 46 6 M G2Ni2	-	ER80S-Ni2	-
Tigfil 80S-Ni2: -	W 46 6 W2Ni2	ER80S-Ni2	IBR

KEY FEATURES :

- Copper coated low alloy steel solid filler wire & rod
- Typical 2.5% Ni-Mn alloy
- Uniform copper coating
- Tough, crack resistant weld deposit gives high impact at -60°C
- Radiographic quality weld

WELDING POSITION :   **GMAW: DCEP**
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar/1-5O ₂ or Ar/CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of 2.5% Ni steels
- Welding fine grained and low alloyed Ni steels
- Welding of storage tanks for low temperature application
- Offshore applications

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Ni	Cu*	S	P
Specification	0.12 max	1.25 max	0.40-0.80	2.0-2.75	0.35 max	0.025 max	0.025 max

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -60°C, J
Specification	PWHT: 620°C for 1 Hr	550 min	480 min	24 min	47 min

Hardness, 3 Layer: 210 BHN max

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig 80S-Ni2	Ø, mm		Kg/Spool	
	1.2		15	
	1.6		15	
Tigfil 80S-Ni2	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Tenalloy 70A**

AUTOMIG 80S-D2 / TIGFIL 80S-D2

COPPER COATED LOW ALLOY WIRE FOR Mn-Mo STEEL

CLASSIFICATION : EN ISO 14341-A EN 1668 AWS A/SFA 5.28 **APPROVALS :**

Automig 80S-D2: G 46 3 C G4Mo	-	ER80S-D2	-
Tigfil 80S-D2: -	W 46 3 W4Mo	ER80S-D2	IBR

KEY FEATURES :

- Copper coated solid filler wire and rod
- Mn-0.5 Mo type weld deposit
- Uniform copper coating
- Mo provides increased strength
- High levels of Mn and Si provide good wetting, rust and scale tolerance
- Excellent subzero toughness
- Porosity free radiographic quality weld

WELDING POSITION :



GMAW: DCEP
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: CO ₂	12-18	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of Mn-0.5 Mo steel
- Application in oil process pipe work and fittings where resistance to sulphide-induced stress corrosion cracking is important
- Suitable for single and multiple pass welding
- Variety of ordinary and difficult to weld carbon and low alloy, higher strength steels in both as welded and PWHT condition

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Mo	Cu*	S	P
Specification	0.07-0.12	1.60-2.10	0.50-0.80	0.40-0.80	0.50 max	1.60-2.10	0.025 max

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Specification	As Welded	550 min	480 min	22 min	30 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig 80S-D2	Ø, mm		Kg/Spool	
	1.2		15	
Tigfil 80S-D2	1.6		15	
	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

AUTOMIG 80S-G / TIGFIL 80S-G

MEDIUM STRENGTH COPPER COATED LOW ALLOY STEEL WIRE

CLASSIFICATION :	AWS A/SFA 5.28	APPROVALS :
Automig 80S-G:	ER80S-G	-
Tigfil 80S-G:	ER80S-G	-

KEY FEATURES :

- Copper coated low alloy steel solid filler wire and rod
- Characterized by smooth and shiny welds
- Uniform copper coating
- Provide good wetting, rust and scale tolerance
- Weld deposit is resistant to cold cracking
- Recommended with 100% CO₂ shielding gas
- Radiographic quality even over poor cleaned base metals

WELDING POSITION :



GMAW: DCEP
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: CO ₂	12-18	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of Mn-0.5 Mo steel
- Pipelines and pressure vessels with operating temperatures of about 500°C
- Repair of medium strength steel castings
- Suitable for a wide range of base metals such as problem steels containing high sulfur to the basic carbon and low alloy Cr-Mo base metals

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Mo	S	P
Typical	0.09	1.6	0.6	0.4	0.01	0.01

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -46°C, J
Typical	PWHT: 620°C for 4 Hrs	650	570	25	90

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig 80S-G	Ø, mm		Kg/Spool	
	1.2		15	
	1.6		15	
Tigfil 80S-G	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

AUTOMIG 90S-D2 / TIGFIL 90S-D2

COPPER COATED LOW ALLOY WIRE FOR Mn-Mo STEEL WELDING

CLASSIFICATION :

AWS A/SFA 5.28

APPROVALS :

Automig 90S-D2:

ER90S-D2

IBR/RDSO

Tigfil 90S-D2:

ER90S-D2

-

KEY FEATURES :

- Copper coated solid filler wire & rod
- Mn-0.5 Mo type weld deposit
- Uniform copper coating
- Mo addition for high strength
- High level of deoxidizers for defect free welds
- Excellent low temperature toughness
- Porosity free radiographic quality weld

WELDING POSITION :



GMAW: DCEP
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar + 1-5O ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of high tensile steels like IS 8500 Gr.540B, 570B & 590B, IS 2002 Gr.3, IS 1875 Class 3A
- Welding of Sailma 450/450HI steel used in CONCOR wagons
- Suitable for single and multiple pass welding
- High temperature service pipe, fittings, flanges and valves

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Mo	Cu*	S	P
Specification	0.07-0.12	1.60-2.10	0.50-0.80	0.40-0.60	0.50 max	0.025 max	0.025 max

* Including Cu in the coating

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Specification	As Welded	620 min	540 min	17 min	30 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig 90S-D2	Ø, mm		Kg/Spool	
	1.2		15	
	1.6		15	
Tigfil 90S-D2	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

GMAW wire also sold as **Automig 4**

AUTOMIG 90S-G / TIGFIL 90S-G

COPPER COATED HIGH STRENGTH LOW ALLOY STEEL WIRE

CLASSIFICATION :	AWS A/SFA 5.28	APPROVALS :
Automig 90S-G:	ER90S-G	-
Tigfil 90S-G:	ER90S-G	-

KEY FEATURES :

- Copper coated high strength low alloy steel GMAW wire and rod
- Welds even over poor cleaned base metals
- Recommended Ar+CO₂ shielding gas
- Moderately high strength with adequate low temperature toughness
- Exhibits excellent out of position characteristics
- Radiographic weld quality

WELDING POSITION :



GMAW: DCEP
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar + CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding high sulfur bearing free machining steels, medium carbon steels, 0.5 Mo steels and high temperature resistant steels
- Pipelines and pressure vessels with operating temperatures of about 500°C
- Repair of medium strength steel castings

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Mo	S	P
Typical	0.09	1.6	0.6	0.4	0.01	0.01

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Specification	As Welded	650	570	25	90

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig 90S-G	Ø, mm		Kg/Spool	
	1.2		15	
	1.6		15	
Tigfil 90S-G	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

MIGINOX 308L / TIGINOX 308L

EXTRA LOW CARBON AUSTENITIC STAINLESS STEEL SOLID WIRE FOR SS 304 WELDING

CLASSIFICATION : EN ISO 14343-A

AWS A/SFA 5.9

APPROVALS :

Miginox 308L: G 19 9 L

ER308L

RDSO (Class VI)

Tiginox 308L: W 19 9 L

ER308L

NPCIL

KEY FEATURES :

- An extra low carbon 308L type stainless steel solid wire
- Excellent corrosion & scaling resistance upto 800°C
- Excellent crack resistance
- Resistance to intergranular corrosion
- Radiographic quality welds

WELDING POSITION :



GMAW: DCEP
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: 98Ar/2O ₂ or Ar/1-5CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding Cr-Ni steels represented by AISI 301, 302, 304, 304L, 308, 308L
- SS piping in refineries, oil and gas industries, chemical plants, food processing industries
- Fabrication of boilers, reactors, turbines, pipes, tubes

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.03 max	1.0-2.5	0.30-0.65	19.5-22.0	9.0-11.0	0.75 max	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	520 min	35 min

Mechanical properties will vary with the type of shielding gas used.

SPECIAL TEST : IGC practice E as per ASTM A262

PACKING DATA :

Miginox 308L	Ø, mm		Kg/Spool	
	0.8		12.5	
	1.2		12.5	
	1.6		12.5	
	2.0		12.5	
Tiginox 308L	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Superinox 1C**

FCAW Wire: **Miginox FC 308L**

MIGINOX 308LSi

308LSi TYPE STAINLESS STEEL SOLID WIRE

CLASSIFICATION : EN ISO 14343-A

AWS A/SFA 5.9

APPROVALS :

G 19 9 LSi

ER308LSi

-

KEY FEATURES :

- An extra low carbon 20Cr/10Ni type stainless steel solid wire
- High Si content improves wetting characteristics
- Resists intergranular corrosion
- Controlled ferrite content ensures excellent crack resistance
- Excellent corrosion and scaling resistance upto 800°C
- Radiographic quality welds

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
98Ar/2O ₂ or Ar/1-5CO ₂	15-22	10-20

TYPICAL APPLICATIONS :

- Welding Cr-Ni steels represented by AISI 301, 302, 304, 304L, 308, 308L
- Fabrication of boilers, reactors, turbines, pipes, tubes
- SS piping in refineries, oil and gas industries, chemical plants, food processing industries

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.03 max	1.0-2.5	0.65-1.0	19.5-22.0	9.0-11.0	0.75 max	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	520 min	35 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Ø, mm	Kg/Spool
0.8	12.5
1.2	12.5
1.6	12.5
2.0	12.5

MIGINOX 309L / TIGINOX 309L

23Cr/12Ni TYPE STAINLESS STEEL SOLID WIRE

CLASSIFICATION : EN ISO 14343-A

AWS A/SFA 5.9

APPROVALS :

Miginox 309L: G 23 12 L

ER309L

-

Tiginox 309L: W 23 12 L

ER309L

IRS/NPCIL

KEY FEATURES :

- An extra low carbon 23Cr/12Ni type stainless steel wire • Excellent corrosion and oxidation resistance upto 1100°C
- High ferrite content ensures highest cracking resistance
- Radiographic quality welds

WELDING POSITION :



**GMAW: DCEP
GTAW: DCEN**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: 98Ar/2O ₂ or Ar/1-5CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of AISI 309, 309L type steels
- Buffer layer on low alloy and carbon steels
- Dissimilar joints between stainless steels and low alloy or carbon steels
- Joining corrosion resistant clad steels

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.03 max	1.0-2.5	0.30-0.65	23.0-25.0	12.0-14.0	0.75 max	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	520 min	30 min

Mechanical properties will vary with the type of shielding gas used.

SPECIAL TEST : IGC practice E as per ASTM A262

PACKING DATA :

Miginox 309L	Ø, mm		Kg/Spool	
	0.8		12.5	
	1.2		12.5	
	1.6		12.5	
	2.0		12.5	
Tiginox 309L	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Betanox DL**

FCAW Wire: **Miginox FC 309L**

MIGINOX 309LSi

309LSi TYPE STAINLESS STEEL SOLID WIRE

CLASSIFICATION : EN ISO 14343-A

AWS A/SFA 5.9

APPROVALS :

G 23 12 LSi

ER309LSi

-

KEY FEATURES :

- An extra low carbon 24Cr/13Ni type stainless steel solid wire
- High Si content improves wetting characteristics
- Excellent corrosion and oxidation resistance upto 1100°C
- Highest cracking resistance
- Radiographic quality welds

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
98Ar/2O ₂ or Ar/1-5CO ₂	15-22	10-20

TYPICAL APPLICATIONS :

- Welding of AISI 309, 309L type steels
- Buffer layer on low alloy and carbon steels
- Dissimilar joints between stainless steels and low alloy or carbon steels
- Joining corrosion resistant clad steels

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.03 max	1.0-2.5	0.65-1.0	23.0-25.0	12.0-14.0	0.75 max	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	520 min	30 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Ø, mm	Kg/Spool
0.8	12.5
1.2	12.5
1.6	12.5
2.0	12.5

MIGINOX 309Mo / TIGINOX 309Mo

23Cr/12Ni/2.5Mo TYPE STAINLESS STEEL SOLID WIRE

CLASSIFICATION :

AWS A/SFA 5.9

APPROVALS :

Miginox 309Mo:

ER309Mo

-

Tiginox 309Mo:

ER309Mo

-

KEY FEATURES :

- A 23Cr/12Ni type stainless steel solid wire
- High ferrite content ensures maximum cracking resistance
- Excellent corrosion & oxidation resistance upto 1100°C
- Mo addition provides high strength and pitting corrosion resistance
- Radiographic quality welds

WELDING POSITION :



**GMAW: DCEP
GTAW: DCEN**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: 98Ar/2O ₂ or Ar/1-5CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of AISI 309 Mo type steels
- Dissimilar joints between 316 type and low alloy or carbon steels
- Buffer layer on low alloy and carbon steels before deposition of 316 type weld metal

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.12 max	1.0-2.5	0.30-0.65	23.0-25.0	12.0-14.0	2.0-3.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	550 min	30 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Miginox 309Mo	Ø, mm		Kg/Spool	
	0.8		12.5	
	1.2		12.5	
	1.6		12.5	
	2.0		12.5	
Tiginox 309Mo	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Betanox DMO**

MIGINOX 316L / TIGINOX 316L

19Cr/12Ni/Mo TYPE STAINLESS STEEL SOLID WIRE

CLASSIFICATION : EN ISO 14343-A

AWS A/SFA 5.9

APPROVALS :

Miginox 316L: G 19 12 3 L

ER316L

-

Tiginox 316L: W 19 12 3 L

ER316L

IRS

KEY FEATURES :

- An extra low carbon 19Cr/12Ni/Mo type stainless steel wire
- Offers improved corrosion and pitting resistance in marine and industrial environment
- High resistance against intergranular corrosion
- Resistant to SCC, hot cracking and chemical attack upto 850°C
- Radiographic quality welds

WELDING POSITION :



GMAW: DCEP
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: 98Ar/2O ₂ or Ar/1-5CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding austenitic alloys represented by AISI 316, 316L, 317, 317L, 318 types
- Application in textile processing, Naval and Chemical environments, Paper and pulp, Paint and dye industries
- Joining similar grade wrought and cast material
- Cladding stainless steels

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.03 max	1.0-2.5	0.30-0.65	18.0-20.0	11.0-14.0	2.0-3.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	490 min	30 min

Mechanical properties will vary with the type of shielding gas used.

SPECIAL TEST : IGC practice E and B as per ASTM A262

PACKING DATA :

Miginox 316L	Ø, mm		Kg/Spool	
	0.8		12.5	
	1.2		12.5	
	1.6		12.5	
	2.0		12.5	
Tiginox 316L	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Superinox 2C**

FCAW Wire: **Miginox FC 316L**

MIGINOX 316LSi

316LSi TYPE STAINLESS STEEL SOLID WIRE

CLASSIFICATION : EN ISO 14343-A

AWS A/SFA 5.9

APPROVALS :

G 19 12 3 LSi

ER316LSi

-

KEY FEATURES :

- An extra low carbon 19Cr/12Ni/Mo type stainless steel solid wire
- High Si content improves wetting characteristics
- High resistance against intergranular corrosion
- Resistant to SCC, hot cracking and chemical attack upto 850°C
- Offers improved corrosion and pitting resistance in marine and industrial environment
- Radiographic quality welds

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
98Ar/2O ₂ or Ar/1-5CO ₂	15-22	10-20

TYPICAL APPLICATIONS :

- Welding austenitic alloys represented by AISI 316, 316L, 317, 317L, 318 types
- Joining similar grade wrought and cast material
- Application in textile processing, Naval and Chemical environments, Paper and pulp, Paint and dye industries
- Cladding stainless steels

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.03 max	1.0-2.5	0.30-0.65	18.0-20.0	11.0-14.0	2.0-3.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	490 min	30 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Ø, mm	Kg/Spool
0.8	12.5
1.2	12.5
1.6	12.5
2.0	12.5

MIGINOX 347 / TIGINOX 347

Nb STABILIZED STAINLESS STEEL ALLOY FOR HIGHEST RESISTANCE AGAINST INTERGRANULAR CORROSION

CLASSIFICATION : EN ISO 14343-A

AWS A/SFA 5.9

APPROVALS :

Miginox 347: G 19 9 Nb

ER347

-

Tiginox 347: W 19 9 Nb

ER347

IRS

KEY FEATURES :

- 19Cr/9Ni/Nb type stabilized stainless steel wire
- Resistance to intergranular corrosion and scaling upto 850°C
- Resistance to cracking and embrittlement
- Smooth operating characteristics
- Radiographic quality welds

WELDING POSITION :



**GMAW: DCEP
GTAW: DCEN**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: 98Ar/2O ₂ or Ar/1-5CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding stabilized Cr-Ni steels such as AISI 321, 321H, 347, 347H
- Refineries, power plants, centrifugal pump impellers and shafts, valve faces, seats
- Recommended for use at high temperatures
- Fabrication of boiler and gas turbine
- Welding of stainless steel tanks, valves, pipes in food, chemical and petrochemical industries

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Ni	Mo	Nb	S	P
Specification	0.08 max	1.0-2.5	0.30-0.65	19.0-21.5	9.0-11.0	0.75 max	10xC-1.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	520 min	30 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Miginox 347	Ø, mm		Kg/Spool	
	0.8		12.5	
	1.2		12.5	
	1.6		12.5	
	2.0		12.5	
Tiginox 347	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Superinox 1B**

FCAW Wire: **Miginox FC 347**

MIGINOX 347Si

347Si TYPE STAINLESS STEEL SOLID WIRE

CLASSIFICATION : EN ISO 14343-A

AWS A/SFA 5.9

APPROVALS :

G 19 9 NbSi

ER347Si

-

KEY FEATURES :

- 19Cr/9Ni type Nb stabilized stainless steel solid wire
- High Si content improves wetting characteristics
- Resistance to cracking and embrittlement
- Resistance to intergranular corrosion and scaling upto 850°C
- Smooth operating characteristics
- Radiographic quality welds

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
98Ar/2O ₂ or Ar/1-5CO ₂	15-22	10-20

TYPICAL APPLICATIONS :

- Welding stabilized Cr-Ni steels such as AISI 321, 321H, 347, 347H
- Refineries, power plants, centrifugal pump impellers and shafts, valve faces, seats
- Fabrication of boiler and gas turbine
- Welding of stainless steel tanks, valves, pipes in food, chemical and petrochemical industries

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Ni	Mo	Nb	S	P
Specification	0.08 max	1.0-2.5	0.65-1.0	19.0-21.5	9.0-11.0	0.75 max	10xC-1.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	520 min	30 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Ø, mm	Kg/Spool
0.8	12.5
1.2	12.5
1.6	12.5
2.0	12.5

MIGINOX 410NiMo / TIGINOX 410NiMo

HIGH STRENGTH MARTENSITIC STAINLESS STEEL SOLID WIRE

CLASSIFICATION : EN ISO 14343-A

AWS A/SFA 5.9

APPROVALS :

Miginox 410NiMo: G 13 4

ER410NiMo

-

Tiginox 410NiMo: W 13 4

ER410NiMo

-

KEY FEATURES :

- 13Cr/4Ni type stainless steel wire
- High strength combined with excellent toughness and cracking resistance
- Preheat and PWHT recommended
- Martensitic type alloy resistant to corrosion, erosion, pitting and impact
- Smooth operating characteristics
- Radiographic quality welds

WELDING POSITION :



GMAW: DCEP
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: 98Ar/2O ₂ or Ar/1-5CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of ASTM CA 6NM casting or similar grades as well as light gauge 410, 410S and 405 base metals
- Welding of extra low carbon castings and forgings of similar composition and surfacing applications
- Surfacing of turbine blades, high pressure valves
- Repair of runners, valve seats, pulp and paper plant equipment

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.06 max	0.6 max	0.5 max	11.0-12.5	4.0-5.0	0.4-0.7	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	PWHT:600°C for 1 hr	760 min	15 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Miginox 410NiMo	Ø, mm		Kg/Spool	
	1.2		12.5	
	1.6		12.5	
Tiginox 410NiMo	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	5	4	20
	2.0 x 1000	5	4	20
	2.5 x 1000	5	4	20
	3.2 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Betachrome 13/4 LB**

MIGINOX 2209 / TIGINOX 2209

DUPLEX STAINLESS STEEL ALLOY FOR HIGH STRENGTH AND PITTING RESISTANCE

CLASSIFICATION : EN ISO 14343-A AWS A/SFA 5.9 **APPROVALS :**

Miginox 2209: G 22 9 3 N L	ER2209	-
Tiginox 2209: W 22 9 3 N L	ER2209	-

KEY FEATURES :

- An extra low carbon 22Cr/9Ni/3Mo/N type duplex stainless steel wire
- Austenitic-ferritic type weld deposit
- Can be applied for operating temperature upto 200°C
- Excellent combination of high strength and resistance to chloride induced SCC and pitting
- Radiographic quality welds

WELDING POSITION :



GMAW: DCEP
GTAW: DCEN

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: 98Ar/2O ₂ or Ar/1-5CO ₂	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of 2205, 2209 type duplex stainless steels and similar grades
- Pipelines transporting chloride bearing products and sour gases
- Cladding on carbon and low alloy steels
- Cast pumps, Valve bodies and sea water handling equipment
- For chemical equipments, heat exchangers, off-shore platforms

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Si	Cr	Ni	Mo	N	Cu	S	P
Specification	0.03 max	0.5-2.0	0.90 max	21.5-23.5	7.5-9.5	2.5-3.5	0.08-0.20	0.75 max	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	690 min	20 min

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Miginox 2209	Ø, mm		Kg/Spool	
	0.8		12.5	
	1.2		12.5	
	1.6		12.5	
	2.0		12.5	
Tiginox 2209	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	2.4 x 1000	5	4	20
	3.2 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Betanox 4462**

FCAW Wire: **Miginox FC 2209**

AUTOMIG Ni-1 / TIGFIL Ni-1

NICKEL SOLID WIRE FOR NICKEL AND NICKEL BASED ALLOYS

CLASSIFICATION : EN ISO 18274

AWS A/SFA 5.14

APPROVALS :

SNi 2061

ERNi-1

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KEY FEATURES :

- A low carbon 96Ni/3Ti Nickel wire
- Almost pure Ni deposit
- Extremely strong and ductile weld metal
- Resistant to cracking and oxidation
- Low iron level ensure maximum corrosion resistance
- Radiographic weld quality

WELDING POSITION :



**GMAW: DCEP
GTAW: DCEN**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar or Ar/He	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of wrought and cast form of commercially pure Ni (99.5%)
- Welding of Nickel 200 and 201
- Suitable for ASTM B160/161/162/163
- For dissimilar welding between Nickel 200/201 and various iron-base and nickel-base alloys
- Applications in Pumps and valves, Cryogenics, Chemical plants, Caustic handling equipments, Food processing equipments
- Overlay on carbon and low alloy steel
- Used for handling corrosive alkalis and halides

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Fe	S	P
Specification	0.15 max	1.0 max	1.0 max	0.015 max	0.03 max
	Si	Cu	Al	Ti	Ni
Specification	0.75 max	0.25 max	1.5 max	2.0-3.5	93.0 min

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	380	30

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig Ni-1	Ø, mm		Kg/Spool	
	1.2		12.5	
	1.6		12.5	
Tigfil Ni-1	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	2.0 x 1000	5	4	20
	2.4 x 1000	5	4	20
	3.2 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Nicalloy 1**

AUTOMIG NiCr-3 / TIGFIL NiCr-3

NiCr-3 TYPE NICKEL ALLOY WIRE

CLASSIFICATION : EN ISO 18274

AWS A/SFA 5.14

APPROVALS :

Automig NiCr-3 SNI 6082

ERNiCr-3

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Tigfil NiCr-3 SNI 6082

ERNiCr-3

IBR

KEY FEATURES :

- A low carbon Ni-Cr solid wire
- Typical 72Ni/20Cr/3Mn/2.5Nb+Ta alloy
- Suitable for cryogenic to high temperature application
- High corrosion and oxidation resistance
- Excellent toughness at low temperatures
- Radiographic weld quality

WELDING POSITION :



**GMAW: DCEP
GTAW: DCEN**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar or Ar/He	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of Ni-Cr-Fe alloys
- Dissimilar welding of Ni based alloys and cladding
- For joints sensitive to thermal loading above 300°C to prevent carbon diffusion
- Joining steels to stainless steels or Ni based alloys
- Applications in pressure vessels, boilers, fittings, machines and apparatus constructions

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Fe	S	P	Si
Specification	0.10 max	2.5-3.5	3.0 max	0.015 max	0.03 max	0.50 max
	Cu	Co	Ti	Cr	Nb + Ta	Ni
Specification	0.50 max	0.12 max	0.75 max	18.0-22.0	2.0-3.0	67.0 min

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	550	33

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig NiCr-3	Ø, mm		Kg/Spool	
	0.8		12.5	
	1.2		12.5	
	1.6		12.5	
	2.0		12.5	
Tigfil NiCr-3	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	2.4 x 1000	5	4	20
	3.2 x 1000	5	4	20

AUTOMIG NiCrMo-3 / TIGFIL NiCrMo-3

NiCrMo-3 TYPE NICKEL ALLOY SOLID WIRE

CLASSIFICATION : EN ISO 18274

AWS A/SFA 5.14

APPROVALS :

Automig NiCrMo-3 SNi 6625

ERNiCrMo-3

-

Tigfil NiCrMo-3 SNi 6625

ERNiCrMo-3

IBR

KEY FEATURES :

- A low carbon Ni-Cr-Mo solid wire
- Typical 61Ni/22Cr/9Mo/3.5Nb+Ta alloy
- Suitable for cryogenic to high temperature application upto 540°C
- Exceptional resistance to pitting, crevice and stress corrosion cracking in severe chloride media
- Radiographic weld quality

WELDING POSITION :



**GMAW: DCEP
GTAW: DCEN**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar or Ar/He	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Joining Ni-Cr-Mo alloys
- Welding of Inconel 625, Incoloy 825, Alloy 20
- Cladding steel with Ni-Cr-Mo weld metal
- Suitable for joining ASTM B443, B444, B446 to itself, to steel, to other Ni-based alloys

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Fe	S	P	Si	Cu
Specification	0.10 max	0.50 max	5.0 max	0.015 max	0.02 max	0.50 max	0.50 max
	Al	Ti	Cr	Nb+Ta	Mo	Ni	
Specification	0.40 max	0.40 max	20.0-23.0	3.15-4.15	8.0-10.0	58.0 min	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	760	32

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig NiCrMo-3	Ø, mm		Kg/Spool	
	0.8		12.5	
	1.2		12.5	
	1.6		12.5	
	2.0		12.5	
Tigfil NiCrMo-3	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	2.4 x 1000	5	4	20
	3.2 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Nicalloy Mo-3**

AUTOMIG NiCrMo-4 / TIGFIL NiCrMo-4

NiCrMo-4 TYPE SOLID WIRE

CLASSIFICATION : EN ISO 18274

AWS A/SFA 5.14

APPROVALS :

SNi 6276

ERNiCrMo-4

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KEY FEATURES :

- Ni-Cr-Mo-W solid wire
- Typical 57Ni/16Cr/15.5Mo/5.5Fe/4W alloy
- Resistant to abrasion, impact, corrosion and high temperatures
- Excellent resistance to stress corrosion in reducing and oxidizing atmosphere
- Radiographic weld quality

WELDING POSITION :



**GMAW: DCEP
GTAW: DCEN**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar or Ar/He	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of alloy C-276 and similar composition steels
- Dissimilar joints between nickel alloys, stainless and low alloy steels
- Die plates, forge dies, hot shear blades, mandrel punches for hot working
- Suitable for joining ASTM B574, B575, B619, B622, B628 to itself, to steel, to other Ni-based alloys
- Application in chemical plants with highly corrosive conditions

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Fe	S	P	Si	Cu
Specification	0.02 max	1.0 max	4.0-7.0	0.03 max	0.04 max	0.08 max	0.50 max
	Co	Cr	Mo	V	W	Ni	
Specification	2.50 max	14.5-16.5	15.0-17.0	0.35 max	3.0-4.5	Bal.	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	Hardness, HRc	
			As Welded	Work Hardened
Typical	As Welded	690	20-25	30-35

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig NiCrMo-4	Ø, mm		Kg/Spool	
	0.8		12.5	
	1.2		12.5	
	1.6		12.5	
	2.0		12.5	
Tigfil NiCrMo-4	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	2.4 x 1000	5	4	20
	3.2 x 1000	5	4	20
	4.0 x 1000	5	4	20

EQUIVALENT : SMAW Electrode: Nicalloy Mo-4

AUTOMIG NiCu-7 / TIGFIL NiCu-7

MONEL SOLID WIRE FOR NICKEL-COPPER ALLOY WELDING

CLASSIFICATION : EN ISO 18274

AWS A/SFA 5.14

APPROVALS :

SNi 4060

ERNiCu-7

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KEY FEATURES :

- Monel solid wire
- Typical 65Ni/30Cu/3Mn/2Ti alloy
- Easily machinable deposit in as welded and stress relieved condition
- Low iron in the deposit exhibit maximum corrosion resistance
- Radiographic weld quality

WELDING POSITION :



**GMAW: DCEP
GTAW: DCEN**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar or Ar/He	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding Monel and NiCu alloys to itself, to mild and low alloyed steels
- Overlaying on steel to obtain a corrosion resistant surface
- Welding of ASTM B127/163/164/165
- Heat exchanger, Piping, Vessels, Salt purification
- Food, Pumps and Valves manufacturing units

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	C	Mn	Fe	S	P
Specification	0.15 max	4.0 max	2.5 max	0.015 max	0.02 max
	Si	Cu	Al	Ti	Ni
Specification	1.25 max	Bal.	1.25 max	1.5-3.0	62.0-69.0

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	480	32

Mechanical properties will vary with the type of shielding gas used.

PACKING DATA :

Automig NiCu-7	Ø, mm		Kg/Spool	
	1.2		12.5	
Tigfil NiCu-7	1.6		12.5	
	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	2.0 x 1000	5	4	20
	2.4 x 1000	5	4	20
	3.2 x 1000	5	4	20

EQUIVALENT :

SMAW Electrode: **Supermonel**

AUTOMIG 4043 / TIGFIL 4043

4043 TYPE ALUMINIUM WIRE

CLASSIFICATION : EN ISO 18273

AWS A/SFA 5.10

APPROVALS :

S Al 4043A

ER 4043

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KEY FEATURES :

- Al/5Si solid wire
- Excellent feedability with consistent welding performance
- Excellent resistance to hot cracking
- Most widely used general purpose filler alloy
- Si addition improves fluidity
- Radiographic weld quality

WELDING POSITION :



**GMAW: DCEP
GTAW: AC**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar or Ar/He	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of wrought and cast Al alloys with Si upto 7%
- Suitable for Al-Si and Al-Mg-Si alloys
- Ship Building, Mobile Machinery
- Automotive, General Fabrication
- Welding of similar grade Al alloys in the form of pipe, plate, forging and casting

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	Si	Fe	Cu	Mn	Mg	Zn	Ti	Al
Specification	4.5-6.0	0.8 max	0.3 max	0.05 max	0.05 max	0.10 max	0.20 max	Bal.

PACKING DATA :

Automig 4043	Ø, mm		Kg/Spool	
	1.0		7	
	1.2		7	
	1.6		7	
Tigfil 4043	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	2	4	8
	2.0 x 1000	2	4	8
	2.4 x 1000	2	4	8

EQUIVALENT :

SMAW Electrode: **Albond 5 Si**

AUTOMIG 5183 / TIGFIL 5183

5183 TYPE ALUMINIUM WIRE

CLASSIFICATION : EN ISO 18273

AWS A/SFA 5.10

APPROVALS :

S Al 5183

ER 5183

-

KEY FEATURES :

- Al-Mg-Mn solid wire
- Excellent feedability with consistent welding performance
- Resist corrosion and sea water
- Higher strength than the conventional 5% Mg alloy
- Radiographic weld quality

WELDING POSITION :



**GMAW: DCEP
GTAW: AC**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar or Ar/He	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of high strength Al alloys
- Automotive, Marine application
- Structural fabrication
- Application where high strength, high impact fracture toughness and exposure to corrosive environment are important

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Al
Specification	0.40 max	0.40 max	0.10 max	0.5-1.0	4.3-5.2	0.05-0.25	0.25 max	0.15 max	Bal.

PACKING DATA :

Automig 5183	Ø, mm		Kg/Spool	
	1.0		7	
	1.2		7	
	1.6		7	
Tigfil 4043	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	2	4	8
	2.0 x 1000	2	4	8
	2.4 x 1000	2	4	8

AUTOMIG 5356 / TIGFIL 5356

5356 TYPE ALUMINIUM WIRE

CLASSIFICATION : EN ISO 18273

AWS A/SFA 5.10

APPROVALS :

S Al 5356

ER 5356

-

KEY FEATURES :

- Al-5Mg solid wire
- Excellent feedability with consistent welding performance
- Most versatile and universally used filler material
- High strength weld with very good corrosion resistance in marine environment
- Radiographic weld quality

WELDING POSITION :



**GMAW: DCEP
GTAW: AC**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
GMAW: Ar or Ar/He	15-22	10-20
GTAW: Ar	10-15	-

TYPICAL APPLICATIONS :

- Welding of similar composition Al-Mg, Al-Mg-Zn and Al-Mg-Si alloys
- Automotive, Marine application
- Structural fabrication
- Welding Al alloys containing more than 3%Mg

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Al
Specification	0.25 max	0.40 max	0.10 max	0.05-0.20	4.5-5.5	0.05-0.20	0.10 max	0.06-0.20	Bal.

PACKING DATA :

Automig 5356	Ø, mm		Kg/Spool	
	1.0		7	
	1.2		7	
	1.6		7	
Tigfil 5356	Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
	1.6 x 1000	2	4	8
	2.0 x 1000	2	4	8
	2.4 x 1000	2	4	8

SOLID FILLER ROD FOR WELDING COPPER – NICKEL ALLOYS
CLASSIFICATION : EN ISO 24373

AWS A/SFA 5.7

APPROVALS :

SCu 7158

ERCuNi

-

KEY FEATURES :

- Copper-Nickel solid filler rod
- Typical 70Cu-30Ni type alloy
- No preheating is required
- Radiographic quality welds

WELDING POSITION :

DCEN
Shielding Gas

Ar

Gas Flow Rate, LPM

8-15

TYPICAL APPLICATIONS :

- Welding of wrought and cast 70/30, 80/20, 90/10 copper-nickel alloys to themselves or to each other
- Clad side of copper-nickel clad steels
- Surfacing applications where high resistance to corrosion, erosion or cavitation is required

STORAGE / HANDLING :

Keep dry during storage and handling

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% :

	Mn	Fe	Si	Ni+Co	P	Pb	Ti	Cu
Specification	1.0 max	0.40-0.75	0.25 max	29.0-32.0	0.02 max	0.02 max	0.20-0.50	Bal.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	345 min	20 min

PACKING DATA :

Ø x L, mm	Primary Box, Kg	No. of Primary Boxes	Net Wt. of Carton, Kg
1.6 x 1000	5	4	20
2.0 x 1000	5	4	20
2.4 x 1000	5	4	20
3.2 x 1000	5	4	20

AUTOMIG FC 71T-1

FCAW WIRE FOR C-Mn STEEL AND 500 MPa TENSILE STRENGTH STEEL

CLASSIFICATION : EN ISO 17632 A

AWS A/SFA 5.20

APPROVALS :

T 42 2 R C/M 2 H5

E71T-1C/M H8

RDSO (Class I)/ABS/BV/DNV
LRA/IRS/IBR

KEY FEATURES :

- Rutile type gas shielded FCW wire
- Low fumes, Minimal spatters
- Easy slag removal, smooth weld bead
- High deposition rate
- Suitable for high quality single and multi pass welds
- All position capability
- Radiographic quality weld

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-18	10-20
80Ar+20CO ₂	18-25	10-20

TYPICAL APPLICATIONS :

- Welding of C-Mn steel with tensile strength up to 500 MPa
- Bridges, Shipbuilding, Towers, Cranes
- Chemical plant machinery, Hulls
- Storage tanks, Structural steel
- Construction equipment, Farm machinery, Rolling stocks
- General carbon steel fabrication

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	S	P
Typical	0.08	1.5	0.4	0.01	0.01
Specification	0.10 max	0.90-1.75	0.55 max	0.025 max	0.025 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -20°C, J
Typical	As Welded	570	470	26	75
Specification		500-640	420 min	22 min	47 min

Hardness, 3 Layer: 140-200 BHN

Diffusible H₂ Content: <5 ml/100 gm

Chemistry and mechanical properties tested with 100% CO₂ shielding gas

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	20 – 30	130 - 300	15
1.6	24 – 32	200 - 380	15

Use 1-2 volts lower when using mix shielding gas.

EQUIVALENT :

SMAW Electrode: **Supabase, Supabase X Plus**

GMAW Wire: **Automig 70S-6**

AUTOMIG FC 121

VACUUM PACKED FCAW WIRE FOR C-Mn STEEL STRUCTURAL FABRICATION

CLASSIFICATION : EN ISO 17632-A AWS A/SFA 5.20

APPROVALS :

T 42 3 R C 2 H5 E71T-1C H8

ABS/BV/DNV/IRS/LRA/NKK

KEY FEATURES :

- Rutile type gas shielded FCW wire
- Low fumes, least spatters
- Easy slag detachability, smooth welds
- High deposition rate than solid wire electrodes
- High quality single and multi pass welding
- Vacuum packed
- Radiographic quality weld

WELDING POSITION :   **DCEP**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-15	10-20

TYPICAL APPLICATIONS :

- Welding of structural and C-Mn steel with tensile strength up to 500 MPa
- Steel structures, Bridges, Vehicles
- Shipbuilding, Towers, Cranes
- Machinery parts, Steel frames
- Rolling stocks, Hulls
- Chemical plant machinery
- General carbon steel fabrication
- Suitable for joining P.No.1 type ASTM SA 36/36M, SA 285/285M Gr.A/B/C, SA 414/414M Gr.A/B/C/D

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	S	P
Typical	0.06	1.4	0.4	0.01	0.01
Specification	0.10 max	0.90-1.75	0.90 max	0.030 max	0.030 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Typical	As Welded	565	460	27	90
Specification		500 min	420 min	22 min	47 min

Hardness, 3 Layer: 200 BHN max

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	21 – 28	130 - 300	15
1.6	25 – 32	220 - 380	15

EQUIVALENT :

SMAW Electrode: **Supabase, Supabase X Plus**

GMAW Wire: **Automig 70S-6**

AUTOMIG FC 71T-5

A BASIC TYPE FCW WIRE FOR 500 MPa TENSILE STRENGTH STEEL

CLASSIFICATION : EN ISO 17632-A

AWS A/SFA 5.20

APPROVALS :

T 46 3 B C/M 2 H5

E71T-5C/M H4

ABS/BV/DNV/IRS/IBR/LRA

KEY FEATURES :

- Basic type gas shielded FCW wire
- Stable arc, Easy slag removal
- Smooth and porosity free weld
- Crack resistant and tough welds especially when welding steels with high carbon content
- Very low level of diffusible H₂ content
- Suitable for high quality single and multi pass welding of thicker sections
- Superb mechanical properties
- All position capability
- Sound radiographic weld quality

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-18	10-20
80Ar+20CO ₂	18-25	10-20

TYPICAL APPLICATIONS :

- Welding of structural and boiler quality steels with minimum UTS upto 510 MPa
- Welding of heavy sections in Pressure vessels, Construction equipment, Off-shore structures, Bridges
- Suitable for IS 226, IS 2002, IS 2062, DIN 17115 HIV
- SA 285 Gr.C, SA 414 Gr.C/D/E
- SA 515 Gr.60/65, SA 516 Gr.60/65

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	S	P
Typical	0.05	1.0	0.3	0.01	0.01
Specification	0.08 max	1.75 max	0.25-0.60	0.025 max	0.025 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Typical	As Welded	575	500	26	50
Specification		530-680	460 min	22 min	47 avg

Diffusible H₂ Content: <4 ml/100 gm

Chemistry and mechanical properties tested with 100% CO₂ shielding gas

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	20 – 30	130 - 300	15
1.6	24 – 32	180 - 380	15

Use 1-2 volts lower when using mix shielding gas.

AUTOMIG FC 71T-1C-J

A RUTILE TYPE FCAW WIRE FOR CARBON STEEL WELDING WITH SUBZERO IMPACT REQUIREMENT

CLASSIFICATION : EN ISO 17632-A

AWS A/SFA 5.20

APPROVALS :

T 42 4 R C 2 H5

E71T-1C-J H8

-

KEY FEATURES :

- Rutile type gas shielded FCW wire
- Stable arc, Easy slag removal
- Smooth and porosity free weld
- Sound radiographic weld quality
- Excellent combination of T1 performance with very good subzero toughness down to -40°C
- All position capability

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-20	10-20

TYPICAL APPLICATIONS :

- Welding of typical structural and carbon steel
SA 36/36M, SA 285/285M Gr.A/B/C, SA 414/414M Gr.A/B/C
- Application in Ship building, Off-shore platform, Pressure vessels, Piping, Low temperature serving storage tanks, Harbor equipment

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.12 max	1.75 max	0.90 max	0.20 max	0.50 max	0.30 max	0.025 max	0.025 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -40°C, J
Specification	As Welded	490 min	400 min	22 min	27 min

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	20 – 30	130 - 300	15
1.6	24 – 32	200 - 380	15

AUTOMIG FC 81T1-B2

LOW ALLOY STEEL FCAW WIRE FOR 1.25Cr-0.5Mo TYPE CREEP RESISTANT ALLOY

CLASSIFICATION : AWS A/SFA 5.29

EN ISO 17634-A

APPROVALS :

E81T1-B2C H8

T CrMo1 R C 2 H5

IBR

KEY FEATURES :

- Rutile type gas shielded FCW wire
- Stable and smooth arc
- Low fumes, Minimal spatters
- Easy slag removal, smooth weld bead
- 1.25Cr-0.5Mo type weld deposit
- Resistant to creep and heat upto 550°C
- Radiographic quality weld

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-15	10-20

TYPICAL APPLICATIONS :

- Welding of 1.25Cr-0.5Mo, 1Cr-0.5Mo steels
- For Cr and Cr-Mo bearing steels at elevated temperature service
- Suitable for 13CrMo44, 15CrMo5, 15Cr3, 16MnCr5, 20MnCr5
- Joining P4 materials ASTM SA 182/182M Gr.F2/F11/F12, SA 213/213M Gr.T11/T12, SA 335/335M Gr.P11/P12, SA 387/387M Gr.2/11/12
- Steam production plants, steam pipes

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	Cr	Mo	S	P
Specification	0.05-0.12	1.25 max	0.80 max	1.0-1.50	0.40-0.65	0.025 max	0.025 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Specification	PWHT: 690°C for 1 Hr	550-690	470 min	19 min

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	20 – 30	130 - 300	15
1.6	24 – 32	200 - 380	15

EQUIVALENT :

SMAW Electrode: **Cromoten**

GMAW Wire: **Automig 80S-B2**

GTAW filler: **Tigfil 80S-B2**

AUTOMIG FC 81T1-Ni1

LOW ALLOY STEEL FCAW WIRE FOR 1%Ni STEEL

CLASSIFICATION : AWS A/SFA 5.29

EN ISO 17632-A

APPROVALS :

E81T1-Ni1C/M H8

T 46 3 1Ni R C/M 2 H5

-

KEY FEATURES :

- Rutile type gas shielded FCW wire
- Typical 1%Ni weld deposit
- Stable and smooth arc
- Low fumes, Minimal spatters
- Easy slag removal, smooth weld bead
- Excellent fracture toughness at -30°C
- Radiographic quality weld

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-18	10-20
Ar+CO ₂	17-22	10-20

TYPICAL APPLICATIONS :

- Welding of high tensile steel 1% Ni steel and equivalent materials
- Storage tanks for low temperature
- Offshore application, Bridges
- Refineries, power plants e.g. pressure vessels and heat exchangers, machinery

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	Ni	Mo	S	P
Specification	0.12 max	1.50 max	0.80 max	0.80-1.10	0.35 max	0.025 max	0.025 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Specification	As Welded	550-690	470 min	19 min	27 min

Diffusible H₂ Content: <5 ml/100 gm

With mixed gas chemical composition and mechanical properties will be higher.

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	22 – 30	130 - 300	15
1.6	24 – 32	200 - 380	15

EQUIVALENT :

SMAW Electrode: **Tenalloy 70C**

GMAW Wire: **Automig 80S-Ni1**

GTAW filler: **Tigfil 80S-Ni1**

AUTOMIG FC 81T1-K2C-J

FCAW WIRE OF 1.5Ni/Mo TYPE WITH IMPROVED IMPACT TOUGHNESS

CLASSIFICATION : AWS A/SFA 5.29

EN ISO 17632-A

APPROVALS :

E81T1-K2C-J H8

T 50 4 1.5Ni R C 2 H5

-

KEY FEATURES :

- Rutile type gas shielded FCW wire
- Stable and smooth arc
- Low fumes, Minimal spatters
- Easy slag removal, smooth weld bead
- Improved impact properties at -40°C
- Suitable for medium to high strength applications
- Radiographic quality weld

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-18	10-20

TYPICAL APPLICATIONS :

- Joining SA455/455M, SA515/515M Gr.60 & 65, SA516/516M Gr.55, 60 & 65, SA533/533M Gr.A,B,C,D Class 1
- Suitable for joining HY 80, HY 100, ASTM A710, A514 steels

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	Ni	Cr	Mo	V	S	P
Specification	0.15 max	0.50-1.75	0.80 max	1.0-2.0	0.15 max	0.35 max	0.05 max	0.025 max	0.025 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -40°C, J
Specification	As Welded	550-690	470 min	19 min	27 min

Diffusible H₂ Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	22 – 30	130 - 300	15
1.6	24 – 32	200 - 380	15

AUTOMIG FC 90T5-K2

LOW ALLOY STEEL FCAW WIRE WITH HIGH STRENGTH AND IMPACT PROPERTIES

CLASSIFICATION : AWS A/SFA 5.29

APPROVALS :

E90T5-K2C H4

-

KEY FEATURES :

- Basic type gas shielded FCW wire
- Stable and smooth arc
- Low fumes, Minimal spatters
- Easy slag removal
- Excellent low temperature toughness down to -50°C
- Suitable for high strength application
- Radiographic quality weld

WELDING POSITION : 



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-18	10-20

TYPICAL APPLICATIONS :

- Welding high strength, fine grained structural steels like N-A-XTRA 55, N-A-XTRA 60, LA60, Sailma 450/450HI
- High strength application of 550-760 MPa minimum yield strength steels
- Suitable for joining HY 80, HY 100, ASTM A710, A514 steels and similar high strength materials
- Offshore structures and structural applications

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	Ni	Cr	Mo	V	S	P
Specification	0.15 max	0.50-1.75	0.80 max	1.0-2.0	0.15 max	0.35 max	0.05 max	0.025 max	0.025 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -50°C, J
Specification	As Welded	620-760	550 min	18 min	27 min

Diffusible H₂ Content: <4 ml/100 gm

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	22 – 30	130 - 300	15
1.6	24 – 32	200 - 380	15

AUTOMIG FC 18M SPL

FCAW WIRE FOR HIGH STRENGTH STEEL

CLASSIFICATION : AWS A/SFA 5.29 EN ISO 18276-A **APPROVALS :**

E91T1-D1C/M H8 T 55 4 MnMo R C/M 2 H5 RDSO Class III

KEY FEATURES :

- Rutile type gas shielded FCW wire
- Stable and smooth arc
- Low fumes, Minimal spatters
- Easy slag removal, smooth weld bead
- Specially designed to produce weld with high tensile strength and moderate impact toughness
- All position capability
- Radiographic quality weld

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-20	10-20
80Ar+20CO ₂	18-25	10-20

TYPICAL APPLICATIONS :

- Welding of High Tensile Steels like IS 8500 Gr.540B, 570B and 590B, IS 2002 Gr.III, IS 1875 CL IIIA
- Welding of SAILMA 450/450HI steel used in CONCOR wagons is a typical application for this wire

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	Mo	S	P
Specification	0.12 max	1.25-2.0	0.80 max	0.25-0.55	0.025 max	0.025 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -40°C, J
Specification	As Welded	630-760	550 min	18 min	27 min

Diffusible H₂ Content: <5 ml/100 gm

With mixed gas chemical composition and mechanical properties will be higher.

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	22 - 30	130 - 300	15
1.6	24 - 32	200 - 380	15

AUTOMIG FC 110T5-K4

LOW ALLOY STEEL FCAW WIRE FOR Q&T HIGH STRENGTH STEELS

CLASSIFICATION : AWS A/SFA 5.29 EN ISO 18276-A **APPROVALS :**

E110T5-K4C H4 T 62 5 Mn2NiCrMo B C 4 H5 IBR

KEY FEATURES :

- Basic type gas shielded FCW wire
- Stable arc, Easy slag removal
- Low fumes, Minimal spatters
- Smooth and porosity free weld
- Excellent low temperature toughness down to -50°C
- Suitable for high strength fine grained steels
- Radiographic quality weld

WELDING POSITION : 



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-18	10-20

TYPICAL APPLICATIONS :

- Welding of high strength, quenched and tempered fine grained steels like N-A-XTRA 65 & 70, USST1, T1B, WELTEN 70C
- Welding of SA533/533M Gr. B/C/D Class 2 & 3, SA543/543M Gr.B/C Class 1 & 2, SA225/225M Gr.C/D, SA738/738M Gr.A/B/C

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	Ni	Cr	Mo	V	S	P
Specification	0.15 max	1.20-2.25	0.80 max	1.75-2.60	0.20-0.60	0.20-0.65	0.03 max	0.025 max	0.025 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -50°C, J
Specification	As Welded	760-900	680 min	15 min	27 min

Diffusible H₂ Content: <4 ml/100 gm

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	22 – 30	130 - 300	15
1.6	24 – 32	200 - 380	15

AUTOMIG FC 180R

FCAW WIRE FOR WEATHERING STEEL JOINING

CLASSIFICATION : AWS A/SFA 5.29

E81T1-W2 C/M H8

APPROVALS :

RDSO Class IV

KEY FEATURES :

- Rutile type gas shielded FCW wire
- Stable and smooth arc
- Low fumes, Minimal spatters
- Easy slag removal, smooth weld bead
- Excellent corrosion resistance
- Matches coloring of ASTM weathering type structural steels
- Optimum combination of strength, ductility and notch toughness
- Radiographic quality weld

WELDING POSITION :   **DCEP**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-18	10-20
Ar+CO ₂	17-22	10-20

TYPICAL APPLICATIONS :

- Welding of typical weathering steel such as ASTM A242, A588, CORTEN A and B grade
- Joining medium high tensile steel type D40S used for ship-building

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	Ni	Cr	Cu	S	P
Specification	0.12 max	0.50-1.30	0.35-0.80	0.40-0.80	0.45-0.70	0.30-0.75	0.025 max	0.025 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Specification	As Welded	550-690	470 min	19 min	27 min

Diffusible H₂ Content: <5 ml/100 gm

With mixed gas chemical composition and mechanical properties will be higher.

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	22 – 30	130 - 300	15
1.6	24 – 32	200 - 380	15

EQUIVALENT :

SMAW Electrode: **Ultracorten III**

MIGINOX FC 308L

GAS SHIELD FLUX CORED WIRE FOR EXTRA LOW CARBON 19/9 TYPE STAINLESS STEEL

CLASSIFICATION : AWS A/SFA 5.22 EN ISO 17633-A

E308LT1-1/4 T 19 9 L R C/M 2

KEY FEATURES :

- Rutile based extra low carbon gas shielded stainless steel FCW wire
- Typical 19Cr-10Ni weld deposit
- Stable arc, low spatter and easy slag removal
- Excellent bead appearance
- Excellent crack resistance and corrosion resistance
- Radiographic weld quality

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-20	10-20
80Ar+20CO ₂	18-25	10-20

TYPICAL APPLICATIONS :

- Welding of 18Cr-8Ni stainless steels of AISI 301, 302, 304, 304L type
- Application in Chemical, Food processing industries, Pipes & tubes

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.04 max	0.50-2.50	1.0 max	18.0-21.0	9.0-11.0	0.5 max	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	520 min	35 min

With mixed gas chemical composition and mechanical properties will be higher.

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	22 - 30	120 - 300	12.5
1.6	24 - 32	200 - 360	12.5

EQUIVALENT :

SMAW Electrode: **Superinox 1C**

GMAW Wire: **Miginox 308L**

GTAW Wire: **Tiginox 308L**

MIGINOX FC 309L

STAINLESS STEEL GAS SHIELDED FLUX CORED WIRE FOR DISSIMILAR STEEL JOINING

CLASSIFICATION : AWS A/SFA 5.22 EN ISO 17633-A

E309LT1-1/4 T 23 12 L R C/M 2

KEY FEATURES :

- An extra low carbon gas shielded stainless steel FCW wire
- Typical 23Cr-13Ni type weld deposit
- Stable arc, low spatter and easy slag removal
- Excellent bead appearance
- Excellent crack and corrosion resistance
- High oxidation resistance upto 1100°C
- Radiographic weld quality

WELDING POSITION :   **DCEP**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-20	10-20
80Ar+20CO ₂	18-25	10-20

TYPICAL APPLICATIONS :

- Welding of AISI 309L type steels and similar grade materials, castings, pipes and tubes
- Joining stainless steel to carbon steel
- For overlays, buttering on carbon and low alloy steels

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.04 max	0.50-2.50	1.0 max	22.0-25.0	12.0-14.0	0.5 max	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	520 min	30 min

With mixed gas chemical composition and mechanical properties will be higher.

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	22 - 32	120 - 300	12.5
1.6	24 - 34	200 - 360	12.5

EQUIVALENT :

SMAW Electrode: **Betanox DL**

GMAW Wire: **Miginox 309L**

GTAW Wire: **Tiginox 309L**

MIGINOX FC 316L

GAS SHIELDED FLUX CORED WIRE FOR 316L TYPE STAINLESS STEEL WELDING

CLASSIFICATION : AWS A/SFA 5.22 EN ISO 17633-A

E316LT1-1/4

T 19 12 3 L R C/M 2

KEY FEATURES :

- Rutile based extra low carbon gas shielded stainless steel FCW wire
- Typical 18Cr/12Ni/2.5Mo weld deposit
- Controlled ferrite content ensures resistance against cracking
- Improved corrosion, pitting and intergranular corrosion resistance
- Stable arc and low spatter
- Excellent bead appearance
- Easy slag removal
- Radiographic weld quality

WELDING POSITION :   **DCEP**

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-20	10-20
80Ar+20CO ₂	18-25	10-20

TYPICAL APPLICATIONS :

- Welding of AISI 316, 316L, 317, 317L, 318 type stainless steel and similar grade
- Welding pipes, tubes and vessels
- Cladding stainless steels
- Application in textile processing, Naval and Chemical environments, Paper and pulp, Paint and dye industries, Food processing industries

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.04 max	0.50-2.50	1.0 max	17.0-20.0	11.0-14.0	2.0-3.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	485 min	30 min

With mixed gas chemical composition and mechanical properties will be higher.

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	22 - 32	120 - 300	12.5
1.6	24 - 34	200 - 360	12.5

EQUIVALENT :

SMAW Electrode: **Superinox 2C**

GMAW Wire: **Miginox 316L**

GTAW Wire: **Tiginox 316L**

MIGINOX FC 347

Nb STABILIZED STAINLESS STEEL GAS SHIELDED FLUX CORED WIRE

CLASSIFICATION : AWS A/SFA 5.22 EN ISO 17633-A

E347T1-1/4

T 19 9 Nb R C/M 2

KEY FEATURES :

- Rutile based gas shielded stainless steel FCW wire
- Typical 19/9/Nb stabilized stainless steel deposit
- Stable arc, low spatter and easy slag removal
- Excellent bead appearance
- Resistance to cracking and embrittlement
- Resistance to intergranular corrosion and scaling upto 850°C
- Radiographic weld quality

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-20	10-20
80Ar+20CO ₂	18-25	10-20

TYPICAL APPLICATIONS :

- Welding stabilized Cr-Ni steels such as AISI 321, 321H, 347, 347H
- Welding of stainless steel tanks, valves, pipes in food, chemical and petrochemical industries
- Fabrication of boiler and gas turbine
- Fabrication of equipments in refineries, power plants, centrifugal pump impellers and shafts, valve faces, seats

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	Cr	Ni
Specification	0.08 max	0.50-2.50	1.0 max	18.0-21.0	9.0-11.0
	Mo	Nb+Ta	Cu	S	P
Specification	0.75 max	8xC-1.0	0.75 max	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	520 min	30 min

With mixed gas chemical composition and mechanical properties will be higher.

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	22 - 32	120 - 300	12.5
1.6	24 - 34	200 - 360	12.5

EQUIVALENT :

SAW Electrode: **Superinox 1B**

GMAW Wire: **Miginox 347**

GTAW Wire: **Tiginox 347**

MIGINOX FC 2209

GAS SHIELDED FLUX CORED WIRE FOR DUPLEX STAINLESS STEEL

CLASSIFICATION : AWS A/SFA 5.22 EN ISO 17633-A

E2209T1-1/4

T 22 9 3 N L R C/M 2

KEY FEATURES :

- Rutile based gas shielded duplex stainless steel FCW wire
- Typical 22Cr/8.5Ni/3Mo/N alloy
- Austenitic-ferritic type weld deposit
- Stable arc, low spatter and easy slag removal
- Uniform and fine ripples
- Excellent combination of high strength and resistance to chloride induced SCC and pitting
- Radiographic weld quality

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-20	10-20
80Ar+20CO ₂	18-25	10-20

TYPICAL APPLICATIONS :

- Welding of 2205, 2209 type duplex stainless steels and similar composition
- Pipelines transporting chloride bearing products and sour gases
- Cast pumps, Valve bodies and sea water handling equipment
- For chemical equipments, heat exchangers, off-shore platforms
- Cladding on carbon and low alloy steels

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt% :

	C	Mn	Si	Cr	Ni
Specification	0.04 max	0.50-2.0	1.0 max	21.0-24.0	7.5-10.0
	Mo	N	Cu	S	P
Specification	2.5-4.0	0.08-0.20	0.50 max	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	690 min	20 min

With mixed gas chemical composition and mechanical properties will be higher.

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	22 - 32	120 - 300	12.5
1.6	24 - 34	200 - 360	12.5

EQUIVALENT :

SMAW Electrode: **Betanox 4462** GMAW Wire: **Miginox 2209**

GTAW Wire: **Tiginox 2209**

AUTOMIG FC 580

FLUX CORED WIRE FOR RESISTANCE AGAINST HIGH ABRASION AND MODERATE IMPACT

ALLOY BASIS :

Medium Carbon High Chromium

KEY FEATURES :

- Basic type flux cored wire
- Smooth arc characteristics
- Low spatter, low fumes
- Non machinable air hardenable deposit
- Resist high stress abrasion and friction
- Can withstand impact load of medium severity
- Resistant to spalling and cracking

WELDING POSITION :



DCEP

Shielding Gas	Gas Flow Rate, LPM	Stickout, mm
CO ₂	10-15	10-20

TYPICAL APPLICATIONS :

- Hard facing applications on carbon steel and manganese components
- Machine parts subjected to high frictional wear
- Repair on damaged cold cutting tools
- Surfacing on austenitic manganese steels
- Screw conveyers, concrete mixer blades, crusher jaws and cones
- Pug mill screws, coal chutes dipper teeth, bucket teeth, crusher plates
- Brick machinery, pellet plant and tamping tools

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

PHYSICAL PROPERTIES :

Condition	Hardness, 3 Layer HRc (BHN)
As Welded	54-57 (550-600)

Machinability	Abrasion Resistance	Impact Resistance	Corrosion Resistance
-	■■■■■	■■■	■■■

PARAMETERS - PACKING DATA :

Ø x L, mm	Voltage, V	Amperage, A	Kg/Spool
1.2	23 - 31	120-250	15
1.6	25 - 33	200 - 380	15

Physical Properties: With increase in number of squares, property improves

AUTOCORE FC 10Cr

SELF SHIELDED FLUX CORED WIRE DEPOSITING MARTENSITIC TYPE ALLOY

ALLOY BASIS :

C, Mn, Si, Cr

KEY FEATURES :

- Self shielded flux cored wire
- Weld deposit is semi-corrosion resistant martensitic type
- Best combination of abrasion and impact wear resistance
- Weld deposit machinable by grinding

WELDING POSITION : 



DCEP

TYPICAL APPLICATIONS :




- Farm equipment
- Forestry tools
- Leading machines and mixers

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

PHYSICAL PROPERTIES :

Condition	Hardness, HRc
As Welded	53-59

Machinability	Abrasion Resistance	Impact Resistance	Corrosion Resistance
-			

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
2.4	25 – 31	200 – 350	12.5
2.8	27 – 32	250 - 400	12.5

Physical Properties: With increase in number of squares, property improves

AUTOCORE FC 16Mn

SELF SHIELDED FLUX CORED WIRE DEPOSITING WORK HARDENING TYPE ALLOY FOR JOINING AND SURFACING

ALLOY BASIS :

C, Mn, Cr

KEY FEATURES :

- Self shielded flux cored wire
- Excellent arc characteristics
- Low spatter, easy slag removal
- Work hardening type alloy for joining and surfacing of Mn steels
- Not recommended for ferritic steels

WELDING POSITION :



DCEP

TYPICAL APPLICATIONS :

- Crusher jaws
- Buffer layer for impact arms
- Buffer layer on crusher hammers

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

PHYSICAL PROPERTIES :

Condition	Hardness, HRc
As Welded	17-20
Work Hardened	40-42

Machinability



Abrasion Resistance



Impact Resistance



Corrosion Resistance



PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
2.4	25 – 31	200 – 350	12.5
2.8	27 – 32	250 - 400	12.5

Physical Properties: With increase in number of squares, property improves

AUTOCORE FC CrC

SELF SHIELDED FLUX CORED WIRE FOR HIGH ABRASION APPLICATIONS

ALLOY BASIS :

C, Mn, Si, Cr

KEY FEATURES :

- Self shielded flux cored wire
- Excellent arc characteristics
- Low spatter
- High percentage of Cr and C render highest resistance against gouging abrasion

WELDING POSITION : 



DCEP

TYPICAL APPLICATIONS :



- Grinding rolls of cement mill and coal mill
- Table liners, coke chutes
- Parts of earth moving and mining equipments

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

PHYSICAL PROPERTIES :

Condition	Hardness, HRc
As Welded	60-62

Machinability	Abrasion Resistance	Impact Resistance	Corrosion Resistance
-		-	

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
2.4	25 – 31	200 – 350	12.5
2.8	27 – 32	250 - 400	12.5

Physical Properties: With increase in number of squares, property improves

AUTOCORE FC 65

SELF SHIELDED FLUX CORED WIRE FOR ELEVATED TEMPERATURE HIGH ABRASION APPLICATIONS

ALLOY BASIS :

Cr, Mn, Nb, Mo, V, W

KEY FEATURES :

- Self shielded flux cored wire
- Excellent arc characteristics
- Low spatter
- Complex carbide alloy
- Suitable for high abrasion at elevated temperatures

WELDING POSITION : 



DCEP

TYPICAL APPLICATIONS :



- Sinter star breaker
- BLT chute liners
- Throat armor plates

STORAGE / HANDLING :

Keep dry and follow handling instructions mentioned on the box

PHYSICAL PROPERTIES :

Condition	Hardness, HRC
As Welded	60-63

Machinability	Abrasion Resistance	Impact Resistance	Corrosion Resistance
-		-	

PARAMETERS - PACKING DATA :

Ø, mm	Voltage, V	Amperage, A	Kg/Spool
2.4	25 – 31	200 – 350	12.5
2.8	27 – 32	250 - 400	12.5

Physical Properties: With increase in number of squares, property improves

C-Mn WIRES FOR SUBMERGED ARC WELDING

COPPER COATED C-Mn STEEL SOLID WIRES

CLASSIFICATION :

Product	EN 756	AWS A/SFA 5.17
AUTOMELT EL8	S1	EL8
AUTOMELT EL12	S1	EL12
AUTOMELT EM12K	S2Si	EM12K
AUTOMELT EH10K	S3	EH10K
AUTOMELT EH12K	S3Si	EH12K
AUTOMELT EH11K		EH11K
AUTOMELT EH14	S4	EH14

KEY FEATURES :

- Uniform copper coating
- Close dimensional tolerances
- Smooth feeding
- Controlled Chemistry

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% (Typical, Including Cu in coating):

Product	C	Mn	Si	Cu
AUTOMELT EL8	0.06	0.50	0.03	0.1
AUTOMELT EL12	0.09	0.50	0.03	0.1
AUTOMELT EM12K	0.09	1.00	0.20	0.1
AUTOMELT EH10K	0.08	1.40	0.15	0.1
AUTOMELT EH12K	0.10	1.55	0.25	0.1
AUTOMELT EH11K	0.09	1.50	0.90	0.1
AUTOMELT EH14	0.12	1.70	0.04	0.1

DIAMETERS - PACKING DATA :

PRODUCT	Ø, mm	Kg / Spool	Kg / Bobbin	SAWPAC DRUM, Kg
AUTOMELT EL8	1.6, 2.0, 2.5, 3.15, 4.0, 5.0	25	250	1.6 - 100 / 250 Others – 350 / 500
AUTOMELT EL12	1.6, 2.0, 2.5, 3.15, 4.0, 5.0, 5.50	25	250	1.6 - 100 / 250 Others – 350 / 500
AUTOMELT EM12K	1.6, 2.0, 2.5, 3.15, 4.0, 5.0	25	250	1.6 - 100 / 250 Others – 350 / 500
AUTOMELT EH10K	2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EH12K	2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EH11K	1.6, 2.0, 2.5, 3.15, 4.0, 5.0	25	250	1.6 - 100 / 250 Others – 350 / 500
AUTOMELT Eh14	2.5, 3.15, 4.0, 5.0	25	250	350 / 500

WIRES FOR SUBMERGED ARC WELDING OF CREEP RESISTANT STEELS

COPPER COATED LOW ALLOY STEEL SOLID WIRES

CLASSIFICATION :

Product	EN 756	EN 12070	AWS A/SFA 5.23
AUTOMELT EA2	S2Mo		EA2
AUTOMELT EA3	S4Mo		EA3
AUTOMELT EA4	S3Mo	S MnMo	EA4
AUTOMELT EA2TiB			EA2TiB
AUTOMELT EB2		S CrMo1	EB2
AUTOMELT EB2R		S CrMo1	EB2R
AUTOMELT EB3		S CrMo2	EB3
AUTOMELT EB3R		S CrMo2	EB3R
AUTOMELT EB91		S CrMo91	EB91

KEY FEATURES :

- Uniform copper coating
- Close dimensional tolerances
- Smooth feeding
- Controlled Chemistry

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% (Typical, Including Cu in coating):

Product	C	Mn	Si	Cr	Mo	Cu	Other
AUTOMELT EA2	0.09	1.10	0.15		0.50	0.10	
AUTOMELT EA3	0.09	1.80	0.15		0.50	0.10	
AUTOMELT EA4	0.09	1.40	0.15		0.50	0.10	
AUTOMELT EA2TiB	0.09	1.10	0.15		0.50	0.10	Ti-0.1; B-0.013
AUTOMELT EB2	0.10	0.60	0.15	1.25	0.50	0.10	
AUTOMELT EB2R	0.10	0.60	0.15	1.25	0.50	0.10	S-0.007; P-0.008; As-0.004; Sn-0.004; Sb-0.004; Bruscato factor X <15
AUTOMELT EB3	0.10	0.60	0.15	2.25	1.00	0.10	
AUTOMELT EB3R	0.10	0.60	0.15	2.25	1.00	0.10	S-0.007; P-0.008; As-0.004; Sn-0.004; Sb-0.004; Bruscato factor X <15
AUTOMELT EB91	0.10	0.40	0.25	9.00	1.00	0.07	Ni-0.5; V-0.2; Nb-0.05; N-0.05; Al-0.005

DIAMETERS - PACKING DATA :

PRODUCT	Ø, mm	Kg / Spool	Kg / Bobbin	SAWPAC DRUM, Kg
AUTOMELT EA2	2.0, 2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EA3	2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EA4	2.0, 2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EA2TiB	2.0, 2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EB2	2.0, 2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EB2R	2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EB3	2.0, 2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EB3R	2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EB91	2.5, 3.15, 4.0, 5.0	25	250	350 / 500

WIRES FOR SUBMERGED ARC WELDING FOR CRYOGENIC APPLICATIONS

COPPER COATED LOW ALLOY STEEL SOLID WIRES

CLASSIFICATION :

Product	EN 756	AWS A/SFA 5.23
Automelt ENi1	S2Ni1	ENi1
Automelt ENi2	S2Ni2	ENi2
Automelt ENi3	S2Ni3	ENi3

KEY FEATURES :

- Uniform copper coating
- Close dimensional tolerances
- Smooth feeding
- Controlled Chemistry

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% (Typical, Including Cu in coating):

Product	C	Mn	Si	Ni	Cu
AUTOMELT ENi1	0.10	1.00	0.20	1.00	0.10
AUTOMELT ENi2	0.10	1.00	0.20	2.20	0.10
AUTOMELT ENi3	0.10	1.00	0.20	3.25	0.10

DIAMETERS - PACKING DATA :

PRODUCT	Ø, mm	Kg / Spool	Kg / Bobbin	SAWPAC DRUM, Kg
AUTOMELT ENi1	2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT ENi2	2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT ENi3	2.5, 3.15, 4.0, 5.0	25	250	350 / 500

WIRES FOR SUBMERGED ARC WELDING OF HIGH STRENGTH STEELS

COPPER COATED LOW ALLOY STEEL SOLID WIRES

CLASSIFICATION :

Product	EN 756	EN 12070	AWS A/SFA 5.23
AUTOMELT EF1	S2Ni1Mo		EF1
AUTOMELT EF2			EF2
AUTOMELT EF3	S3Ni1Mo		EF3
AUTOMELT EF4			EF4
AUTOMELT EF5		S3Ni2.5CrMo	EF5
AUTOMELT EG1			EG

KEY FEATURES :

- Uniform copper coating
- Close dimensional tolerances
- Smooth feeding
- Controlled Chemistry

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% (Typical, Including Cu in coating):

Product	C	Mn	Si	Mo	Ni	Cr	Cu
AUTOMELT EF1	0.10	1.20	0.25	0.45	1.00		0.10
AUTOMELT EF2	0.12	1.80	0.20	0.50	0.60		0.10
AUTOMELT EF3	0.12	1.75	0.20	0.55	0.90		0.10
AUTOMELT EF4	0.18	0.80	0.25	0.25	0.60	0.50	0.10
AUTOMELT EF5	0.12	1.80	0.15	0.50	2.50	0.40	0.10
AUTOMELT EG1	0.10	1.60	0.30	0.60	2.50		0.10

DIAMETERS - PACKING DATA :

PRODUCT	Ø, mm	Kg / Spool	Kg / Bobbin	SAWPAC DRUM, Kg
AUTOMELT EF1	2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EF2	2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EF3	2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EF4	2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EF5	2.5, 3.15, 4.0, 5.0	25	250	350 / 500
AUTOMELT EG1	2.5, 3.15, 4.0, 5.0	25	250	350 / 500

WIRES FOR SUBMERGED ARC WELDING OF STAINLESS STEELS

STAINLESS STEEL SOLID WIRES

CLASSIFICATION :

Product	EN ISO 14343-A	AWS A/SFA 5.9
SUBINOX 308L	S 19 9 L	ER308L
SUBINOX 316L	S 19 12 3 L	ER316L
SUBINOX 309L	S 23 12 L	ER309L
SUBINOX 347	S 19 9 Nb	ER347
SUBINOX 410	S 13	ER410
SUBINOX 410NiMo	S 13 4	ER410NiMo
SUBINOX 430	S 17	ER430
SUBINOX 2209	S 22 9 3 NL	ER2209
SUBINOX 2553		ER2553
SUBINOX 2594		ER2594

KEY FEATURES :

- Smooth feeding
- Close dimensional tolerances
- Controlled Chemistry

CHEMICAL COMPOSITION OF BARE SOLID WIRE, Wt% (Typical, Including Cu in coating):

Product	C	Mn	Si	Cr	Ni	Mo	Other Elements
SUBINOX 308L	0.025	1.50	0.40		9.3	--	--
SUBINOX 316L	0.025	1.50	0.40		11.5	2.2	--
SUBINOX 309L	0.025	1.50	0.40		12.2	--	--
SUBINOX 347	0.03	1.50	0.30	0.50	9.7	--	Nb + Ta – 0.60
SUBINOX 410	0.05	0.40	0.30	0.40	--	--	--
SUBINOX 410NiMo	0.03	0.40	0.30		4.5	0.45	--
SUBINOX 430	0.04	0.40	0.30		--	--	--
SUBINOX 2209	0.02	1.20	0.45		8.0	2.7	N – 0.12
SUBINOX 2553	0.02	0.60	0.40		5.5	3.5	Cu – 2.0
SUBINOX 2594	0.015	0.55	0.40		9.1	4.0	N – 0.25, W – 0.10

DIAMETERS - PACKING DATA :

PRODUCT	Ø, mm	Kg / Spool	Kg / Bobbin	SAWPAC DRUM, Kg
SUBINOX 308L	0.8, 1.2, 1.6, 2.0, 2.5, 3.15, 4.0, 5.0	0.8 to 1.6mm – 12.5 kg spool	2.0 to 5.0mm - 250	0.8 to 1.6 – 100 & 250
SUBINOX 316L				
SUBINOX 309L				
SUBINOX 347		1.6 to 5.0 – 25Kg Spool		2.0 to 5.0 - 350 & 500
SUBINOX 410				
SUBINOX 410NiMo				
SUBINOX 430				
SUBINOX 2209				
SUBINOX 2553				
SUBINOX 2594				

NOTE ON SAW FLUXES

1. Basicity of the Flux:

Basicity is ratio of Basic oxides to Acidic oxides present in the flux. For the basicities mentioned in AWL literature, formula devised by Boniszewski is used, which is as below;

$$\text{Basicity} = \frac{\text{CaO} + \text{MgO} + \text{CaF}_2 + \text{NaO} + \text{K}_2\text{O} + \frac{1}{2}(\text{MnO} + \text{FeO})}{\text{SiO}_2 + \frac{1}{2}(\text{Al}_2\text{O}_3 + \text{TiO}_2 + \text{ZrO}_2)}$$

Based on Basicity No. Fluxes are divided in following Types:

- Acidic – Basicity 0.80
- Neutral – $0.80 > \text{Basicity} > 1.20$
- Basic – $1.20 > \text{Basicity} > 2.00$
- High Basic – Basicity > 2.00

1. Activity of Fluxes:

Activity of the flux is devised by Wall Neutrality Number. Wall Neutrality Number is measured as below:

- Make two chemistry pads with same wire flux combination, same welding parameters, except voltage used for 2nd pad is increased by 8V.
- They are analyzed for Si and Mn.
- The wall neutrality Number is calculated by following formula:
 $\text{Wall Neutrality Number} = 100 (|\Delta \% \text{Si}| + |\Delta \% \text{Mn}|)$
 $\Delta \% \text{Si}$ – Difference in Si in two pads
 $\Delta \% \text{Mn}$ – Difference in Mn in two pads
 Wall Neutrality Number is absolute value, ignoring positive and negative sign.

Based on Activity, Fluxes are divided into following types:

- Active Flux – Wall Neutrality Number > 35
- Neutral Flux – Wall Neutrality Number > 35

3. Storage and Re-drying Condition s for SAW Fluxes:

Storage:

- It is recommended that submerged-arc-welding fluxes are stored in controlled conditions: Air temperature: 18 °C min. Relative Humidity: 60% max. Extended periods of exposure in workshops should be avoided and precautions taken to prevent direct contamination by moisture, oil, grease and rust.
- It is recommended that flux is to be re-dried at 300°C for 2 Hrs

4. Packing of Fluxes:

SAW Fluxes are available in following Packing:

S.N.	Packing	Net Wt (Kg)
1	Poly Lined Non-woven Plastic Bag	30
2	MS Drum	30
3	MS Drum	100
4	Vacuum Pack	5



AUTOMELT A55 (AUTOMELT Gr II)

GENERAL DESCRIPTION:

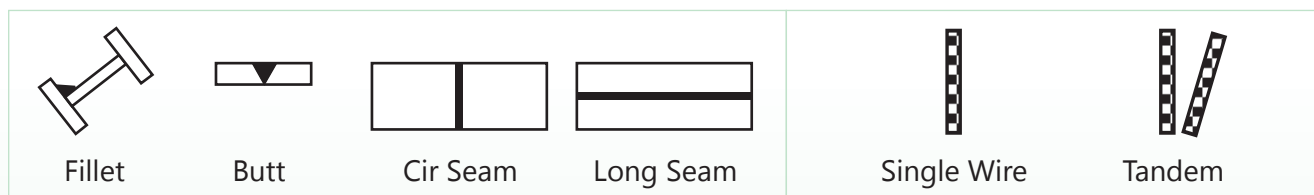
- Agglomerated Flux
- Aluminate- Rutile Type Flux
- Acidic Flux having Basicity Index of 0.6
- Active Flux with moderate Si and Mn pick-up
- For Single and Multi-pass Butt and fillet welding (With EM12K Wire restrict to 15mm thickness for multi-pass)
- For Carbon Steels
- Suitable for Single Wire & Tandem System
- Suitable for Welding Speeds of 0.35 – 0.60 m/min
- Grain Size – 0.25-2.00mm
- Type of Current – DCEP / AC 800A
- Wall Neutrality Number with EL8 Wire is 56

CLASSIFICATION :

With Wire	AWS 5.17/5.23	Single / Multi-pass
AUTOMELT EL8	F7AZ/PZ-EL8	Multi-pass
AUTOMELT EL12	F7AZ/PZ-EL12	Multi-pass
AUTOMELT EM12K	F7A0/P0-EM12K	Limited Multi-pass
AUTOMELT EH11K	F7AZ-EH12K	Single Pass

TYPICAL APPLICATIONS :

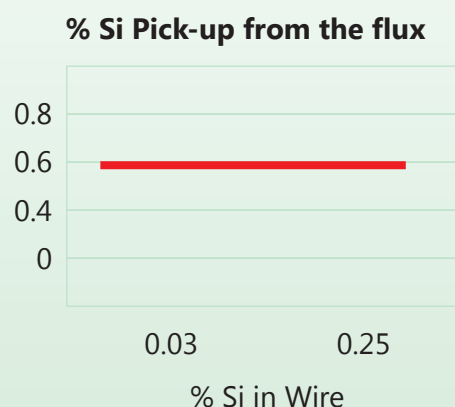
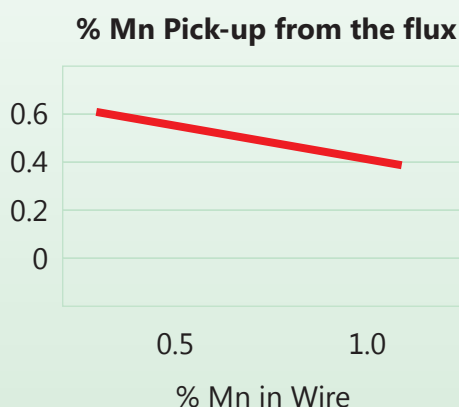
- General Structural Welding
- Long Seam and Cir Seam Welding of Pipes
- Fabrication of Cylinders and vessels



APPROVALS:

RDSO, ABS, BV, DNV, IRS, LRA, MND, IBR

ACTIVITY OF THE FLUX:



(continue...)

AUTOMELT A55 (AUTOMELT Gr II)

(continue...)

CHEMICAL COMPOSITION OF FLUX:

$\text{SiO}_2 + \text{TiO}_2$	$\text{CaO} + \text{MgO}$	$\text{Al}_2\text{O}_3 + \text{MnO}$	CaF_2
30	10	45	15

Chemical Composition of Undiluted Weld Metal (wt%), Typical:

With wire	C	Mn	Si
Automelt EL8	0.06	1.10	0.65
Automelt EL12	0.08	1.20	0.65
Automelt EM12K	0.07	1.40	0.80
Automelt EH11K	0.07	1.80	1.10

Mechanical properties of All Weld Metal, Typical:

With wire	Condition	UTS, MPa	YS, MPa	% E	CVN Impact	
					0°C	-20°C
Automelt EL8	AW	530	440	25	50	--
Automelt EL8	PW	500	420	27	60	--
Automelt EL12	AW	540	450	26	50	--
Automelt EL12	PW	510	430	28	60	--
Automelt EM12K	AW	540	450	28	--	40
Automelt EM12K	PW	510	430	30	--	50

AW – As Welded; PW – After Post weld heat treatment of 620°C for 1 hour

The chemistry and mechanical properties will depend on actual wire chemistry and arc voltage

AUTOMELT A57

GENERAL DESCRIPTION:

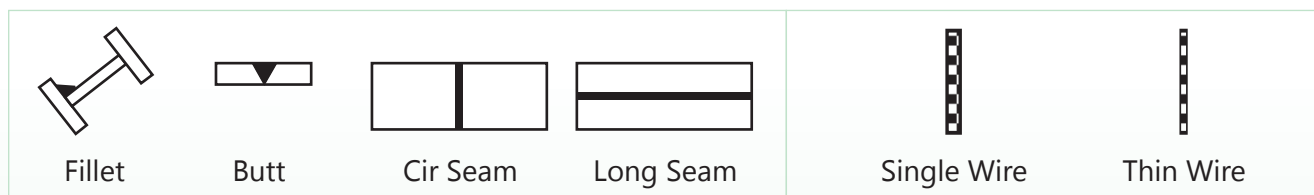
- Agglomerated Flux
- Aluminate- Rutile Type Flux
- Acidic Flux having Basicity Index of 0.5
- Active Flux with moderate Si and Mn pick-up
- For Single and Multi-pass Butt and fillet welding (With EM12K Wire restrict to 15mm thickness for multi-pass)
- For Carbon Steels
- Suitable for Single Wire System & thin wire SAW
- Suitable for Welding Speeds of 0.20 – 0.75 m/min
- Grain Size – 0.25-1.60 mm
- Type of Current – DCEP 800A
- Wall Neutrality Number with EL8 Wire is 60

CLASSIFICATION :

With Wire	AWS 5.17/5.23	Single / Multi-pass
AUTOMELT EL8	F7AZ/PZ-EL8	Multi-pass
AUTOMELT EL12	F7AZ/PZ-EL12	Multi-pass
AUTOMELT EM12K	F7A0/P0-EM12K	Limited Multi-pass
AUTOMELT EH11K	F7AZ-EH12K	Single Pass

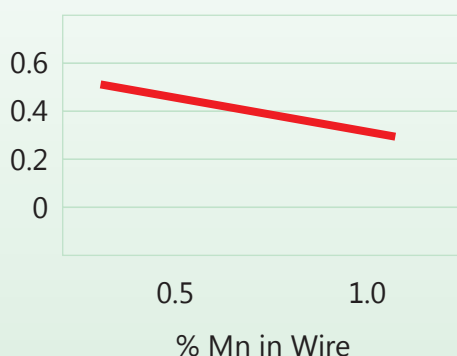
TYPICAL APPLICATIONS :

- General Structural Welding
- Long Seam and Cir Seam Welding of Pipes
- Fabrication of Cylinders and vessels

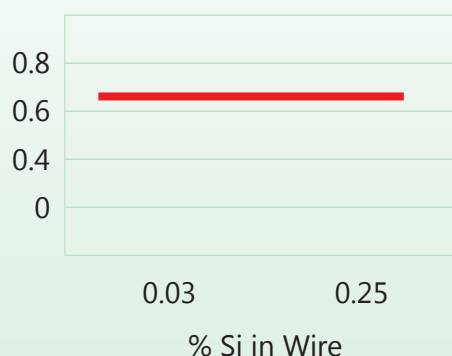


ACTIVITY OF THE FLUX:

% Mn Pick-up from the flux



% Si Pick-up from the flux



(continue...)

AUTOMELT A57

(continue...)

CHEMICAL COMPOSITION OF FLUX:

$\text{SiO}_2 + \text{TiO}_2$	$\text{CaO} + \text{MgO}$	$\text{Al}_2\text{O}_3 + \text{MnO}$	CaF_2
25	10	55	5

Chemical Composition of Undiluted Weld Metal (wt%), Typical:

With wire	C	Mn	Si
Automelt EL8	0.07	1.00	0.70
Automelt EL12	0.08	1.10	0.70
Automelt EM12K	0.07	1.30	0.80
Automelt EH11K	0.07	1.90	1.20

Mechanical properties of All Weld Metal, Typical:

With wire	Condition	UTS, MPa	YS, MPa	% E	CVN Impact (J) 0°C
Automelt EL8	AW	530	440	25	40
Automelt EL8	PW	500	420	27	50
Automelt EL12	AW	540	450	26	40
Automelt EL12	PW	510	430	28	50
Automelt EM12K	AW	540	450	28	40

AW – As Welded; PW – After Post weld heat treatment of 620°C for 1 hour

The chemistry and mechanical properties will depend on actual wire chemistry and arc voltage

AUTOMELT A81

GENERAL DESCRIPTION:

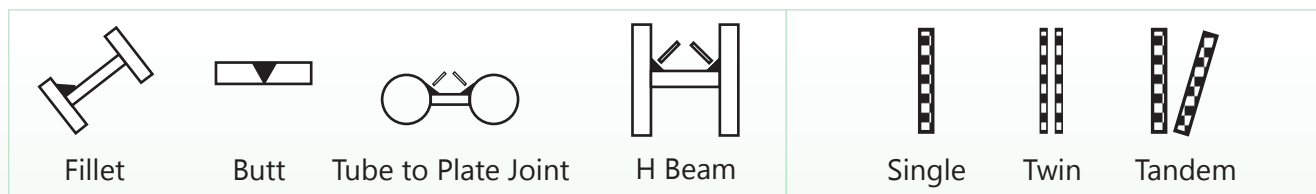
- Agglomerated Flux
- Aluminate-Rutile Type Flux
- Acidic Flux having Basicity Index of 0.6
- Active Flux with Moderate Si and Mn pick-up
- For Single and Multi-pass Butt and fillet welding at high speeds
- For Low Alloy Steels
- Suitable for Single and Multi-Wire, twin and tandem wire system
- Suitable for Welding Speeds of 0.40 – 1.20 m/min
- Grain Size – 0.25-1.60 mm
- Type of Current – DCEP / AC 1000A
- Wall Neutrality Number with EM12K Wire is 56

CLASSIFICATION :

With Wire	AWS 5.17/5.23	Single / Multi-pass
AUTOMELT EM12K	F7AZ-EM12K	Limited Multi-pass
AUTOMELT EA2	F8AZ-EA2-A2	Limited Multi-pass
AUTOMELT EA4	F8AZ-EA4-A4	Limited Multi-pass
AUTOMELT EB2	F9PZ-EB2-B2	Limited Multi-pass
AUTOMELT EB3	F9PZ-EB3-B3	Limited Multi-pass

TYPICAL APPLICATIONS :

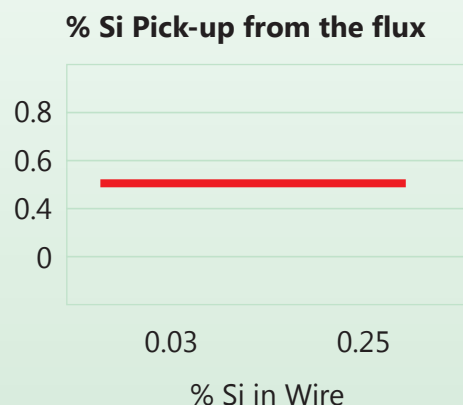
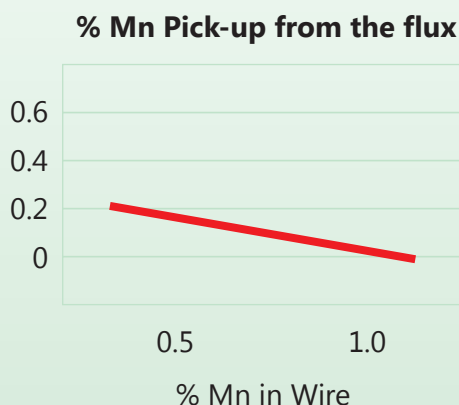
- High Speed Butt & Fillet Welding
- Tube to Plate Joint
- Fabrication of H & I Beams
- Fabrication of Boilers



APPROVALS:

IBR

ACTIVITY OF THE FLUX:



(continue...)

AUTOMELT A81

(continue...)

CHEMICAL COMPOSITION OF FLUX:

$\text{SiO}_2 + \text{TiO}_2$	$\text{CaO} + \text{MgO}$	$\text{Al}_2\text{O}_3 + \text{MnO}$	CaF_2
25	10	50	10

Chemical Composition of Undiluted Weld Metal (wt%), Typical:

With wire	C	Mn	Si	Cr	Mo
Automelt EM12K	0.07	1.20	0.70	--	--
Automelt EA2	0.06	1.20	0.70	--	0.50
Automelt EA4	0.06	1.50	0.70	--	0.50
Automelt EB2	0.06	1.15	0.70	1.10	0.50
Automelt EB3	0.06	1.15	0.70	2.10	1.00

Mechanical properties of All Weld Metal, Typical:

With wire	Condition	UTS, MPa	YS, MPa	% E	CVN Impact (J) 0°C
Automelt EM12K	AW	540	430	26	40
Automelt EA2	AW	570	500	23	40
Automelt EA4	AW	600	520	23	40
Automelt EB2	PW	640	570	20	40
Automelt EB3	PW	700	600	19	40

AW – As Welded; PW – After Post weld heat treatment of 690°C for 1 hour

The chemistry and mechanical properties will depend on actual wire chemistry and arc voltage



AUTOMELT A82

GENERAL DESCRIPTION:

- Agglomerated Flux
- Aluminate-Rutile Type Flux
- Acidic Flux having Basicity Index of 0.6
- Active Flux with Moderate Si and Mn pick-up
- For Single pass Butt and fillet welding at very high speeds
- For Carbon Steels
- Suitable for Single and twin wire system
- Suitable for Welding Speeds of 0.40 – 2.0 m/min
- Grain Size – 0.25-1.20 mm
- Type of Current – DC / AC 1000A
- Wall Neutrality Number with EM12K Wire is 85

CLASSIFICATION :

With Wire	AWS 5.17/5.23	Single / Multi-pass
AUTOMELT EL8	F7AZ-EL8	Limited Multi-pass
AUTOMELT EL12	F7AZ-EL12	Limited Multi-pass
AUTOMELT EM12K	F7AZ-EM12K	Limited Multi-pass

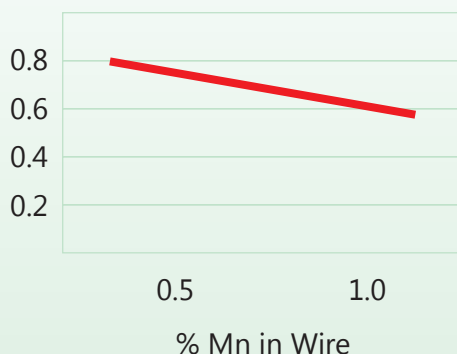
TYPICAL APPLICATIONS :

- Structural Welding
- High Speed Fillet Welding
- Fabrication of H & I Beams
- Fabrication of Boilers

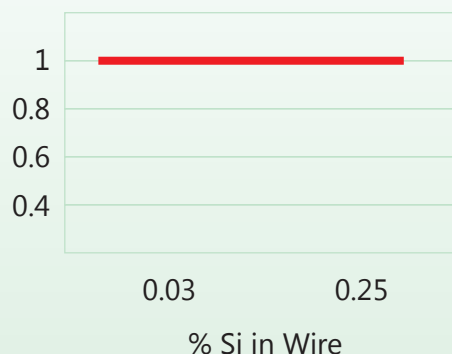


ACTIVITY OF THE FLUX:

% Mn Pick-up from the flux



% Si Pick-up from the flux



(continue...)

AUTOMELT A82

(continue...)

CHEMICAL COMPOSITION OF FLUX:

$\text{SiO}_2 + \text{TiO}_2$	$\text{CaO} + \text{MgO}$	$\text{Al}_2\text{O}_3 + \text{MnO}$	CaF_2
25	10	50	10

Chemical Composition of Undiluted Weld Metal (wt%), Typical:

With wire	C	Mn	Si
Automelt EL8	0.06	1.20	1.00
Automelt EL12	0.07	1.20	1.00
Automelt EM12K	0.06	1.60	1.30

Mechanical properties of All Weld Metal, Typical:

With wire	Condition	UTS, MPa	YS, MPa	% E	CVN Impact (J) 0°C
Automelt EL8	AW	550	460	22	40
Automelt EL12	AW	560	460	23	40
Automelt EM12K	AW	560	470	23	40

AW – As Welded

The chemistry and mechanical properties will depend on actual wire chemistry and arc voltage

AUTOMELT A61

GENERAL DESCRIPTION:

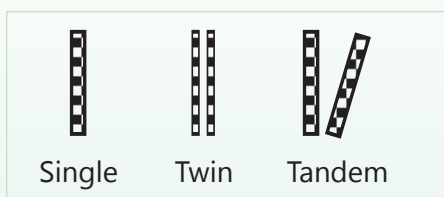
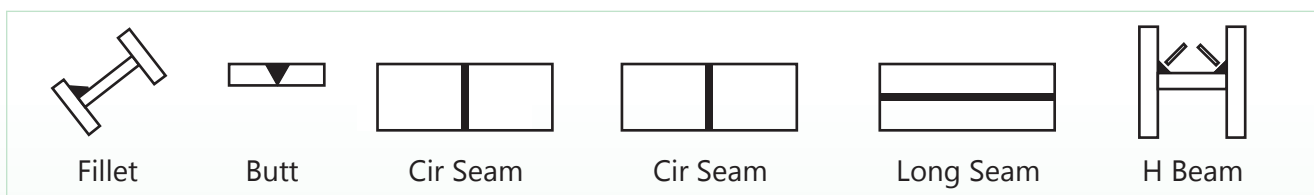
- Agglomerated Flux
- Manganese-Silicate Type Flux
- Neutral Flux having Basicity Index of 1.0
- Active Flux with high Si and Mn pick-up
- For Single and Multi-pass Butt and fillet welding at high speeds (With EM12K Wire restrict to 15mm thickness for multi-pass)
- For Carbon Steels
- Suitable for Single and Multi-Wire, twin and tandem wire system
- Suitable for Welding Speeds of 0.40 – 2.00 m/min
- Grain Size – 0.25-1.60 mm
- Type of Current – DC / AC 1200A
- Wall Neutrality Number with EM12K Wire is 85

CLASSIFICATION :

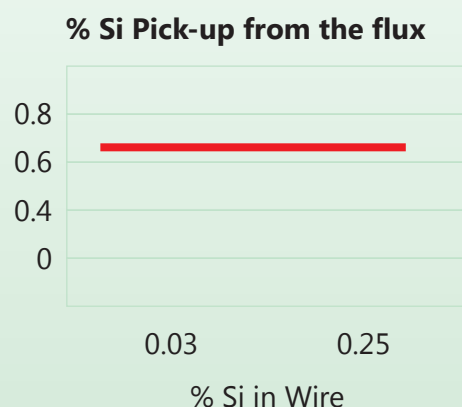
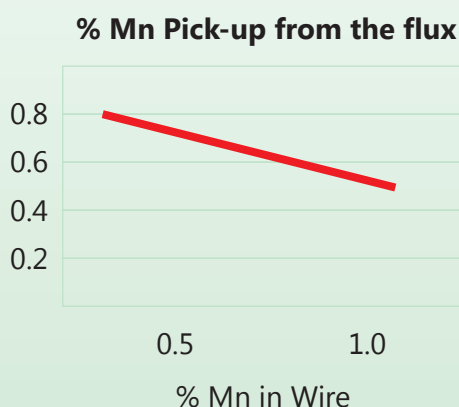
With Wire	AWS 5.17/5.23	Single / Multi-pass
AUTOMELT EL8	F7A0-EL8	Multi-pass
AUTOMELT EL12	F7A0-EL12	Multi-pass
AUTOMELT EM12K	F7A2/P2-EM12K	Limited Multi-pass

TYPICAL APPLICATIONS :

- High Speed Butt Welding
- Fabrication of H & I Beams (thickness above 6mm)
- Spiral, long Seam and Cir Seam Welding of Pipes



ACTIVITY OF THE FLUX:



(continue...)

AUTOMELT A61

(continue...)

CHEMICAL COMPOSITION OF FLUX:

$\text{SiO}_2 + \text{TiO}_2$	$\text{CaO} + \text{MgO}$	$\text{Al}_2\text{O}_3 + \text{MnO}$	CaF_2
35	15	14	5

Chemical Composition of Undiluted Weld Metal (wt%), Typical:

With wire	C	Mn	Si
Automelt EL8	0.06	1.30	0.70
Automelt EL12	0.07	1.30	0.70
Automelt EM12K	0.06	1.30	0.90

Mechanical properties of All Weld Metal, Typical:

With wire	Condition	UTS, MPa	YS, MPa	% E	CVN Impact (J) 0°C
Automelt EL8	AW	530	440	25	-
Automelt EL12	AW	540	450	26	-
Automelt EM12K	AW	510	430	28	40
Automelt EM12K	PW	540	450	28	40

AW – As Welded; PW – After Post weld heat treatment of 620°C for 1 hour

The chemistry and mechanical properties will depend on actual wire chemistry and arc voltage


GENERAL DESCRIPTION:

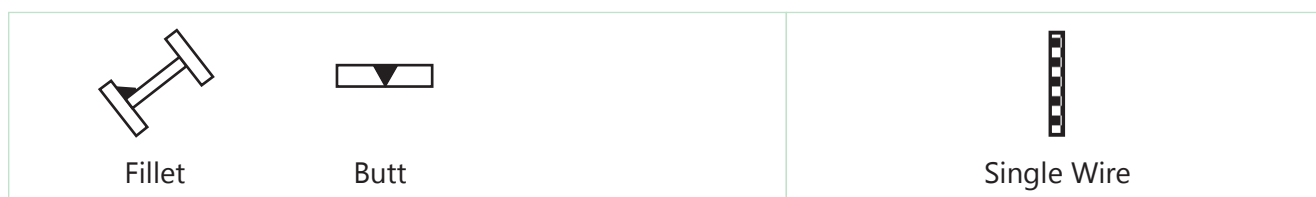
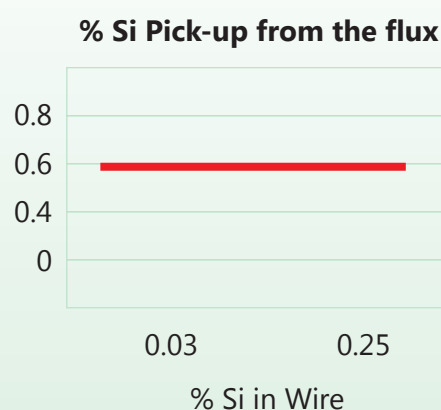
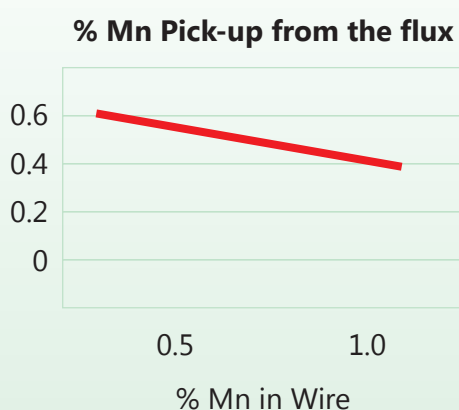
- Agglomerated Flux
- Aluminate- Rutile Type Flux
- Neutral Flux having Basicity Index of 0.9
- Active Flux with moderate Si and Mn pick-up
- For Multi-pass Butt and fillet welding
- For Carbon Steels
- Suitable for Single Wire Suitable for Welding Speeds of 0.35 – 0.60 m/min
- Grain Size – 0.25-2.00mm
- Type of Current – DCEP 800A
- Wall Neutrality Number with EL8 Wire is 50

CLASSIFICATION :

With Wire	AWS 5.17/5.23	Single / Multi-pass
AUTOMELT EL8	F7AZ/PZ-EL8	Multi-pass
AUTOMELT EL12	F7AZ/PZ-EL12	Multi-pass
AUTOMELT EM12K	F7AZ/PZ-EM12K	Limited Multi-pass

TYPICAL APPLICATIONS :

- General Structural Welding
- Fabrication of Cylinders and vessels


APPROVALS:
ACTIVITY OF THE FLUX:

CHEMICAL COMPOSITION OF FLUX:

$\text{SiO}_2 + \text{TiO}_2$	$\text{CaO} + \text{MgO}$	$\text{Al}_2\text{O}_3 + \text{MnO}$	CaF_2
35	15	35	15

(continue...)



(continue...)

Chemical Composition of Undiluted Weld Metal (wt%), Typical:

With wire	C	Mn	Si
Automelt EL8	0.06	1.10	0.65
Automelt EL12	0.08	1.20	0.65
Automelt EM12K	0.07	1.40	0.80

Mechanical properties of All Weld Metal, Typical:

With wire	Condition	UTS, MPa	YS, MPa	% E	CVN Impact (J) 0°C
Automelt EL8	AW	530	440	25	40
Automelt EL8	PW	500	420	27	50
Automelt EL12	AW	540	450	26	40
Automelt EL12	PW	510	430	28	50
Automelt EM12K	AW	540	450	28	40
Automelt EM12K	PW	510	430	30	50

AW – As Welded; PW – After Post weld heat treatment of 620°C for 1 hour

The chemistry and mechanical properties will depend on actual wire chemistry and arc voltage



AUTOMELT B31 (AUTOMELT Gr IV)

GENERAL DESCRIPTION:

- Agglomerated Flux
- Fluoride-Basic Type Flux
- Acidic Flux having Basicity Index of 1.5
- Mildly Active Flux with moderate Si and Mn pick-up with Low Mn Wires and Mn burnout with high Mn wires
- Multi-pass Butt and Fillet Welding
- For Carbon & Low Alloy Steels
- Suitable for Single Wire System
- Suitable for Welding Speeds of 0.40 – 0.60 m/min
- Grain Size – 0.25-2.00mm
- Type of Current – DCEP
- Wall Neutrality Number with EH14 Wire is 7

CLASSIFICATION :

With Wire	AWS 5.17/5.23	Single / Multi-pass
AUTOMELT EL8	F6A2-EL8	Multi-pass
AUTOMELT EL12	F6A2-EL12	Multi-pass
AUTOMELT EM12K	F7A2-EM12K	Multi-pass
AUTOMELT EH14	F7A4/P4-EH14	Multi-pass

TYPICAL APPLICATIONS :

- General Structural Welding
- Boiler and Pressure Vessel Fabrication



Fillet



Single V



Double V

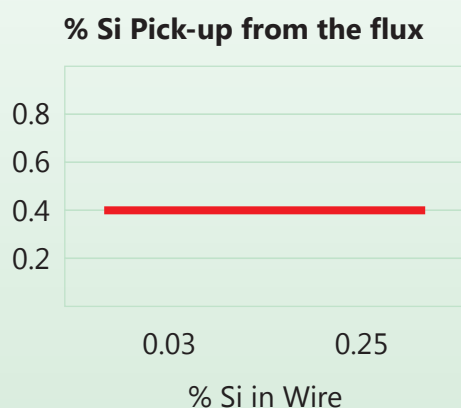
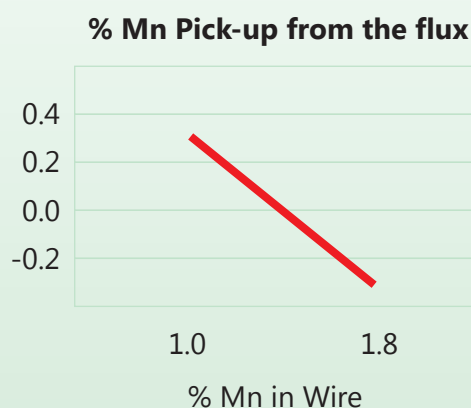


Single Wire

APPROVALS:

RDSO, ABS, BV, DNV, IRS, LRA, MND, IBR

ACTIVITY OF THE FLUX:



(continue...)

AUTOMELT B31 (AUTOMELT Gr IV)

(continue...)

CHEMICAL COMPOSITION OF FLUX:

$\text{SiO}_2 + \text{TiO}_2$	$\text{CaO} + \text{MgO}$	$\text{Al}_2\text{O}_3 + \text{MnO}$	CaF_2
15	20	30	35

Chemical Composition of Undiluted Weld Metal (wt%), Typical:

With wire	C	Mn	Si
Automelt EL8	0.06	0.85	0.40
Automelt EL12	0.07	0.90	0.40
Automelt EM12K	0.07	1.20	0.50
Automelt EH14	0.07	1.50	0.40

Mechanical properties of All Weld Metal, Typical:

With wire	Condition	UTS, MPa	YS, MPa	% E	CVN Impact		
					-20°C	-30°C	-40°C
Automelt EL8	AW	470	390	28	50		
Automelt EL12	AW	480	390	27	50		
Automelt EM12K	AW	510	430	27		40	
Automelt EH14	AW	510	430	30			40
Automelt EH14	PW	510	430	30			50

AW – As Welded; PW – After Post weld heat treatment of 620°C for 1 hour

The chemistry and mechanical properties will depend on actual wire chemistry and arc voltage



AUTOMELT B71

GENERAL DESCRIPTION:

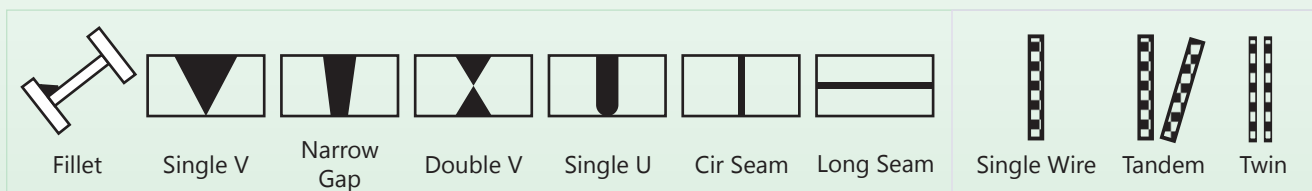
- Agglomerated Flux
- Fluoride-Basic Type Flux
- Basic Flux having Basicity Index of 1.6
- Mildly Active Flux with moderate Si and Mn pick-up with Low Mn Wires and Mn burnout with high Mn wires
- Multi-pass Butt and Fillet Welding including "two-run" technique
- For Carbon & Low Alloy Steels
- Suitable for Narrow Gap Welding
- Suitable for Single & Multi Wire twin and Tandem System
- Suitable for Welding Speeds of 0.35-0.70 m/min
- Grain Size – 0.25-1.60mm
- Type of Current – DCEP / AC
- Wall Neutrality Number with EM12K Wire is 23

CLASSIFICATION :

With Wire	AWS 5.17/5.23	Single / Multi-pass
AUTOMELT EL8	F7A2-EL8	Multi-pass
AUTOMELT EL12	F7A2-EL12	Multi-pass
AUTOMELT EM12K	F7A4/P4-EM12K	Multi-pass
AUTOMELT EH10K	F7A4/P4-EM12K	Multi-pass
AUTOMELT EH11K	F7TA0-EH11K	Two-Run
AUTOMELT EH12K	F7A4/P4-EH12K	Multi-pass
AUTOMELT EH14	F7A4/P4-EH14	Multi-pass
AUTOMELT EA2	F7A2/P2-EA2-A2	Multi-pass
AUTOMELT EA4	F8A2/P2-EA4-A4	Multi-pass
AUTOMELT EA3	F8A2/P2-EA3-A3	Multi-pass
AUTOMELT EA2TiB	F9TA4-EG-G	Two-Run
AUTOMELT EB2	F8PZ-EB2-B2	Multi-pass
AUTOMELT EB3	F8PZ-EB3-B3	Multi-pass
AUTOMELT ENi1	F8A5-ENi1-Ni1	Multi-pass
AUTOMELT ENi2	F8A6-ENi2-Ni2	Multi-pass
AUTOMELT ENi3	F8A8/P10-ENi3-Ni3	Multi-pass

TYPICAL APPLICATIONS :

- General Structural Welding
- Long Seam and Cir Seam Welding of Pipes
- Fabrication of Pressure Vessel and Boiler
- Heavy Equipment Fabrication



APPROVALS:

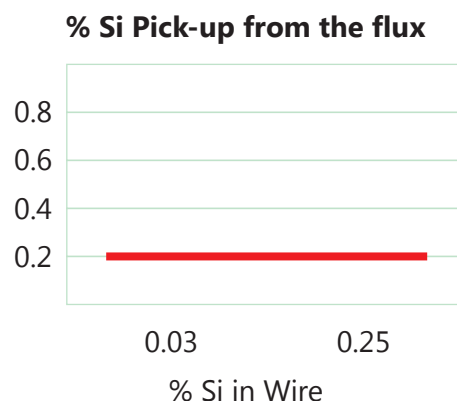
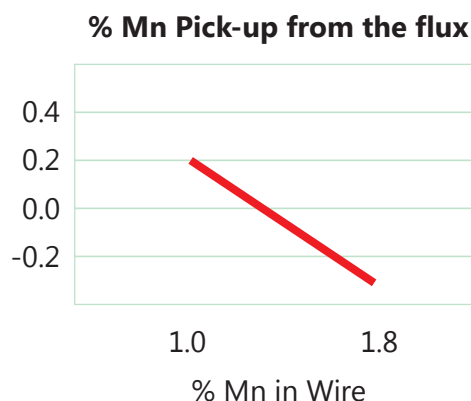
RDSO, ABS, IBR

(continue...)

AUTOMELT B71

(continue...)

ACTIVITY OF THE FLUX:



CHEMICAL COMPOSITION OF FLUX:

$\text{SiO}_2 + \text{TiO}_2$	$\text{CaO} + \text{MgO}$	$\text{Al}_2\text{O}_3 + \text{MnO}$	CaF_2
15	30	30	25

Chemical Composition of Undiluted Weld Metal (wt%), Typical:

With wire	C	Mn	Si	Ni	Cr	Mo	Other Elements
AUTOMELT EL8	0.06	1.00	0.30	--	--	--	
AUTOMELT EL12	0.08	1.00	0.30	--	--	--	
AUTOMELT EM12K	0.08	1.35	0.45	--	--	--	
AUTOMELT EH10K	0.07	1.50	0.45	--	--	--	
AUTOMELT EH11K	0.07	1.70	1.00	--	--	--	
AUTOMELT EH12K	0.08	1.55	0.45	--	--	--	
AUTOMELT EH14	0.08	1.55	0.30	--	--	--	
AUTOMELT EA2	0.08	1.35	0.30	--	--	0.50	
AUTOMELT EA4	0.08	1.50	0.30	--	--	0.50	
AUTOMELT EA3	0.08	1.55	0.30	--	--	0.50	
AUTOMELT EA2TiB	0.07	1.35	0.30	--	--	0.50	Ti – 0.02;B – 0.003
AUTOMELT EB2	0.07	1.10	0.40	--	1.10	0.50	
AUTOMELT EB3	0.07	1.10	0.40	--	2.10	0.50	
AUTOMELT ENi1	0.08	1.40	0.40	0.90	--	--	
AUTOMELT ENi2	0.09	1.40	0.40	2.20	--	--	
AUTOMELT ENi3	0.09	1.40	0.40	3.00	--	--	

(continue...)

AUTOMELT B71

(continue...)

Mechanical properties of All Weld Metal, Typical:

With wire	Condition	UTS, MPa	YS, MPa	% E	CVN Impact (J) 0°C				
					-30°C	-40°C	-50°C	-60°C	-70°C
Automelt EL8	AW	500	420	26	50				
Automelt EL12	AW	520	430	26	50				
Automelt EM12K	AW	530	430	26		50			
Automelt EM12K	PW1	500	420	28		60			
Automelt EH10K	AW	550	440	26		60			
Automelt EH10K	PW1	530	430	28		70			
Automelt EH11K	AW, TR	550	440	26	50J at -20°C	60			
Automelt EH12K	AW	560	450	25		70			
Automelt EH12K	PW1	540	430	27		60			
Automelt EH14	AW	550	440	26		70			
Automelt EH14	PW1	530	430	28					
Automelt EA2	AW	580	470	24	50				
Automelt EA2	PW1	560	460	25	60				
Automelt EA4	AW	600	490	24	50				
Automelt EA4	PW1	580	470	26	60				
Automelt EA3	AW	630	500	24	50				
Automelt EA3	PW1	610	480	25	60	40			
Automelt EA2TiB	AW, TR	630	580	18					
Automelt EB2	PW2	600	490	24					
Automelt EB3	PW2	630	510	24					
Automelt ENi1	AW	580	470	25			40		
Automelt ENi2	AW	600	490	25			50		
Automelt ENi3	AW	620	510	26				50	
Automelt ENi3	PW1	600	490	27					50

AW – As Welded; PW1 – After Post weld heat treatment of 620°C for 1 hour

PW2 – After Post Weld Heat treatment of 690°C for 1 hour

TW – Two Run

The chemistry and mechanical properties will depend on actual wire chemistry and arc voltage

AUTOMELT B22 PLUS

GENERAL DESCRIPTION:

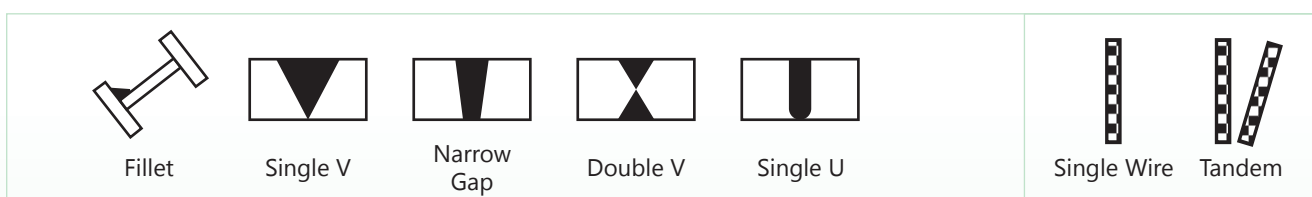
- Agglomerated Flux
- Fluoride-Basic Type Flux
- Acidic Flux having Basicity Index of 1.8
- Mildly Active Flux with moderate Si and Mn pick-up with Low Mn Wires and Mn burnout with high Mn wires
- Multi-pass Butt and Fillet Welding
- For Carbon & Low Alloy Steels
- Suitable for Single Wire and Multiple wire tandem System
- Suitable for Welding Speeds of 0.40-0.60 m/min
- Grain Size - 0.25-1.60mm
- Type of Current – DCEP / AC
- Wall Neutrality Number with EH12K Wire is 23

CLASSIFICATION :

With Wire	AWS 5.17/5.23	Single / Multi-pass
AUTOMELT EM12K	F7A5/F6P5-EM12K	Multi-pass
AUTOMELT EH10K	F7A4/P4-EH10K	Multi-pass
AUTOMELT EH12K	F7A4/P4-EH12K	Multi-pass

TYPICAL APPLICATIONS :

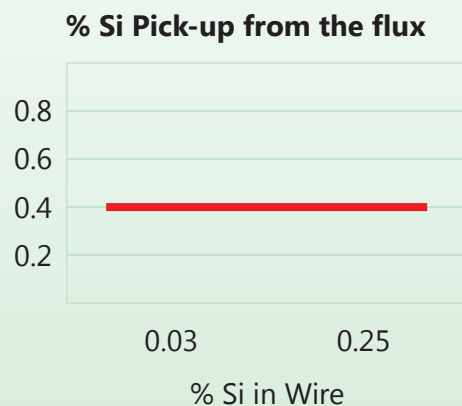
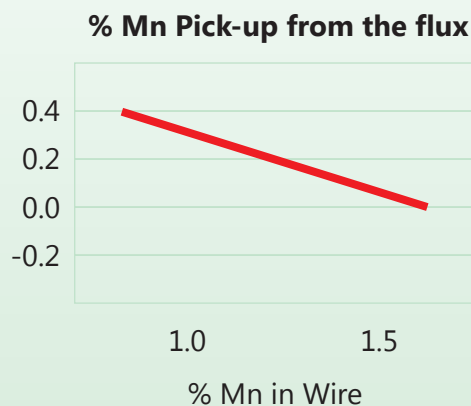
- Wind Mill Fabrication
- Boiler and Pressure Vessel Fabrication



APPROVALS:

CE

ACTIVITY OF THE FLUX:



(continue...)

AUTOMELT B22 PLUS

(continue...)

CHEMICAL COMPOSITION OF FLUX:

$\text{SiO}_2 + \text{TiO}_2$	$\text{CaO} + \text{MgO}$	$\text{Al}_2\text{O}_3 + \text{MnO}$	CaF_2
30	20	25	20

Chemical Composition of Undiluted Weld Metal (wt%), Typical:

With wire	C	Mn	Si
Automelt EM12K	0.06	1.40	0.30
Automelt EH10K	0.06	1.50	0.30
Automelt EH12K	0.07	1.50	0.30

Mechanical properties of All Weld Metal, Typical:

With wire	Condition	UTS, MPa	YS, MPa	% E	CVN Impact	
					-40°C	-46°C
Automelt EM12K	AW	510	430	27	60	40
Automelt EM12K	PW	480	400	27	70	50
Automelt EH10K	AW	520	440	28	40	
Automelt EH10K	PW	510	430	28	50	
Automelt EH12K	AW	540	450	28	40	
Automelt EH12K	PW	520	440	28	50	

AW – As Welded; PW – After Post weld heat treatment of 620°C for 1 hour

The chemistry and mechanical properties will depend on actual wire chemistry and arc voltage



AUTOMELT B20 PLUS

GENERAL DESCRIPTION:

- Agglomerated Flux
- Fluoride-Basic Type Flux
- High Basic Flux having Basicity Index of 3.1
- Mildly Active Flux with moderate Si and Mn pick-up with Low Mn Wires and Mn burnout with high Mn wires
- Multi-pass Butt and Fillet Welding
- For Carbon & Low Alloy Steels
- Suitable for Narrow Gap Welding
- Suitable for Single & Multi Wire Tandem System
- Suitable for Welding Speeds of 0.40 – 0.60 m/min
- Grain Size – 0.25-1.60mm
- Type of Current – DCEP / AC
- Wall Neutrality Number with EM12K is 23

CLASSIFICATION :

With Wire	AWS 5.17/5.23	Single / Multi-pass
AUTOMELT EM12K	F7A8-EM12K	Multi-pass
AUTOMELT EH10K	F7A8/P8-EH10K	Multi-pass
AUTOMELT EH12K	F7A8/P10-EH12K	Multi-pass
AUTOMELT EH14	F7A6/P6-EH14	Multi-pass
AUTOMELT EB2R	F8P2-EB2R-B2R	Multi-pass
AUTOMELT EB3R	F8P0-EB3R-B3R	Multi-pass
AUTOMELT EB91	F9PZ-EB91-B91	Multi-pass
AUTOMELT ENi1	F7A6-ENi1-Ni1	Multi-pass
AUTOMELT ENi2	F7A8-ENi2-Ni2	Multi-pass
AUTOMELT ENi3	F7A10-ENi3-Ni3	Multi-pass
AUTOMELT EF1	F8A6-EF1-F1	Multi-pass
AUTOMELT EF2	F8A6-EF2-F2	Multi-pass
AUTOMELT EF3	F9A8-EF3-F3	Multi-pass
AUTOMELT EF4	F8A6-EF4-F4	Multi-pass
AUTOMELT EF5	F9A10-EF5-F5	Multi-pass
AUTOMELT EG1	F11A8-EG-G	Multi-pass

TYPICAL APPLICATIONS :

- Fabrication of Reactors, steam generators
- Long Seam and Cir Seam Welding of Pipes
- Fabrication of Pressure Vessel and Boiler
- Heavy Equipment Fabrication



Fillet



Single V


Narrow
Gap


Double V



Single U



Cir Seam



Long Seam



Single Wire



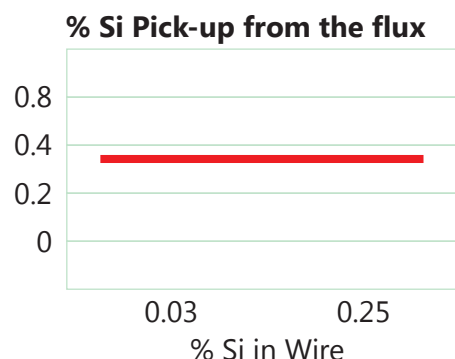
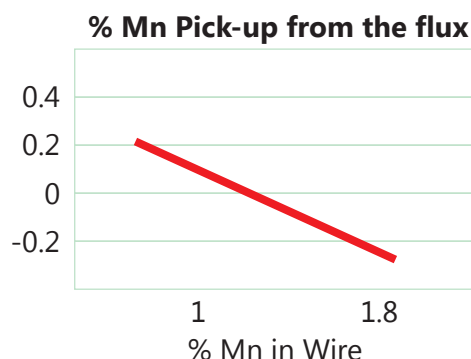
Tandem

(continue...)

AUTOMELT B20 PLUS

(continue...)

ACTIVITY OF THE FLUX:



CHEMICAL COMPOSITION OF FLUX:

SiO ₂ + TiO ₂	CaO + MgO	Al ₂ O ₃ + MnO	CaF ₂
20	15	30	30

Chemical Composition of Undiluted Weld Metal (wt%), Typical:

With wire	C	Mn	Si	Ni	Cr	Mo	Other Elements
AUTOMELT EM12K	0.06	1.25	0.40	--	--	--	
AUTOMELT EH10K	0.07	1.45	0.40	--	--	--	
AUTOMELT EH12K	0.08	1.50	0.40	--	--	--	
AUTOMELT EH14	0.08	1.60	0.30	--	--	--	
AUTOMELT EB2R	0.06	0.90	0.30		1.10	0.50	S-0.007; P-0.009; Cu-0.05; As-0.003; Sn-0.003; Sb-0.003
AUTOMELT EB3R	0.07	0.90	0.30	--	2.10	0.50	S-0.007; P-0.009; Cu-0.05; As-0.003; Sn-0.003; Sb-0.003
AUTOMELT EB91	0.07	0.50	0.30	0.55	8.70	0.95	V-0.20; Nb-0.04; N-0.04; Mn+Ni<1.20
AUTOMELT ENi1	0.07	1.40	0.30	0.90	--	--	
AUTOMELT ENi2	0.08	1.40	0.30	2.20	--	--	
AUTOMELT ENi3	0.08	1.40	0.30	3.00	--	--	
AUTOMELT EF1	0.08	1.20	0.40	1.00	--	0.45	
AUTOMELT EF2	0.08	1.50	0.40	0.60	--	0.50	
AUTOMELT EF3	0.08	1.50	0.40	0.90	--	0.50	
AUTOMELT EF4	0.08	1.40	0.40	0.50	0.30	0.20	
AUTOMELT EF5	0.08	1.50	0.40	2.20	0.30	0.40	
AUTOMELT EG1	0.07	1.60	0.45	2.40	--	0.60	

(continue...)

AUTOMELT B20 PLUS

(continue...)

Mechanical properties of All Weld Metal, Typical:

With wire	Condition	UTS, MPa	YS, MPa	% E	CVN Impact (J) 0°C				
					-30°C	-40°C	-50°C	-60°C	-70°C
Automelt EM12K	AW	510	430	28		80	50	30	
Automelt EH10K	AW	540	440	27			60	40	
Automelt EH10K	PW1	520	420	27			80	50	
Automelt EH12K	AW	540	450	27			70	50	
Automelt EH12K	PW1	530	430	28			90	70	50
Automelt EH14	AW	530	440	27			50		
Automelt EH14	PW1	520	430	28			60		
Automelt EB2R	PW2	600	490	24	40				
Automelt EB3R	PW2	630	500	24	30				
Automelt EB91	PW3	660	570	19					
Automelt ENi1	AW	520	430	29			50		
Automelt ENi2	AW	530	430	28			70	40	
Automelt ENi3	AW	540	440	27			90	60	40
Automelt EF1	AW	580	470	25			50		
Automelt EF2	AW	600	480	25			40		
Automelt EF3	AW	650	570	22			60	40	
Automelt EF4	AW	600	490	24			40		
Automelt EF5	AW	650	570	22				60	40
Automelt EG1	AW	790	700	17			60	40	

AW – As Welded; PW1 – After Post weld heat treatment of 620°C for 1 hour

PW2 – After Post Weld Heat treatment of 690°C for 1 hour

PW2 – After Post Weld Heat treatment of 760°C for 2 hour

The chemistry and mechanical properties will depend on actual wire chemistry and arc voltage

AUTOMELT B41

GENERAL DESCRIPTION:

- Agglomerated Flux
- Fluoride-Basic Type Flux
- High Basic Flux having Basicity Index of 3.1
- Mildly Active Flux with Mn burnout
- Multi-pass Butt and Fillet Welding including two run technique
- For Carbon & Low Alloy Steels
- Suitable for Single & Multi Wire Tandem System
- Suitable for Welding Speeds of 0.40 – 0.60 m/min
- Grain Size – 0.25-1.60mm
- Type of Current – DCEP / AC
- Wall Neutrality Number with EH10K is 5

CLASSIFICATION :

With Wire	AWS 5.17/5.23	Single / Multi-pass
AUTOMELT EH11K	F7TA2-EH11K	Two Run
AUTOMELT EH10K	F7A8/P8-EH10K	Multi-pass
AUTOMELT EH12K	F7A8/P8-EH12K	Multi-pass
AUTOMELT EH14	F7A6/P6-EH14	Multi-pass
AUTOMELT EA2	F8A4-EA2-A2	Multi-pass
AUTOMELT EA4	F8A4/P4-EA4-A4	Multi-pass
AUTOMELT EA3	F8A4/P4-EA3-A3	Multi-pass
AUTOMELT ENi1	F7A6-ENi1-Ni1	Multi-pass
AUTOMELT ENi2	F7A8-ENi2-Ni2	Multi-pass
AUTOMELT ENi3	F7A10-ENi3-Ni3	Multi-pass
AUTOMELT EF1	F8A6-EF1-F1	Multi-pass
AUTOMELT EF2	F8A6-EF2-F2	Multi-pass
AUTOMELT EF3	F9A8-EF3-F3	Multi-pass
AUTOMELT EF4	F8A6-EF4-F4	Multi-pass
AUTOMELT EF5	F9A10-EF5-F5	Multi-pass

TYPICAL APPLICATIONS :

- Fabrication of Reactors, steam generators
- Long Seam and Cir Seam Welding of Pipes
- Fabrication of Pressure Vessel and Boiler
- Heavy Equipment Fabrication



Fillet



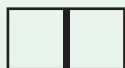
Single V



Double V



Single U



Cir Seam



Long Seam



Single Wire



Tandem

APPROVALS:

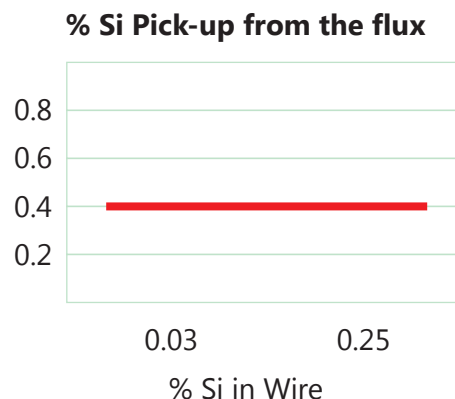
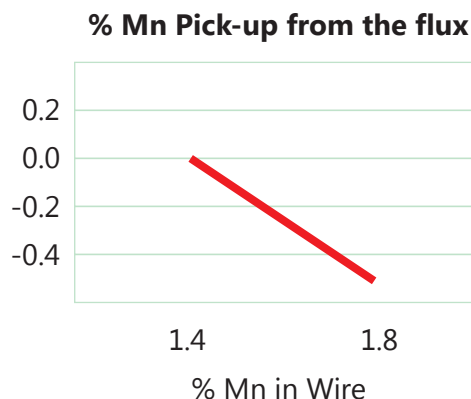
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(continue...)

AUTOMELT B41

(continue...)

ACTIVITY OF THE FLUX:



CHEMICAL COMPOSITION OF FLUX:

$\text{SiO}_2 + \text{TiO}_2$	$\text{CaO} + \text{MgO}$	$\text{Al}_2\text{O}_3 + \text{MnO}$	CaF_2
10	35	20	30

Chemical Composition of Undiluted Weld Metal (wt%), Typical:

With wire	C	Mn	Si	Ni	Cr	Mo
AUTOMELT EH11K	0.08	1.35	0.45	--	--	--
AUTOMELT EH10K	0.07	1.50	0.45	--	--	--
AUTOMELT EH12K	0.08	1.55	0.45	--	--	--
AUTOMELT EH14	0.08	1.55	0.30	--	--	--
AUTOMELT EA2	0.08	1.35	0.30	--	--	0.50
AUTOMELT EA4	0.08	1.50	0.30	--	--	0.50
AUTOMELT EA3	0.08	1.55	0.30	--	--	0.50
AUTOMELT ENi1	0.07	1.40	0.30	0.90	--	--
AUTOMELT ENi2	0.08	1.40	0.30	2.20	--	--
AUTOMELT ENi3	0.08	1.40	0.30	3.00	--	--
AUTOMELT EF1	0.08	1.20	0.40	1.00	--	0.45
AUTOMELT EF2	0.08	1.50	0.40	0.60	--	0.50
AUTOMELT EF3	0.08	1.50	0.40	0.90	--	0.50
AUTOMELT EF4	0.08	1.40	0.40	0.50	0.30	0.20
AUTOMELT EF5	0.08	1.50	0.40	2.20	0.30	0.40

(continue...)

AUTOMELT B41

(continue...)

Mechanical properties of All Weld Metal, Typical:

With wire	Condition	UTS, MPa	YS, MPa	% E	CVN Impact		
					-40°C	-50°C	-60°C
Automelt EH11K	AW, TR	540	440	24	(50J at -30°C)		
Automelt EH10K	AW	550	440	26		60	40
Automelt EH10K	PW	530	430	28		80	60
Automelt EH12K	AW	560	450	26		80	50
Automelt EH12K	PW	540	430	27		90	60
Automelt EH14	AW	550	440	26	60	50	
Automelt EH14	PW	530	430	28	80	60	
Automelt EA2	AW	580	470	24	40		
Automelt EA2	PW	560	460	25	50		
Automelt EA4	AW	600	490	24	40		
Automelt EA4	PW	580	470	26	50		
Automelt EA3	AW	630	500	24	40		
Automelt EA3	PW	610	480	25	50		
Automelt ENi1	AW	520	430	29		50	
Automelt ENi2	AW	530	430	28		70	40
Automelt ENi3	AW	540	440	27	(40J at -70°C)	90	60
Automelt EF1	AW	580	470	25		50	
Automelt EF2	AW	600	480	25		40	
Automelt EF3	AW	650	570	22		60	40
Automelt EF4	AW	600	490	24		40	
Automelt EF5	AW	650	570	22	(40J at -70°C)		60

AW – As Welded; PW – After Post weld heat treatment of 620°C for 1 hour

The chemistry and mechanical properties will depend on actual wire chemistry and arc voltage

AUTOMELT S76

GENERAL DESCRIPTION:

- Agglomerated Flux
- Fluoride-Basic Type Flux
- Neutral Flux having Basicity Index of 1.2
- It compensates Chromium to counteract arc loss
- For Cladding of Stainless Steels
- Suitable for Welding Speeds of 0.40 – 0.60 m/min
- Grain Size – 0.25-1.60mm
- Type of Current – DCEP / DCEN

TYPICAL APPLICATIONS :

- Cladding of Stainless Steels

APPROVALS:

BHEL

CHEMICAL COMPOSITION OF FLUX:

SiO₂ + TiO₂	CaO + MgO	Al₂O₃ + MnO	CaF₂
30%	20	20	50

Chemical Composition of Undiluted Weld Metal (wt%), Typical:

With wire	C	Mn	Si	Ni	Cr	Mo	Other Elements
Subinox 308L	0.03	1.50	0.40	19.5	9.3	--	--
Subinox 316L	0.03	1.50	0.40	18.5	11.5	2.3	--
Subinox 347	0.03	1.20	0.50	19.5	9.5	--	Nb + Ta – 0.50
Subinox 309L	0.03	1.20	0.50	23.5	12.5	--	--
Subinox 410	0.03	0.50	0.30	12.5	--	--	--
Subinox 430	0.03	0.40	0.50	16.2	--	--	--

Mechanical properties of All Weld Metal, Typical:

With wire	Condition	UTS, MPa	% E	CVN Impact (J) 20°C
Subinox 308L	AW	580	37	70
Subinox 316L	AW	580	37	70
Subinox 347	AW	600	35	70
Subinox 309L	AW	600	35	70
Subinox 410	AW	700	25	70
Subinox 430	AW	700	25	70

AW – As Welded

The chemistry and mechanical properties will depend on actual wire chemistry and arc voltage

AUTOMELT S33

GENERAL DESCRIPTION:

- Agglomerated Flux
- Fluoride-Basic Type Flux
- High Basic Flux having Basicity Index of 3.1
- Neutral Behaviour to Carbon, so Low C weld metal is produced with Low C Wire
- Non-Chromium Compensating
- Chromium Burnout is very less
- Multi-pass Butt and Fillet Welding
- For Stainless Steels
- Suitable for Welding Speeds of 0.40 – 0.60 m/min
- Grain Size – 0.25-1.60mm
- Type of Current – DCEP

TYPICAL APPLICATIONS :

- Welding of High Alloy Stainless steels including Duplex and Superduplex Stainless Steels
- Most suitable for welding Cryogenic Vessels



Fillet



Single V



Double V



Single Wire

APPROVALS:

ABS

CHEMICAL COMPOSITION OF FLUX:

SiO ₂ + TiO ₂	Al ₂ O ₃ + MnO	CaF ₂
10	35	50

Chemical Composition of Undiluted Weld Metal (wt%), Typical:

With wire	C	Mn	Si	Ni	Cr	Mo	Other Elements
Subinox 308L	0.025	1.40	0.50	19.5	9.3	--	--
Subinox 316L	0.025	1.40	0.50	18.5	11.5	2.3	--
Subinox 347	0.050	1.40	0.50	19.5	9.5	--	Nb + Ta – 0.50
Subinox 309L	0.025	1.40	0.50	23.5	12.5	--	--
Subinox 410	0.07	0.50	0.30	12.5	--	--	--
Subinox 410NiMo	0.03	0.50	0.30	12.5	4.5	0.50	--
Subinox 430	0.05	0.50	0.30	16.5	--	--	--
Subinox 2209	0.025	1.30	0.50	22.0	9.0	3.0	N – 0.12
Subinox 2553	0.03	1.30	0.50	25.0	7.0	3.5	N – 0.15; Cu – 2.0
Subinox 2594	0.025	0.60	0.50	24.5	8.5	4.0	N – 0.25

(continue...)

AUTOMELT S33

(continue...)

Chemical Composition of Undiluted Weld Metal (wt%), Typical:

With wire	C	Mn	Si	Ni	Cr	Mo	Other Elements
Subinox 308L	0.025	1.40	0.50	19.5	9.3	--	--
Subinox 316L	0.025	1.40	0.50	18.5	11.5	2.3	--
Subinox 347	0.050	1.40	0.50	19.5	9.5	--	Nb + Ta – 0.50
Subinox 309L	0.025	1.40	0.50	23.5	12.5	--	--
Subinox 410	0.07	0.50	0.30	12.5	--	--	--
Subinox 410NiMo	0.03	0.50	0.30	12.5	4.5	0.50	--
Subinox 430	0.05	0.50	0.30	16.5	--	--	--
Subinox 2209	0.025	1.30	0.50	22.0	9.0	3.0	N – 0.12
Subinox 2553	0.03	1.30	0.50	25.0	7.0	3.5	N – 0.15; Cu – 2.0
Subinox 2594	0.025	0.60	0.50	24.5	8.5	4.0	N – 0.25

Mechanical properties of All Weld Metal, Typical:

With wire	Condition	UTS, MPa	YS, MPa	CVN Impact	
				-50°C	-196°C
Subinox 308L	AW	580	37	90	50
Subinox 316L	AW	580	37	90	40
Subinox 347	AW	600	35	90	
Subinox 309L	AW	600	35	90	
Subinox 410	AW	700	25	50	
Subinox 410NiMo	AW	750	23	50	
Subinox 430	AW	700	25	50	
Subinox 2209	AW	780	27	70	
Subinox 2553	AW	780	25	50	
Subinox 2594	AW	650	27	70	

AW – As Welded

The chemistry and mechanical properties will depend on actual wire chemistry and arc voltage



Welding Equipment

SMAW Equipment | GMAW Welding Equipment
GTAW Welding Equipment | SAW Welding Equipment

SOME BASICS TO KNOW

MOST COMMON TYPES OF INSULATION CLASSES USED IN WELDING EQUIPMENTS

The most common types of Insulation Classes, for which welding equipments are designed, are basically B, F and H. However electrical machines have following range of Insulation classes as per National and International standards. The maximum allowable temperatures are given below for these Insulation classes

- A = Class of Insulation --105 Deg. Centigrade
- E = Class of Insulation --120 Deg. Centigrade
- B = Class of Insulation --130 Deg. Centigrade
- F = Class of Insulation --155 Deg. Centigrade
- H = Class of Insulation --180 Deg. Centigrade
- C = Class of Insulation --220 Deg. Centigrade

MOST COMMON TYPES OF ENCLOSURE PROTECTIONS USED IN WELDING EQUIPMENTS

DEGREE OF INGRESS PROTECTION CLASS USED FOR ENCLOSURES OF WELDING EQUIPMENTS

The most common Ingress Protection classes (IP class) used for the enclosure of the welding equipments are IP 21, IP 23 and IP44. These protections classes of enclosures provide different degree of protection against Ingress of foreign body or particle and vertically falling water to the machines

- IP 21 • IP 23 • IP 44

FIRST DIGIT – Indicates protection against the ingress of foreign body or the particle

- 2 = Protection against ingress of foreign body / particle > 12 mm dia
- 4 = Protection against ingress of foreign body / particle > 1 mm dia

SECOND DIGIT – Indicates protection against the ingress of dripping or vertically falling water

- 1 = Protection against ingress of water i.e.dripping or vertically falling water
- 3 = Protection against ingress of spraying or splashing water up to 60 degrees
- 4 = Protection against the ingress of the splashing water from any direction i.e. all round the machine

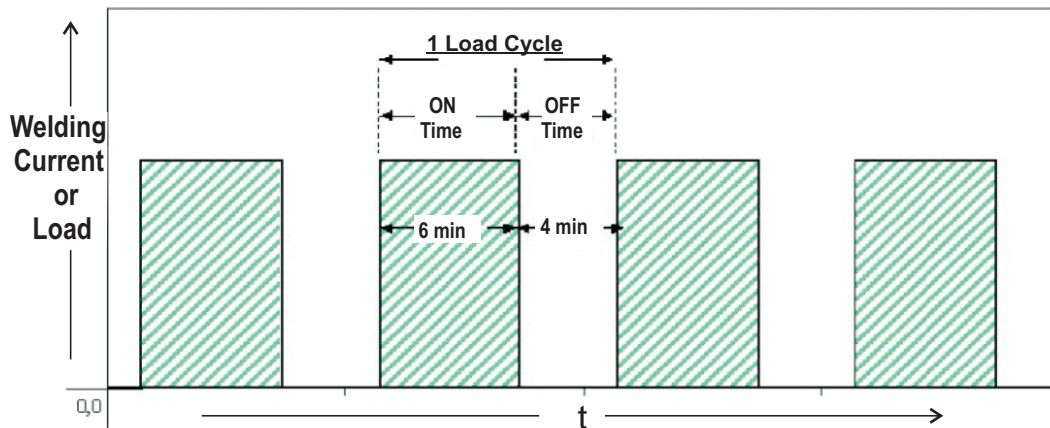
MOST COMMON TYPES OF DUTY CYCLES USED IN WELDING EQUIPMENTS

DUTY CYCLES OF WELDING EQUIPMENTS

Welding equipments are never used continuously for manual or semiautomatic welding processes. The common duty cycles observed for majority of welding applications are 25%, 35%, 40%, 60%. However all welding equipments are also supposed to be specified for 100% duty cycles. The duty cycle of the machine or application indicates how severely machines will be used to complete the jobs to be welded. A typical duty cycle is explained on next page, which indicate the WELD time and OFF time observed during the welding of job. The total CYCLE TIME consists of one WELD time and one OFF time associated with the respective WELD time. The CYCLE TIMES are 5 minute and 10 minute as per Indian and International standards respectively.

SOME BASICS TO KNOW

DUTY CYCLE



$$\begin{aligned} \% \text{ Duty cycle} &= \frac{(\text{ON Time}) \times 100}{(\text{ON Time} + \text{Off Time})} \\ &= \frac{6 \times 100}{(6 + 4)} = 60\% \end{aligned}$$

FINDING CURRENT FOR THE REQUIRED DUTY CYCLE WHEN CURRENT IS SPECIFIED AT DIFFERENT DUTY CYCLE

Present specs. are 400 A @ 60 % duty cycle

- Follow following steps to find the welding current at 100% duty cycle
- Losses @ d1 = Losses @ d2
- $(I_1)^2 \times r \times t_1 = (I_2)^2 \times r \times t_2$
- $(400 \times 400) \times 6 = (I_2)^2 \times 10$
- $(I_2)^2 = (6/10) \times 400 \times 400$
- $I_2 = \text{sq. root of } (6/10) \times 400$
- $I_2 = \text{sq. root of } 0.6 \times 400$
- $I_2 = 0.7746 \times 400$
- $I_2 = 309.8$
- $I_2 = 310$

Present specs. are 310 A @ 100 % duty cycle

- Follow following steps to find the welding current at 60% duty cycle
- Losses @ d1 = Losses @ d2
- $(I_1)^2 \times r \times t_1 = (I_2)^2 \times r \times t_2$
- $(310 \times 310) \times 10 = (I_2)^2 \times 6$
- $(I_2)^2 = (10/6) \times 310 \times 310$
- $I_2 = \text{sq. root of } (10/6) \times 310$
- $I_2 = \text{sq. root of } 1.66 \times 310$
- $I_2 = 1.29 \times 310$
- $I_2 = 400.2$
- $I_2 = 400$

SOME BASICS TO KNOW

ELECTRODE TYPES / SIZES VS. RECOMMENDED WELDING CURRENTS

SN.	ELECTRODE TYPE	AWS TYPE	WELDING CURRENTS (AMPS) FOR ELECTRODE SIZE (DIA)						
			1.6MM	2.0MM	2.5MM	3.2MM	4.0MM	5.0MM	6.3MM
1.	Superbond	E6013	30-50	55 40-60	80 60-90	125 100-130	170 140-180	220 180-240	275
2.	Superbond-S	E6013	30-50	55 40-60	80 60-90	125 100-140	170 140-180	220 180-250	250-330
3.	Superbond-SS	E6013	30-50	40-60	90 60-90	135 100-140	180 140-190	240 190-250	300 250-330
4.	Supabase	E7018	40-60	50-70	80 60-90	125 100-140	170 150-200	200 200-240	275 270-360
5.	Supabase-X-Plus	E7018	40-60	50-70	80 60-90	125 90-140	170 150-190	225 200-250	300 270-320
6.	Celwel 70G	E7010-G	-	-	55 50-70	100 80-120	130 110-160	180 140-210	-
7.	Celwel 60	E6010	-	-	55 50-70	100 80-120	130 110-160	-	-

GUIDING NOTES :

1. Recommended Polarities

- Superbond, Superbond-S, Superbond-SS = AC, DC (-)
- Supabase, Supabase-X-Plus = AC (70 OCV), DC (+)
- Celwel 60, Celwel 70G = DC(+) (for all passes), DC(-) (for root pass only)

2. Recommended Welding Positions

- Superbond, Superbond-S, Superbond-SS, Celwel 60, Celwel 70G = All including vertical down (Vertical - Top to Bottom)
- Supabase, Supabase-X-Plus = All except vertical down (Vertical - Top to Bottom)

3. Current Selection Generally Adapted

- For Downhand flat, horizontal and overhead positions = Current at middle of the range is used.
- For Vertical up (Bottom to Top) = Current at maximum of the range is used.
- For vertical down (Top to Bottom) = Current at maximum of the range or slightly more than maximum is used.
- For the same diameter, as the thickness of parent material increases, employed current is increased.

SELECTION GUIDE

WELDING & CUTTING EQUIPMENT & PROCESSES



HELP ME CHOOSE

THE BEST WELDING EQUIPMENT FOR DESIRED APPLICATION

STEP 1 METAL JOINING AND CUTTING PROCESS SELECTION

Select a process for a given metal you want to join or cut from the table given below

METAL TYPE	WELDING PROCESS						CUTTING PROCESS		
	STICK	MIG	FCAW	SAW	AC-TIG	DC-TIG	CAC-A-AC	CAC-A-DC	PLASMA
STEEL	✓	✓	✓	✓		✓		✓	✓
STAINLESS STEEL	✓	✓	✓	✓		✓		✓	✓
ALUMINIUM		✓			✓			✓	✓
CAST IRON	✓							✓	✓
COPPER, BRASS		✓				✓	✓		✓
TITANIUM						✓			✓
MAGNESIUM ALLOYS					✓				✓
SKILL LEVEL	MODERATE	LOW	LOW	MODERATE	HIGH	HIGH	MODERATE	MODERATE	HIGH

STEP 2 WELDING PROCESS SELECTION

It is possible that more than one welding process can be used for a given requirement.

Hence to facilitate selection, study and understand the advantages of each process as given below.

A	SMAW / MMAW / STICK WELDING	Most suitable for outside/openside use One of jobs or less volume jobs. Better accessibility for intricate joints Ideal for dirty/rusty surfaces
B	GMAW/MIG/MAG/SEMI-AUTOMATIC/ CONTINUOUS WELDING	Suitable for high welding productivity Most suitable for relatively thinner sheets Very neat and clean welding without slag removable Easy to learn for welders
C	FLUX CORED (FCAW) MIG/MAG	Suitable for deep penetration for welding thick sections with less nos. of runs Provides higher welding deposition rates Gives excellent weld bead shape
D	SUBMERGED ARC WELDING (SAW)	Most suitable where excellent mechanical properties are required Ideally suitable for heavy duty longitudinal structures like girders High deposition rates gives higher welding productivity Gives excellent weld bead shape
E	TIG WELDING (GTAW)	Used where highest quality welding required Gives precise welding with very good welding finish Most suitable for thinnest sheets where better heat input controls are required and very minimal distortions allowed
F	AIR PLASMA ARC CUTTING	Used with almost all electrical conducting metals. Distortion free, dross free, burr free, narrow kerf with clean cuts, compared to carbon ARC cutting.

HELP ME CHOOSE

THE BEST WELDING EQUIPMENT FOR DESIRED APPLICATION

STEP 3 ADDITIONAL CHECK LIST

Also check for following along with above mentioned process advantages

1. POWER SUPPLY CONDITIONS*	• Stable / Unstable / Very Low / Very High voltage condition	
2. ENVIRONMENTAL CONDITIONS*	• Chemical (Acidic) Contamination. Conducting Dust Contamination.	
3. BUDGET	• Economy	

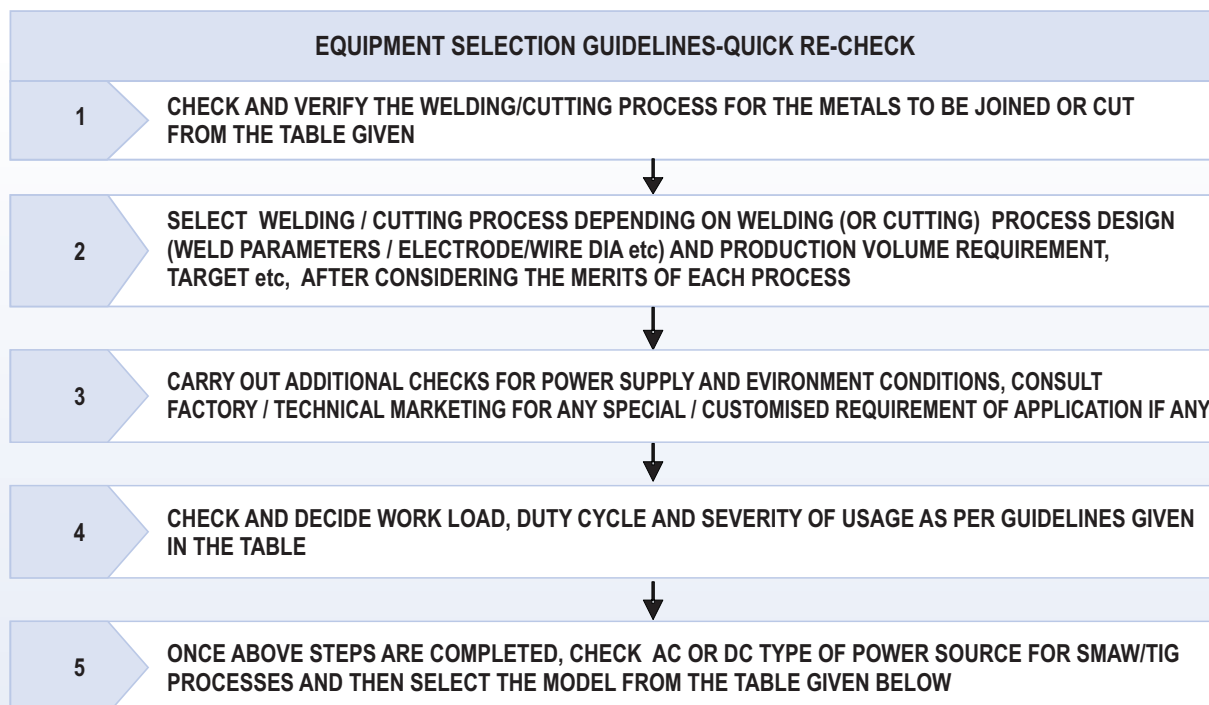
* Consult factory / Technical Marketing Team for extreme supply and environmental conditions

STEP 4 SELECTION OF WORK LOAD AND DUTY CYCLE

Workload/usage/duty	Likely Duty Cycle	Welding Current Range Recommended
Light Duty - Single Shift	20 % to 35 %	Upto 225 Amps
Medium Duty - Single or Two Shift	>35 % to 60 %	225 Amps to 300 Amps
Heavy Duty - Two or Three Shift	>60% to 100 %	More than 300 Amps

STEP 5 MODEL SELECTION TABLE

Thus after selecting the process, duty cycle, and going through the additional checklist, please verify once again the steps completed so far as per following FLOW CHART as a QUICK RE-CHECK and select the model for your welding/cutting need from the model selection table



RED / TPA SERIES WELDING TRANSFORMERS

A Wide Range of World Class Welding Transformers

1 Phase 3 Phase



RED SERIES

- Single phase (2 lines of 3 phase) Welding Transformers
- Class F Insulation - enhances services life
- User friendly AC ARC Welders
- Easily maneuverable from job to job on the shop-floor
- Stepless, smooth and infinitely variable current regulation
- Forced air cooled transformers - less coil temperature resulting in longer service life



TPA SERIES

- Three phase Welding Transformers
- User friendly AC ARC Welders
- Stepless, smooth and infinitely variable current regulation
- Compact and lightweight
- Convenient and easily maneuverable from job to job on the shop-floor
- 'Open-delta' design enables conversion of three phase input into single phase output
- Forced air cooled transformers - less coil temperature resulting in longer service life












SALIENT FEATURES

- Smooth welding current control by moving core magnetic shunt design
- Stepless, smooth and infinitely variable current regulation
- Adjustment of welding current possible even while welding is in progress
- 1 swivel front wheel and 2 rear wheel arrangement for easy maneuverability
- ON-OFF switch control, current control and current indicator provided on the front panel
- A Special design provides for excellent dynamic characteristic and ensures smooth and optimum metal transfer - RED Series specifically recommended for low hydrogen electrodes

RED / TPA SERIES WELDING TRANSFORMERS

A Wide Range of World Class Welding Transformers

MODELS	UNIT	RED 403	RED 503	TPA 303	TPA 403
INPUT					
Supply Voltage 	Volts	415	415	380/415	380/415
Phases 	No.	2 Lines of 3 Phase	2 Lines of 3 Phase	3	3
Frequency 	Hz	50	50	50	50
Input KVA @ 100 % Duty Cycle	KVA	19	25	16.5	21.0
Input switch fuse rating	A	80	100	55	80
Recommended Capacitor for P.F. improvement	KVAr	8	10	6	7
OUTPUT					
Output Characteristic 	Type	CC	CC	CC	CC
Operating Arc Voltage 	Volts	22-36	23-40	22-32	22-35
Open circuit voltage	Volts	80	80	66	66
Welding current range	A	60-400	80-500	40-300	60-400
Max. Continuous hand welding current @ 60% Duty Cycle	A	300	400	225	300
current @100% Duty Cycle 	A	230	300	175	230
Max. Intermittent welding current	A	400	500	300	400
Welding Electrode range					
Minimum	mms	2	2.5	2	2
Maximum	mms	6.3	6.3	5	6.3
GENERAL					
Class of Insulation	Class	F	F	A	A
Cooling Type 	Type	Forced Air	Forced Air	Forced Air	Forced Air
Protection class	Class	IP23	IP23	IP23	IP23
Dimensions (mms) L 	mms	720	745	720	720
W	mms	460	500	500	500
H	mms	750	780	800	800
Weight (approx.) 	kgs.	110	132	125	163
ORDERING INFORMATION		PRODUCT CODE	PRODUCT CODE	PRODUCT CODE	PRODUCT CODE
Standard Power Source-AC ARC Welder		F10.35.001.0007	F10.35.001.0008	F10.35.001.0014	F10.35.001.0015
Optional Accessories	Type				
Welding Accessories		S10.64.001.0014	S10.64.001.0014	S10.64.001.0014	S10.64.001.0015

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

DOUBLE MUSTANG / DOUBLE RACER DOUBLE HORSE / DOUBLE STALLION

Thoroughbred Series AC ARC Welding Transformers

1
Phase










- Light weight and compact transformers with robust construction - Ideal choice for site usage
- Natural air cooled transformers - coils designed for natural air cooling which eliminates the use of fan and thus risk of coil burning whenever fan fails
- Specially designed transformer coils with minimum joints and better interlayer insulation - eliminates the coil failure and enhances service life of transformer
- Stepless, infinitely variable current adjustment through sturdy and smooth moving core mechanism
- Stepless, smooth and infinitely variable current adjustment possible even while welding is in progress

SALIENT FEATURES

- Ensures the fine control of welding current to minimise the heat input to the job which reduces the HAZ
- Dynamic output characteristics ensures smooth and uninterrupted arc resulting excellent welding performance throughout the entire welding range
- Provided with input power ON-OFF switch
- Welder friendly usage - easy to operate since all controls like ON-OFF switch, welding current controlling handle, current scale on the same side i.e. front side

DOUBLE MUSTANG / DOUBLE RACER DOUBLE HORSE / DOUBLE STALLION

Thoroughbred Series AC ARC Welding Transformers

SPECIFICATIONS		UNIT	DOUBLE MUSTANG	DOUBLE RACER	DOUBLE HORSE	DOUBLE STALLION
INPUT						
Input		Volts	230/400	415	415	415
Voltage Supply Phases		No.	1	1	1	1
			(.....2 Lines of 3 Phase AC.....)			
Frequency		Hz	50	50	50	50
Input KVA @ 100% Duty Cycle		KVA	10.5	16.0	21.0	25.5
Recommended Capacitor for PF improvement		KVAr	5.0	8.0	9.0	11.0
OUTPUT						
Open Circuit Voltage		V	66	80	80	80
Welding Current Range		A	35-250	50-300	60-400	80-500
			(.....Single Range Control.....)			
Maximum intermittent welding current at 35% duty		A	250	300	400	500
Maximum continuous welding current at 60% duty cycle		A	190	225	300	375
Maximum automatic welding current at 100% duty cycle		A	150	175	230	300
GENERAL SPECIFICATIONS						
Type of Cooling			(.....Natural Air Cooled.....)			
Insulation		Class	H	H	H	H
Recommended electrode size/range		mm	2-5	2-2.6	2-6.3	2.5-6.3
Overall dimensions:						
Length		mm	590	650	650	650
Width		mm	425	475	500	550
Height		mm	660	700	725	755
Weight (approx.)		kg	92	120	140	170
ORDERING INFORMATION			PRODUCT CODE	PRODUCT CODE	PRODUCT CODE	PRODUCT CODE
Standard Power Source - AC ARC Welder			F10.35.802.0009	F10.35.802.0006	F10.35.802.0007	F10.35.802.0008

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
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- Backed by dedicated customer care package.

E-WELMAC 190

E-WELMAC AC ARC Welding Transformers

1
Phase










- Light weight, compact AC arc welding transformer - easy to mobilise at sites
- Single phase, natural air cooled transformer with robust construction
- Most reliable and simple transformer - very convenient and welder friendly to use at sites
- Infinitely variable current adjustment through sturdy and smooth moving core mechanism

SALIENT FEATURES

- Welding current adjustment possible even while welding is in progress
- Provided with input power ON-OFF switch
- Dynamic output characteristics ensures smooth and uninterrupted arc resulting excellent welding performance throughout the entire welding range
- H-class insulation of windings enhances reliability and service life

E-WELMAC 190

E-WELMAC AC ARC Welding Transformers

MODELS	UNIT	E-WELMAC 190
INPUT	Volts	230
Input Supply:	No.	1
Voltage	Hz	50
Phases 		
Frequency	KVA	5.5
Input KVA @ 100% Duty Cycle		
OUTPUT		
Open Circuit Voltage 	Volts	50
Welding Current Range 	Amps	30-150
Current:		
@20% duty cycle 	Amps	200
@60% duty cycle	Amps	115
@100% duty cycle	Amps	90
Welding Electrode range	mm	2.0-4.0
GENERAL		
Cooling 	Type	-----Natural Air Cooled-----
Dimensions (approx.):	Class	H
Length 	mm	340
Width	mm	315
Height	mm	500
Weight (approx.) 	Kg.	39
ORDERING INFORMATION		PRODUCT CODE
Standard Power Source - AC ARC Welder		F10.35.802.0003

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
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- Backed by dedicated customer care package.

GL SERIES WELDING RECTIFIERS (DIODE BASED)

A Wide of World Class Welding Rectifiers

SALIENT FEATURES :

- Transducer controlled rectifier units.
- 600 Amps ideally suited for gouging application
- Welding rectifiers based on most simple, reliable and maintenance free diode based technology.
- These welding rectifiers are built with most robust and rugged mechanical construction which withstand rough handling at construction and project sites.
- Welding current adjustment and regulation through electromagnetic transducer resulting stepless and smooth current control.
- These welding rectifiers are welder friendly - Very easy to use and operate, maintain and service by ordinary electricians.








- Single knob current control from the front panel or remote control unit (provided optionally.)
- Easy parallel connection of these welding rectifiers possible for high current gouging applications.
- These welding rectifiers can be also used for DC TIG welding applications by connecting suitable TIG control units.

APPLICATIONS :

- Most simple, robust and reliable welding rectifiers ideally recommended for heavy duty structural welding of construction equipments like crane, steel foundries, steel and fertiliser plants, shipyards.
- These welding rectifiers are ideally suitable for heavy fabrication shops, project sites with harsh environment, where maintenance staff is not well equipped and qualified.
- GL 601 is most recommended for heavy duty welding and gouging applications in foundries, steel plants, heavy engineering workshops etc.

SPECIFICATIONS :



Technical Specifications		Unit	GL 401	GL 601
Input				
Input Supply :				
Supply Voltage		Volt	400/440	400/440
Phase		No	3	3
Frequency		Hz	50	50
Input KVA @ 100% duty cycle		KVA	26	38.5
Input Current @ 100% duty cycle		A	45	70
Recommended switch fuse rating		A	TP50	TP80
Output				
Output Characteristic		Type	CC	CC
Open circuit voltage		Volts	80	80
Welding current range		A	50-400	80-600

Cont.

GL SERIES WELDING RECTIFIERS (DIODE BASED)

A Wide of World Class Welding Rectifiers

Cont.

@ 35% duty cycle		A	NA	NA
@ 60% duty cycle	X%	A	400	600
@ 100% duty cycle		A	310	465
General				
Class of Insulation		Class	B	B
Cooling Type	FC	Type	Fan cooled	
Protection class		Class	IP23	IP23
Dimensions (mm)				
Length		mm	840	907
Height		mm	705	750
Width		mm	905	1005
Weight (approx.)		Kg	275	430

ORDERING INFORMATION:

Standard Power	PRODUCT CODE	PRODUCT CODE		
Source - MMA outfit	F10.34.302.0002	F10.34.302.0004		

OPTIONAL ACCESSORIES

Welding Accessories- WAC 400	S10.64.001.0014			
Welding Accessories- WAC 600		S10.64.001.0014		

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
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- Backed by dedicated customer care package.

THYROLUXE 401 / THYROLUXE 600

The world class Thyristor based DC welders



THYROLUXE 401











THYROLUXE 600

SALIENT FEATURES

- Choice of heavy duty models to take care of both welding & gouging (for 600 A model only)
- Superior welding performance for the complete welding current range
- Ideal constant current drooping characteristics
- Stepless control for current adjustments
- Protections against input supply fluctuations i.e Under voltage, Over voltage, Single phasing, over load and short circuit
- Power source provided with built in Hot start, Antistick and self controlled Arc force dynamics
- Worry-free on maintenance
- Smooth and stable arc with minimum spatters
- Welder friendly Remote controller for easy and convenient setting of current from the workplace or the job
- Easy arc striking, High OCV for ease in arc start / restart

THYROLUXE 401 / THYROLUXE 600

The world class Thyristor based DC welders

SPECIFICATIONS TECHNICAL SPECIFICATIONS	UNIT	THYROLUXE 401	THYROLUXE 600
INPUT			
Input Supply: Voltage 	Volts	415, +10, -15%	415, +10, -15%
Phase	No.	3	3
Frequency	Hz.	50/60	50/60
Input KVA @100% duty cycle 	KVA	19.5	31.5
Input current @100% duty cycle	Amps AC	26.0	44
Recommended switch fuse/rating	Amps AC	TP-35	TP-60
OUTPUT			
Open Circuit Voltage 	Volts DC	100	100
Welding Current Range 	Amps DC	100-400	20-600
Current:			
@40% duty cycle 	Amps DC	-	-
@60% duty cycle	Amps DC	400	600
@100% duty cycle	Amps DC	310	465
GENERAL			
Gouging Carbon Electrode size	mm Ø	-	6 to 9
Current Display	-	Analog	Analog
Ingress Protection	Class	IP23	IP23
Cooling 	Type	Forced Air	Forced Air
Insulation	Class	H	H
Dimensions			
Length 	mm	835	980
Width	mm	495	550
Height	mm	820	960
Weight (approx.) 	Kg.	147	216
ORDERING INFORMATION		PRODUCT CODE	PRODUCT CODE
Standard Power Source - MMA outfit		F.10.34.401.0060	F10.34.401.0072
OPTIONAL ACCESSORIES			
Welding Accessories- WAC 400		S10.64.001.0014	
Welding Accessories- WAC 600		-	S10.64.001.0015

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

THYROLUXE 1000 THYROLUXE 1200

The world class Thyristor based DC welders










SALIENT FEATURES

- Thyristor based heavy duty DC Welding and Gouging Rectifiers.
- Stepless control for current adjustments.
- Protections against supply fluctuations i.e Under voltage, Over voltage, Single phasing, over load and short circuit.
- Constant current drooping characteristics – Ideal for Welding and Gouging applications.
- Power source provided with built in Hot start, Antistick and self controlled Arc force dynamics.
- Smooth and stable arc with minimum spatters
- Welder friendly Remote controller for easy and convenient setting of current from the work place or the job

THYROLUXE 1000

THYROLUXE 1200

The world class Thyristor based DC welders

SPECIFICATIONS TECHNICAL SPECIFICATIONS	UNIT	THYROLUXE 1000	THYROLUXE 1200
INPUT			
Input Supply:	Volts	415 , +10%, -10%	415 , +10%, -10%
Voltage	No.	3	3
Phase 	Hz	50/60	50/60
Frequency			
Max. rated Input KVA	KVA	81	96.5
OUTPUT			
Open Circuit Voltage 	Volts DC	100	100
Welding Current Range	Amps DC	100-1000	100-1200
Current:			
@40% duty cycle 	Amps DC	1000	-
@60% duty cycle 	Amps DC	850	1200
@100% duty cycle	Amps DC	650	930
GENERAL			
Suitable Gouging Carbon Electrode size	mmØ	6 to 12 mm	6 to 12 mm
Current Display		Analog	Analog
Ingress Protection	Class	IP23	IP23
	Type	Forced Air	Forced Air
Cooling 	Class	H	H
Insulation			
Dimensions			
Length 	mm	1130	1200
Width	mm	770	770
Height	mm	1080	1175
Weight (approx.) 	Kg.	403	450
ORDERING INFORMATION		PRODUCT CODE	PRODUCT CODE
MMA Outfit		F10.34.401.0035	F10.34.401.00 0 1

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CHAMP 200

The new world class indigenous inverter based DC welder








SALIENT FEATURES :

- Single phase High efficiency DC Welder
- High frequency IGBT based PWM Inverter
- Light weight, compact and portable for easy handling
- Compatible to power generator supply
- Hot start feature available
- Smooth and stable arc with minimum spatter
- TIG welding with scratch/Lift arc start
- Provided with the UV, OV thermal and line Voltage (415V) Protections



SPECIFICATIONS :





Technical Specifications	Unit	CHAMP 200
Input		
Input Supply :		
Voltage 	Volt	240, +10%, -15%
Phase	No	1
Frequency	Hz	50/60
Max input KVA @ 100% duty cycle 	KVA	5
Efficiency	%	>84
Output		
Open Circuit Voltage @ 240 Vac 	Volt	68 +/-3
Welding Current Range 	Amps	10-200
Welding Current (40°C 10 minute cycle)		
@ 35% duty cycle	Amps	200
@ 60% duty cycle 	Amps	150
@ 100% duty cycle	Amps	120
General		
Suitable Welding Electrode size	mm Ø	1.6, 2.5, 3.2 and intermittent 4
Hot Start 	-	120% of the set current
Antistick	-	Built in
Ingress Protection	Class	IP23
Cooling 	Type	Forced Air
Insulation	Class	F
Welding Output Terminals		Stud type / Camlock

Cont.

CHAMP 200

The new world class indigenous inverter based DC welder

Cont.

Dimensions			
Length		mm	415
Width		mm	155
Height		mm	300
Weight (approx.)		Kg	7
Ordering Information For Machines With Stud Type Output Terminals		Ordering Information For Machines With Stud Type Output Terminals	
Ordering Information	CHAMP 200	Ordering Information	CHAMP 200
Power Source with Stud type output terminals inclusive of welding and earthing cables	F10.34.501.0037	Power Source with CAMLOCK type output terminals inclusive of welding & earthing cables	F10.34.501.0042
Optional Accessories		Optional Accessories	
4 meter TIG Torch , MODEL-HIPRO TIG180 TV-4 with LUG type end connection	S15.01.002.0156	4 meter TIG torch , MODEL-HIPRO TIG-180 TV-4 with CAMLOCK type end connection	S15.01.002.0155

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
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- Backed by dedicated customer care package.

CHAMP 250

The new world class Inverter based Indigenous DC welder

SALIENT FEATURES :

- Three phase PWM controlled inverter based, high efficiency and high power factor heavy duty DC welder
- Enhanced Reliability due to SMD technology
- High frequency IGBT based Rectifier
- Arc force adjustment on panel
- TIG Welding possible with External HF Unit
- Light weight, compact and portable for easy handling
- High efficiency
- Built in Hot Start
- Smooth and stable arc with minimum Spatter








PROTECTIONS WITH AUTO RESET :

- Input Supply Voltage protections for over and under Voltage
- Over Temperature
- Protection against Single phasing

SPECIFICATIONS :







Technical Specifications	Unit	CHAMP 250
Input		
Input Supply :		
Voltage 	Volt	415, +15%, -10%
Phase	No	3
Frequency	Hz	50/ 60
Input KVA @ 415 Vac 		
@ 100% duty cycle	KVA	7.5
@ No Load	KVA	0.15
Power Factor	CosØ	0.94
Efficiency	%	85
Output		
Open Circuit Voltage 	Volt	84
Welding Current Range 	Amps	10-250
Welding Current (40°C 10 minute cycle)		
@ 60% duty cycle	Amps	250
@ 100% duty cycle 	Amps	195

Cont.

CHAMP 250

The new world class indigenous inverter based DC welder

Cont.

General		
Suitable Welding Electrode size	mm Ø	1.6, 2.5, 3.2, 4 and intermittent 5 mm
Arc force setting 	-	Adjustable by Potentiometer
Built in Hot Start	-	25% more than set current for 2 seconds
Current Display (Actual)		3 digit –7 segment digital panel pcb
Ingress Protection	Class	IP23
Cooling 	Type	Forced Air
Insulation	Class	H
Insulation		
Dimensions		
Length 	mm	520
Width	mm	260
Height (with handle)	mm	450
Height (without handle)	mm	410
Weight (approx.) 	Kg	26
Ordering Information	Model	Product Code
Standard Power Source – MMA outfit	Champ 250	F10.34.501.0066
Optional Accessories		
Welding Cable Assembly -5mtr.		S17.01.001.1211
Earthing Cable Assembly -5mtr.		S17.01.001.1095
Remote control unit -10 mtr.		S17.01.002.0301

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

CHAMP T400

The new world class indigenous inverter based DC welder

SALIENT FEATURES :

- Three phase IGBT inverter based, high efficiency and high power factor DC Welder
- High OVC and suitable for Long distance welding and cellulosic electrodes
- Enhanced Reliability due to SMD technology
- Capable of Welding with all types of cellulosic electrodes including 6010, 7010G and 8010G I HF Unit
- High frequency IGBT based Rectifier
- Arc force adjustment on panel
- TIG Welding possible with External HF Unit
- Light weight, compact and portable for easy handling
- Capable of Welding with 100 meter + 100 meter welding and return cables
- Smooth and stable arc with minimum spatter
- Controls provided for adjustments of Arc force
- TIG operation possible with external HF TIG Control unit







PROTECTIONS WITH AUTO RESET :

- Input Supply Voltage protections for over and under Voltage
- Over Temperature
- Protection against Single phasing

SPECIFICATIONS :







Technical Specifications	Unit	CHAMP T400
Input		
Input Supply :		
Voltage 	Volt	415 , +15%, -10%
Phase	No	3
Frequency	Hz	50/ 60
Input KVA @ 415 Vac 		
@ 100% duty cycle	KVA	14
@ No Load	KVA	0.24
Power Factor	CosØ	Upto 0.93
Efficiency	%	85
Output		
Open Circuit Voltage 	Volt	85 V DC
Welding Current Range 	Amps	10-400
Welding Current (40°C)		

Cont.

CHAMP T400

The new world class indigenous inverter based DC welder

Cont.

@ 60% duty cycle (10 minute cycle)	Amps	400
@ 100% duty cycle 	Amps	310
General		
Suitable Welding Electrode size	mm Ø	2.5, 3.2, 4, 5 and 6.3 mm
Arc force setting 	-	Adjustable by Potentiometer
Current Display (Set Current & Actual Current)	A	3 digit –7 segment digital panel pcb
Ingress Protection		IP23
Cooling 	Class	Forced Air
Insulation	Type	H
Welding Output Terminals	Class	Stud type for Lug type cable connections
Dimensions L x W x H	mm	660 X 305 X 530
Weight (approx.) 	Kg	40
Ordering Information		
Power Source	Model	Product Code
	Champ T400	F10.34.501.0076
Welding Cable Assembly (Optional).		S17.01.002.0059
Remote control unit (Optional) 10 mtr.		S17.01.002.0049
Earthing Cable Assembly (Optional)		S17.01.002.1305

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CHAMP 500 / CHAMP 600

The new world class Inverter based Indigenous DC welders

SALIENT FEATURES :

- Three phase inverter based, high efficiency and high power factor DC Welders
- Enhanced Reliability due to SMD technology
- High frequency IGBT based Rectifier
- Arc force adjustment on panel
- TIG Welding possible with External HF Unit
- Suitable for all electrodes including 6010, 7010G and 8010G
- Latest PWM inverter technology
- Smooth and stable arc with minimum spatter
- Suitable for Gouging Application and long distant welding








- Arc force adjustments provided on the front panel
- TIG operation possible with external HF TIG Control unit.

PROTECTIONS WITH AUTO RESET :

- Input Supply Voltage protections for over and under Voltage
- Over Temperature
- Protection against Single phasing

SPECIFICATIONS :






Technical Specifications	Unit	CHAMP 500	CHAMP 600
Input			
Input Supply :			
Voltage 	Volt	415 , +15%, -10%	
Phase	No	3	
Frequency	Hz	50/ 60	
Input KVA @ 415 Vac 			
@ 100% duty cycle	KVA	17.5	22.0
@ No Load	KVA	0.27	0.31
Power Factor	CosØ	0.93	
Efficiency	%	87	
Output			
Open Circuit Voltage 	Volt	89	
Welding Current Range 	Amps	20-500	20-600
Welding Current (40°C 10 minute cycle) 			
@ 60% duty cycle	Amps	500	600
@ 100% duty cycle	Amps	387	465

Cont.

CHAMP 500 / CHAMP 600

The new world class indigenous inverter based DC welder

Cont.

General			
Suitable Welding Electrode size	mm Ø	2.5, 3.2, 4, 5 and 6.3 mm	
Suitable for Gouging Electrode Size	mm Ø	Max. up to 9mm	Max. up to 9 mm 12mm –limited use
Arc force setting		Adjustable by Potentiometer	
Current Display (Actual)		4 digit –7 segment digital panel pcb	
Ingress Protection 	Class	IP23	
Cooling	Type	Forced Air	
Insulation	Class	H	
Welding Output Terminals		Stud type for Lug type cable connections	
Dimensions			
Length 	mm	700	
Width	mm	460	
Height (with handle)	mm	575	
Height (without handle)	mm	630	
Weight (approx.) 	Kg	57	58
Ordering Information	Model	Product Code	
Standard Power Source – MMA outfit	Champ 500 / Champ 600	F10.34.501.0030	F10.34.501.0026
Optional Accessories			
Welding Cable Assembly, 70 sq. mm 5mtr		S17.01.002.0287	
Earthing Cable Assembly, 70 sq.mm 5mtr		S17.01.002.0288	
Gouging Torch (CAG-9)		S15.01.003.0532	

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- Backed by dedicated customer care package.

CHAMP 1200 - GOUGEMASTER

The new world class indigenous inverter based DC welder
with High Current Gouging capability

GENERAL :

- Three phase inverter based, high efficiency and high power factor DC Welder
- Suitable for normal Electrode Welding as well as gouging at high currents
- Enhanced Reliability due to SMD technology



PROTECTIONS WITH AUTO RESET :

- Input Supply Voltage protections for over and under Voltage
- Over Temperature
- Protection against Single phasing

SPECIFICATIONS :



Technical Specifications	Unit	Champ 1200
Input		
Input Supply :		
Voltage	Volt AC	415 , +15%, -10%
Phase	No	3
Frequency	Hz	50/ 60
Max Input KVA @ @ 100% duty cycle	KVA	55
Input Supply Current @ 100% duty cycle (1000 Amps)	Amps, AC	76
Input Supply Current @ 60% duty cycle (1200 Amps)	Amps, AC	92
Power Factor @ 100% duty cycle		0.93
Efficiency @ 100% duty cycle	%	85
Output		
Open Circuit Voltage	Volt,DC	90
Welding Current Range	Amps,DC	100-1200
Welding Current (40°C 10 minute cycle)		
@ 60% duty cycle	Amps,DC	1200
@ 100% duty cycle	Amps,DC	1000
General		
Suitable Welding Electrode size	mm Ø	3.2, 4, 5 and 6.3 mm
Suitable for Gouging Electrode Size	mm Ø	Up to 12 mm
Remote Control (Optional)		10 meter Remote Control provided as optional for current setting
Ingress Protection	Class	IP23
Cooling	Type	Forced Air
Insulation	Class	H

Cont.

CHAMP 1200 - GOUGEMASTER

The new world class indigenous inverter based DC welder
with High Current Gouging capability

Cont.

Welding Output Terminals		Stud type for Lug type cable connections
Dimensions		
Length	mm	930
Width	mm	525
Height (with handle)	mm	950
Weight (approx.)	Kg	115
Front Panel Functions		'MAINS ON' - Green LED Indication
		'MMA/GOUGING' - Red LED Indication
		'REMOTE ON' - Red LED Indication
		'TRIP' - Red LED Indication if Machine is under Protection Mode
		Current Adjustment Encoder
		4 Digit Digital Display for Current and Voltage
Protections (Auto - Reset)		Over Voltage, Under Voltage, Single Phasing
		Over Temperature

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SUPERGEN 320

Performance Proven Motor Generator Welding Set
Choose from the finest for superior weld quality and efficiency

SALIENT FEATURES :

- The set consists of three-phase motor as prime mover and DC welding generator of a special patented design
- Excellent high quality welding with big savings in power bills
- Positive protection against overload and single phasing
- Mobile and mounted on rubber-tyred wheels
- Ideal for welding with cellulosic electrodes for cross country pipelines and thermal/nuclear power plants.



QUANTUM LEAP IN WELDING PRODUCTION FEATURE-WISE COMPARISON












Features you want	Brand X	Our new technology break through
Welding with 100 mtr cable length without any current drop	Current drops	Constant current even with longer cable length
Low no load power consumption	3.2 KW	1.1 KW - less than half power consumption and energy cost
Low power consumption at	22.23 KW 320 Amp.welding current	15.5 KW Reduction by 30% in energy bill Saving upto Rs. 46,000 in a year
Low maintenance cost	Periodic wear'n tear of brushes	Brushless' technology eliminates frequent Maintenance and down time costs
Freedom from stator failures	No protection	Built-in protection against single phasing, over voltage and under voltage
Insulation class	"B"	"H" - provides longer service life- more reliable
Suitable for welding in open/ dusty sites	S.P.D.P.* Open type design - sucks in dirt and dust	Totally enclosed preventing entry of dirt and dust inside winding - ideal for site conditions
Ease of mobility	330 kgs in weight	Only 265 kgs in weight i.e. 25% lighter-easier to move about
Availability of Spares & service	Spares subject to imports- Limited service network	Easy availability of spares Large network of authorised service centres.

Cont.

SUPERGEN 320

Performance Proven Motor Generator Welding Set
Choose from the finest for superior weld quality and efficiency

Cont.

SPECIFICATIONS :						
Technical Specifications		Unit	Value			
Input						
Input Supply :						
Voltage		Volt	415			
Phase		No	3			
Frequency		Hz	50			
Power		Kw/HP	15.5/20.78			
Speed (Synchronous)		RPM	3000			
Starting		-	Star / Delta starter			
Recommended switch fuse rating		-	TP40			
Protection to Machine		-	Machine provided with built in Single Phasing, Under voltage (340V), Over voltage (480 V) and thermal protection			
Output						
Open Circuit Voltage		Volt	100			
Welding Current Range		Amps	35-320			
Welding Current						
@ 60% duty cycle		Amps	320			
@ 100% duty cycle		Amps	250			
Welding Electrode Range		mm	2.5-6.3			
General						
Insulation		Class	H			
Cooling		Type	Fan Cooled			
Enclosure		Type	Totally enclosed			
Protection		Class	IP44 (excluding Fan side)			
Dimensions L X W X H		mm	1065 x 540 x 840			
Weight (approx)		Kg	265			
Ordering Information			Product Code			
Standard Power Source - MMA outfit			F10.31.001.0005			
Optional Accessories						
Welding Accessories- WAC 400			S10.64.001.0014			
Ammeter/Voltmeter Box - DPAV 400			S10.64.001.0051			

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- Backed by dedicated customer care package.

SILENT CHALLENGER 401

New Generation Diesel Engine Driven Silent Welding Set Conforming to Latest CPCB II Norms

SALIENT FEATURES :

- Conforming to latest CPCB norms for noise & exhaust emission level
- Versatile applications, including cross country, in plant pipe and tube welding
- Ideal for heavy fabrication & site applications
- Highly reliable even in hostile site conditions
- Big savings in fuel and longer runs before next refueling
- Specially proven with Cellulosic (6010, 7010G & 8010G types) and other special types of electrodes.
- Excellent Pre and Post Sales Services.
- Super Silent Operations



SPECIFICATIONS :



Technical Specifications	Unit	Value
Machine Name		Sc401
CPCB compliance	Type	Meets CPCB - II compliance for Exhaust Emission and Noise within 75 dba at 1 mtr
Welding Generator		
Welding Generator	Type	Brushless type, high frequency generator, specially designed for welding applications, constant current (CC) characteristic with winding less, commutator less, magnet less, slipring less and rotating diode less rotor construction for maintenance free and reliable operation
Welding process	Type	SMAW (Shielded Metal Arc Welding)
Operators	No	Single
Welding current range	Amps	50 - 400
Max. hand welding current	Amps	400
Max. hand welding current @ 60% DC	Amps	400
Max. hand welding current @ 100% DC	Amps	310
Open circuit voltage (Max. / Min)	Volts	100/45
Diameter of coated electrode	mm	2.5-6.3
Insulation Class	Type	H
Engine Make, Type		SIMPSON, SJ327T CPCB-II Compliant
Cylinder	No.	3
Rated engine Speed	RPM	1800
Engine Cooling	Type	Water Cooled
Engine Rating	BHP	38.5 BHP @ 1800 RPM
Conforms to	Standard	IS 10002(BI)
Starting	Type	Electric (Battery 12 V, 75 AH)

SILENT CHALLENGER 401

New Generation Diesel Engine Driven Silent Welding Set Conforming to Latest CPCB II Norms

Cont.

Fuel Consumption @ 60% Duty Cycle	Ltrs./Hrs.	4.0 ltrs/hr @ 100% Duty Cycle	
Fuel tank Capacity	Ltrs.	70	
Meters/Gauges/Indications	Type/Detail	Lube oil pressure, Fuel level Indication, Battery charging current, Charging failure warning lamp, Engine speed, Hour Meter etc.	
OPTIONAL Engine Safety Protection	Type	Engine Auto Shut off in the event of low lube oil pressure	
Auxiliary Power Source (Indicates rating with simultaneous welding load)			
Rating	KVA	10	3
Voltage	Volts	415	240
Phases	No	3	1
MCCB Rating	Amps	16	
Output Sockets	No	2	
General (Dimensions & Weight)			
Skid Mounted :			
Length/Width/Height	mm	2000 x 820 x 1460	
Weight (Net)	Kg	1100	
Two Wheel Mounted :			
Length/Width/Height	mm	2900 x 1455 x 1990	
Weight (Net)	Kg	1240	
Four Wheel Mounted :			
Length/Width/Height	mm	2900 x 1555 x 1990	
Weight (Net)	Kg	1340	

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

SILENT CHALLENGER 501

New Generation Diesel Engine Driven Silent Welding Set Conforming to Latest CPCB II Norms

SALIENT FEATURES :

- Conforming to latest CPCB norms for noise & exhaust emission level
- Versatile applications, including cross country, in plant pipe and tube welding.
- Ideal for heavy fabrication & site applications
- Highly reliable even in hostile site conditions
- Big savings in fuel and longer runs before next refueling
- Specially proven with Cellulosic (6010, 7010G & 8010G types) and other special types of electrodes.
- Excellent Pre and Post Sales Services.
- Super Silent Operations



SPECIFICATIONS :



Technical Specifications	Unit	Value
Machine Name		SC 501
CPCB compliance	Type	Meets CPCB - II compliance for Exhaust Emission and Noise within 75 dba at 1 mtr
Welding Generator		
Machine Name		SC 501
Welding Generator	Type	Brushless type, high frequency generator, specially designed for welding applications, constant current (CC) characteristic with winding less, commutator less, magnet less, slipring less and rotating diode less rotor construction for maintenance free and reliable operation
Welding process	Type	SMAW (Shielded Metal Arc Welding)
Operators	No	Single
Welding current range	Amps	50 - 500
Max. hand welding current	Amps	500
Max. hand welding current @ 60% DC	Amps	500
Max. hand welding current @ 100% DC	Amps	400
Open circuit voltage (Max. / Min)	Volts	100/45
Diameter of coated electrode	mm	2.5-6.3
Insulation Class	Type	H
Engine Make, Type		
Cylinder	No.	3
Rated engine Speed	RPM	1800
Engine Colling	Type	Water Cooled
Engine Rating	BHP	38.5 BHP @ 1800 RPM
Conforms to	Standard	IS 10002(BI)
Starting	Type	Electric (Battery 12 V, 75 AH)

Cont.

SILENT CHALLENGER 501

New Generation Diesel Engine Driven Silent Welding Set Conforming to Latest CPCB II Norms

Cont.

Fuel Consumption @ 60% Duty Cycle	Ltrs./Hrs.	4.0 ltrs/hr @ 100% Duty Cycle	
Fuel tank Capacity	Ltrs.	70	
Meters/Gauges/Indications	Type/Detail	Lube oil pressure, Fuel level Indication, Battery charging current, Charging failure warning lamp, Engine speed, Hour Meter etc.	
OPTIONAL Engine Safety Protection	Type	Engine Auto shut of in the event of low lube oil pressure or High Cylinder Head Temperature	
Auxiliary Power Source (Indicates rating with simultaneous welding load)			
Rating	KVA	10	3
Voltage	Volts	415	240
Phases	No	3	1
MCCB Rating	Amps	16	
Output Sockets	No	2	
General (Dimensions & Weight)			
Skid Mounted :			
Length/Width/Height	mm	1995 X 820 X 1520	
Weight (Net)	Kg	1100	
Two Wheel Mounted :			
Length/Width/Height	mm	2900 x 1455 x 1990	
Weight (Net)	Kg	1240	
Four Wheel Mounted :			
Length/Width/Height	mm	3435 x 1555 x 1990	
Weight (Net)	Kg	1340	

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

Cont.

SILENT CHALLENGER 2 X 301

The New generation Diesel Engine Driven Silent Welding Set
Conforming To Latest CPCB II norms

SALIENT FEATURES :

- Conforms to latest CPCB norms for noise & exhaust emission level
- Versatile applications, including cross country, in-plant pipe and tube welding.
- Ideal for heavy fabrication & site applications
- Highly reliable even in hostile site conditions
- Big savings in fuel and longer runs before next re- fuelling
- Specially proven with Cellulosic (6010, 7010 G & 8010G types) and other special types of electrodes.
- Excellent Pre and Post Sales Services.
- Super Silent Operations



SPECIFICATIONS :



Technical Specifications	Unit	Value		
Welding Generator	Type	Double Operator Semi Auto (CV)	Double Operator Manual (CC)	Single Operator Manual (CC)
Welding Current Range	Amps, DC	15x300 A	15x300 A	30-600 Amps
Max. Hand Welding Current @ 40% DC	Amps, DC	2x300 A @32V	2x300 A @29V	600 Amps @30V
Max. Hand Welding Current @ 60% DC	Amps, DC	2x250 A @30V	2x250 A @26.5V	500 Amps @30V
Max. Hand Welding Current @ 100% DC	Amps, DC	2x200 A @28V	2x200 A @24V	400 Amps@36V
Open Circuit Voltage (Max)	Volts, DC	34 VDC	92 VDC	92 VDC
Generally Conforms To	IS	26-35		
Insulation	Type	H		
Engine Make, Type		SIMPSON, SJ327T CPCB-II Compliant		
Cylinder	No.	3		
Engine Colling	Type	Water Cooled		
Engine Rating	BHP	38.5 BHP @ 1800 RPM		
Speed	RPM	1800		
Conforms to	IS	10002/82		
Start (12V)	Type	Electric		
Fuel Consumption	Ltrs./Hrs.	4		
Fuel tank Capacity	Ltrs.	75		
Meters/Gauges/Indications	Type/Detail	Lube oil pressure, Fuel level Indication, Battery charging current, Charging failure warning lamp, Engine speed, Hour Meter etc.		
OPTIONAL Engine Safety Protection	Type	Engine Auto shut of in the event of low lube oil pressure or High Cylinder Head Temperature		

Cont.

SILENT CHALLENGER 2 X 301

The New Generation Diesel Engine Driven Silent Welding Set Conforming To Latest Cpcb Ii Norms

Cont.

Auxiliary Power Source (Built In)			
Mode	Amps, DC	Weld Load together with Auxiliary Load	Auxiliary Mode without Weld Load
Rating (3 Phase)	KAV/KW	8	10 & 8 KVA from each socket Respectively (18 KVA Total)
Or			
Rating (Single Phase)		3	3 KVA from each socket Respectively (6 KVA Total)
Votage (3 Phase / 1 Phase)	Volts	415/240	415/240
Phases	No	3-jan	3-jan
MCCB Rating	Amps	10/12.5	27/25
Dimensions, Rate & Mounting Details			
Skid Mounted :			
Length/Width/Height	mm	1995 x 820 x 1520	
Weight (Net)	Kg	1008	
Two Wheel Mounted :			
Length/Width/Height	mm	2905 x 1455 x 2100	
Weight (Net)	Kg	1150	
Four Wheel Mounted :			
Length/Width/Height	mm	3435 x 1555 x 2100	
Weight (Net)	Kg	1250	
Ordering Information			
Description			Product Code
Silent Challenger 2 X 301 For CPCB II Compliant Engine, Skid Mounted			F10.33.103.0069
Silent Challenger 2 X 301 For CPCB II Compliant Engine, Two Wheel Mounted			F10.33.103.0070
Mandatory Maintenance Kit For SIMPSON SJ327 Diesel Engine (for 1000 Hrs Operation)			S12.10.007.0197

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

MAXIMIG 251

The Workhorse Diode based Tap controlled
MIG / MAG Welding Rectifier





SALIENT FEATURES ::

- Recommended for All position MIG / MAG welding applications
- Suitable for welding of wide range of metals like Carbon Steel, Stainless Steel and other steel alloys, with appropriate or recommended consumable
- High volume thin sheet metal fabrication welding as in Auto Industries and other engineering industries, maintenance and repair workshops
- Most ideal for Auto Ancillary units - for increased productivity and quality welding applications
- Most reliable and dependable workhorse welding machines with proven economy
- Rugged design, reliable performance and superior arc characteristics
- Diode based power source with traditional tapped transformer, provided with switch on front panel for step control of voltage, enabling welder to obtain the desired arc voltage with ease
- User friendly selection of 2 track / 4track operation for zero defect GMAW welding
- Good and consistent weld quality with low hydrogen content
- Dependable Thyristorized wire-feeder system ensures long, uninterrupted welding
- Quick release wire feed roller mechanism enables operator to change the wire spool quickly, minimising the unproductive time and thus increasing the productivity on the shop floor
- Standard Package comprises of Power Source, Wire feeder (2 Roll Drive) with 5 meter interconnection and Welding Torch only



SPECIFICATIONS :



Technical Specifications	Unit	Maximig 251
Characteristic Control		Tap Controlled Diode Based
Characteristics	Type	Constant Potential
Input 		
Input Supply:		
Voltage	Volts, Ac	380 / 415 , +10%, -10%
Phase 	No	3
Frequency	Hz	50/60
Maximum Input Current	Amps, AC	13
Input Kva @ 100% Duty Cycle 	KVA	10
Input Kva @ 60% Duty Cycle 	KVA	7
No. Of Welding Steps		16

Cont.

MAXIMIG 251

The Workhorse Diode based Tap controlled
MIG / MAG Welding Rectifier

Cont.

Output		
Open Current Voltage	X%	Volts, DC
Welding Current Range		Amps, DC
Welding Current @ 100% duty cycle		Amps, DC
Welding Current @ 60% duty cycle		Amps, DC
General		120% of the set current
Cooling		Type
Insulation		Class
Welding Output Terminals	SS	Type
Dimensions (L X W X H)		mm
Weight (Approx)		Kg

Ordering Information				
Model	Power Source	Wirefeeder	Torch	Product Code
MAXIMIG 251 (A)	CVR 251	FEEDLITE 20 (NEL-5)	TW 252 (E)	F10.37.202.0119
MAXIMIG 251 (B)	CVR 251	FEEDLITE 20 (NEL - 5)	MTG 250 (E)	F10.37.202.0120

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

MAXIMIG 400

The Workhorse Diode based Tap controlled
MIG / MAG Welding Rectifier




SALIENT FEATURES :

- Most reliable and dependable workhorse MIG / MAG welding machines proven for wide range of applications
- Rugged design, reliable performance and superior arc characteristics – minimum maintenance requirements
- Diode based power source with traditional tapped transformer, provided with switch on front panel for step control of voltage enabling welder to obtain the desired arc voltage with ease
- User friendly selection of 2track / 4track operation for zero defect GMAW welding
- Good and consistent weld quality with low hydrogen content
- Dependable Thyristorized wire feeder system ensures long, uninterrupted welding
- Quick release wire feed roller mechanism enables operator to change the wire spool quickly, minimizing the unproductive time and thus increasing the productivity on the shop floor
- Standard Package comprises of Power Source, Wire feeder (2 Roll Drive) with 5 meter interconnection and Welding Torch only
- Recommended for All position MIG / MAG welding applications
- Suitable for wide range of metals like Carbon Steel, Stainless Steel, with appropriate or recommended consumable
- Ideally recommended for heavy duty MIG / MAG welding applications like crane structure components manufacturing, 3 shift use, rough handling on the shop-floor and fabrication shops where maintenance staff is not very qualified



SPECIFICATIONS :



Technical Specifications	Unit	Maximig 400
Characteristic Control		Tap Controlled Diode Based
Characteristics	Type	Constant Potential
Input 		
Input Supply:		
Input Supply Voltage	Volts, Ac	415 , +10%, -10%
Phase 	No	3
Frequency	Hz	50/60
Input Kva @ 100% Duty Cycle 	KVA	17.5
No. Of Welding Steps		32

Cont.

MAXIMIG 400

The Workhorse Diode based Tap controlled
MIG / MAG Welding Rectifier

Cont.

Output		
Open Circuit Voltage	X%	Volts, DC
Welding Current Range		Amps, DC
Welding Current @ 100% duty cycle		Amps, DC
Welding Current @ 60% duty cycle		Amps, DC
General		
Cooling		Type
Insulation		Class
Welding Output Terminals	SS	Type
Dimensions (L X W X H)		mm
Weight (Approx)		Kg
Wire Feeder		Model
		FEEDLITE 40 NEM(C) - 4 ROLL
Weight (Without Spool)		Kg
Dimensions (LXWXH)		MM
Suitable for wire spool capacity		Kg
Wire Feeder Fitted with rollers		mm
Wire Feeder Motor Voltage		Volts DC
Wire Drive Motor		Type
Wire Roll Drive		No
Wire Feed Speed		Mtr/ min
Suitable for wire sizes		mm
Torch (3 Meter)		

Ordering Information				
MAXIMIG 400 (C)	CVR 400	FEEDLITE 40 (NELC-5)	TW 402 (E)	F10.37.202.0123
MAXIMIG 400 (D)	CVR 400	FEEDLITE 40 (NELC-5)	MTG 400 (E)	F10.37.202.0124

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

RANGER 403

Most Reliable and Dependable Thyristor based welding power source, suitable for MIG/MAG Semiautomatic and Automatic welding applications

TYPICAL APPLICATIONS :

The complete system consists of power source, wire feeder, torch and interconnecting cables. Remote control provided along with outfit enable user to set voltage and current while welding. Various combination of complete system (outfits) is given in the Ordering Information.








SALIENT FEATURES :

- Light weight, Compact design of Power source, Wire feeder and Torch
- Crater Voltage and Current control possible with ON/OFF switch
- LED Indications for Mains ON and Trip signal
- Globule Detachment Technique keeps the tip ready without globule formation for next welding cycle
- Protection against overheating and very high secondary short circuit current
- Flux core or solid wire selection switch and Gas check Toggle switch on front panel
- Special construction of transformer-resulting in faster response time and Excellent Arc dynamics
- Analog voltage and current meters on front panel
- Wheels for easy movement of machine on the shop floor

SPECIFICATIONS :




Technical Specifications	Unit	Ranger 403
Input		
Input Supply :		
Voltage 	Volts, AC	415, +10%, -10%
Phase	No	3
Frequency	Hz	50
Max input KVA @ 100% duty cycle 	KVA	20
Input Current	Amps, AC	34
Output		
Open Circuit Voltage 	Volts, DC	62 V +/-3V
Welding Current Range 	Amps, DC	60-400
Welding Current		
@ 100% duty cycle	Amps, DC	310
@ 60% duty cycle 	Amps, Dc	400
Welding Voltage Range	Volts, DC	16-39

Cont.

RANGER 403

Most Reliable and Dependable Thyristor based welding power source, suitable for MIG/MAG Semiautomatic and Automatic welding applications

Cont.

General			
Ingress Protection		Class	IP23
Cooling		Type	Forced Air
Insulation		Class	H
Dimension L×W×H		mm	440 x 705 x 835
Weight (approx.)		Kg	160
Wire Feeder	Model	FEEDLITE 20 (PEMR)	FEEDLITE 40 (PEMR)
Drive Unit	Type	2 Roll Print Mointor	4 Roll Print Mointor
Motor Voltage	Volts, DC	18.3	18.3
Second Valve Voltage	mm	1.2-18	1.2-18
Wire Spool Capacity	Kg	15	15
Suitable For Wire Diameter	mm	0.8, 1.0, 1.2 & 1.6	0.8, 1.0, 1.2 & 1.6
Inch Switch		On Wire Feeder	On Wire Feeder
Dimension L×W×H	mm	460 x 200 x 280	460 x 200 x 280
Weight (approx.)	Kg	9	9
Welding Torch	Unit	ADOR TW 402 (E)	ADOR MTG 400 (E)
Rating	Amps, DC	400 A @ 60% DUTY CYCLE FOR CO ₂ , 320 A @ 60% DUTY CYCLE FOR MIXED GAS	400 A @ 60% DUTY CYCLE FOR CO ₂ , 320 A @ 60% DUTY CYCLE FOR MIXED GAS
End Connection With Torch	Type	Euro	Euro
Torch Lenght	Meter	3	3

Ordering Information				
Model	Power Source	Wirefeeder	Torch	Product Code
Ranger 403 (A)	TCVR- 403 (A)	FEEDLITE 20 (PMER)	TW 402 (E)	F10.37.202.0129
Ranger 403 (B)	TCVR- 403 (A)	FEEDLITE 20 (PMER)	MTG 400 (E)	F10.37.202.0130
Ranger 403 (C)	TCVR- 403 (A)	FEEDLITE 40 (PMER)	TW 402 (E)	F10.37.202.0131
Ranger 403 (D)	TCVR- 403 (A)	FEEDLITE 40 (PMER)	MTG 400 (E)	F10.37.202.0132

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

RANGER 600

The Heavy Duty Thyristorized MIG/MAG Welding Rectifier

SALIENT FEATURES :

- Most reliable and dependable thyristor based power source for high quality MIG / MAG semi automatic manual and semiautomatic mechanized welding applications
- Hex phase, full wave full control bridge rectification circuit reduces ripple in the welding output - resulting in spatter free welding
- Special design and construction of Transformer - resulting faster response time and excellent Arc dynamics
- Light weight, Compact design of power source, wire feeder and Torch
- Adjustment of Crater Voltage, Crater Current possible with regulating pots provided on the front panel
- Globule detach technique keeps the tip ready for next welding cycle
- Choice of different types of wire feeder motors and welding torches available for different industrial applications
- Quick release wire feed roller mechanism enables operator to change the wire spool quickly, minimizing the unproductive time and thus increasing the productivity on the shop floor
- Power source protected from Over Voltage, Under Voltage supply, Single phasing, Over load / overheating and very high secondary short circuit current
- Suitable for ALL position MIG / MAG welding applications -both within shop-floor as well as at open yards and project sites (with due protection or shield against windy air)
- Suitable for wide range of metals like Carbon Steel, Stainless Steel, Aluminium and its alloys, with appropriate or recommended consumable
- Specifically designed for heavy duty, structural welding, machine building applications



SPECIFICATIONS :



Technical Specifications	Unit	TCVR 600 (Ranger 600)
Characteristics Control		Constant Potential Thyristorized Phase Control
Input		
Input Supply:		
Voltage	Volts, Ac	415 , +10%, -10%
Phase	No	3
Frequency	Hz	50/60

Cont.

RANGER 600

The Heavy Duty Thyristorized MIG/MAG Welding Rectifier

Cont.

Maximum Input Current	Amps, AC	55
Input Kva @ 100% Duty Cycle	KVA	31.7
Input Kva @ 60% Duty Cycle		40
Output		
Open Circuit Voltage	Volts, DC	65 V MAXIMUM
Welding Current Range	Amps, DC	60-600
Welding Current @ 100% duty cycle	Amps, DC	465
Welding Current @ 60% duty cycle	Amps, DC	600
General		
Ingress Protection		IP23
Cooling	Class	Forced Air
Insulation	Type	H
Welding Output Terminals	Class	Stud Type For Lug Type Cable Connections
Dimensions (L X W X H)	mm	980 x 550 x 960
Weight (Approx)	Kg	230
Wire Feeder		
Weight (without spool)	Kg	16 Kg Approx
Dimensions (L X W X H)	mm	563X230X410
Suitable for wire spool capacity	Kg	15 Kg
Wire Feeder Fitted with Rollers	mm	1.2/1.6 for Solid Wire 2 No.
Wire Feeder Motor Voltage	V DC	42 V DC
Wire Driver Motor	Type	Permanent Magnet DC Type
Wire Roll Driver	No	Four
Wire Feed Speed	mtr/min	1.5 to 18
Suitable for Wire sizes	mm	0.8,1,1.2,1.6

Ordering Information

Model	Power Source	Wirefeeder	Torch	Product Code
Ranger 600 (A)	TCVR 601	FEEDLITE 40 (NEH) -C	MT 600 (E)	F10.37.202.0125
Ranger 600 (C)	TCVR 601	FEEDLITE 40 (NEH) -C	ADOR TW 502 (E)	F10.37.202.0156

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

RANGER 600 MULTI

The Heavy Duty Multipurpose Thyristorized Welding Rectifier for
MMA / MIG / TIG / GOUGING Applications

SALIENT FEATURES :

- Heavy duty Thyristorized Multipurpose Welding Rectifier with Double-star configuration
- Suitable for multi process welding applications like SMAW / GMAW / FCAW / GTAW and GOUGING processes within shop floor as well as at open yards and project sites (with due protection or shield against windy air)
- Suitable for wide range of metals like Carbon Steel, Stainless Steel, Aluminium and its alloys, with appropriate or recommended consumable
- Specifically designed for heavy duty, structural welding, machine building application
- Rugged construction -most reliable and dependable thyristor based power source for high quality welding processes
- Hex- phase, full wave full control bridge rectification circuit reduces ripple in the welding output- resulting spatter-free welding
- Automatic Globule Detachment technique keeps the tip ready for next welding cycle
- Choice of 2 roll and 4 roll wire-feeders and different torches available for different industrial applications
- Quick release wire feed roller mechanism enables operator to change the wire spool quickly, minimising the unproductive time and thus increasing the productivity on the shop floor
- Power source protected from Over Voltage, Under Voltage supply, Single phasing, Over load/ overheating and very high secondary short circuit current



SPECIFICATIONS :



Technical Specifications	Unit	TCCVR 600
Characteristics Control	CC/CV	Constant Potential Thyristorized Phase Control
Input		
Input Supply:		
Voltage	Volts, AC	415 , +10%, -10%
Phase	No	3
Frequency	Hz	50/60
Maximum Input Current	Amps, AC	55
Recommended Switch Fuse Rating	Amps, AC	60
Input Kva @ 100% Duty Cycle	KVA	31.7
Input Kva @ 60% Duty Cycle		40

Cont.

RANGER 600 MULTI

The Heavy Duty Multipurpose Thyristorized Welding Rectifier for
MMA / MIG / TIG / GOUGING Applications

Cont.

Output		
Open Circuit Voltage	Volts, DC	80 V (CC Mode)
		65 V MAXIMUM
Welding Current Range	Amps, DC	20-600 (CC Mode)
		75-600 (CV Mode)
Welding Current (40°, 10 Min duty cycle)		
@ 60% duty cycle	Amps, DC	600
@ 100% duty cycle	Amps, DC	465
General		
Ingress Protection		IP23
Cooling	Class	Forced Air
Insulation	Type	H
Welding Output Terminals	Class	Stud Type For Lug Type Cable Connections
Dimensions		
Lenght	mm	980
Width	mm	550
Height (With Handel)	mm	960
Weight (Approx)	Kg	227
Wire Feeder		FEEDLITE 40 NEH(C)
Weight (without spool)	Kg	16 Kg Approx
Dimensions (L X W X H)	mm	563X230X410
Suitable for wire spool capacity	Kg	15 Kg
Wire Feeder Fitted with Rollers	mm	1.2/1.6 for Solid Wire 2 No.
Wire Feeder Motor Voltage	V DC	42 V DC
Wire Driver Motor	Type	Permanent Magnet DC Type
Wire Roll Driver	No	Four
Wire Feed Speed	mtr/min	1.5 to 18
Suitable for Wire sizes	mm	0.8,1,1.2,1.6

Ordering Information

Model	Power Source	Wirefeeder	Torch	Product Code
Ranger Multi 600 (A)	TCCCVR 601	FEEDLITE 40 (NEH)-C	MT 600 (E)	F10.37.202.0128
Ranger Multi 600 (B)	TCCCVR 601	FEEDLITE 40 (NEH)-C	ADOR TW 502 (E)	F10.37.202.0158

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

CHAMPMIG 250

The new world class indigenous inverter based GMAW welding outfit

INTRODUCTION :

CHAMP MIG 250 is IGBT inverter based welding outfit suitable for GMAW applications. The IGBT Power module, ferrite core and fast recovery diode are used as key device for power conversion and trans-mission to assure better efficiency and performance. The complete system consists of power source, wire feeder and MIG torch and interconnecting cables.



DETAILS OF COMPLETE SYSTEM :

Sr. No.	Description	CHAMPMIG 250 A	CHAMPMIG 250 B
1	Power Source	ICVR 250	ICVR 250
2	Wire feeder	FEEDLITE 20 (NELR)	FEEDLITE 20 (NELR)
3	Torch	ADOR TW 252 (E)	ADOR MTG 250 (E)

SALIENT FEATURES :

- Inverter based GMAW outfit
- High efficiency and high power factor – resulting energy saving
- Auto “Weld Stop” when welding torch is taken away from weld job
- Compatible to Power Generator Supply
- Enhanced Reliability due to SMD technology
- Digital Panel for adjusting the welding parameters
- 30% more Energy efficient than conventional machines
- Maximum Power factor is 0.93
- Excellent dynamic response enables superior arc characteristics. 2T, 4T operating modes
- Electronic choke adjustment for better arc control
- Crater voltage and Crater current adjustment through digital panel
- Unique feature of Globule Detachment to stop formation of globules at the tip of wire at the end of welding
- Automatic “Weld Stop” facility

PROTECTION :

The equipment is provided with following protections.









- Under Voltage and Over Voltage:** Error message is displayed and the equipment shuts down if the supply voltage exceeds the positive or negative limits specified in the Technical Specifications
- Over Temperature:** Error message is displayed and the equipment shuts down if the temperature of the main power components exceeds the safe limits
- Single Phasing Protection:** Error message is displayed and the equipment shuts down if any one of the three phase supply line is absent (single-phasing prevention / protection)

CHAMPMIG 250

The new world class indigenous inverter based GMAW welding outfit

SPECIFICATIONS :



Technical Specifications	Unit	ICVR 250
Input		
Input Supply :		
Voltage 	Volt	415, +15%, -10%
Phase	No	3
Frequency	Hz	50/ 60
Input KVA 		
@ 100% duty cycle	KVA	6.5
@ No Load	KVA	0.19
Output		
Open Circuit Voltage 	Volts +/-5%	65
Welding Current Range 	Amp	50-250
Welding Current (40°C 10 minutes cycle)		
@ 100% duty cycle 	Amp	195
Welding Voltage Range	Volt	16-34
Crater Current Range	Amp	50-250
Crater Voltage Range	Volt	16-34
Mode of operation		2 track, 4 track, Gas check, OCV check facility
Remote Control (on wire feeder)		For setting voltage & current
Power Factor		Max 0.93
Efficiency	%	83% @ 100% duty cycle
General		
Compatibility to International standard		As per Std. EN60974-1
Wire feed speed	m/min	1.5-18
Suitable Welding Wire Diameter	mm	Steel 0.8,1.0 and 1.2
Ingress Protection	Class	IP23
Cooling 	Type	Forced Air
Dimensions (Approx.) 		
Length	mm	500
Width	mm	260
Height	mm	470
Weight 	Kg	26
Audio Noise Emission		70

Cont.

CHAMPMIG 250

The new world class indigenous inverter based GMAW welding outfit

SPECIFICATIONS :

Technical Specifications	Unit	FEEDLITE 20 (NELR)
Suitable for wire	mm	0.8,1,1.2
Wirefeed speed	mtr/min	1.5 to 18
Wire roll drive	-	TWO
Wire drive motor	Type	Permanent Magnet DC
Wire feeder Motor voltage	V	42
Wire feeder fitted with rollers	-	0.8/1.0/1.2 for sold wire 1no
Suitable for Wire Spool capacity	Kg	15
Dimensions		
Length	mm	460
Width	mm	210
Height	mm	280
Weight (without spool)	Kg	10 (Approx)

TORCH SPECIFICATIONS :

Technical Specifications	Unit	ADOR TW 252 (E)	ADOR MTG 250 (E)
Rating	A	250A @ 60% Duty cycle for CO ₂	250A @ 60% Duty cycle for CO ₂
End Connection to Torch	Type	Euro	Euro
Suitable for Wire Ø	mm	0.8, 1.0, 1.2	0.8, 1.0, 1.2
Torch Length	meter	3	3

ORDERING INFORMATION :

Champ MIG 250 A	Power Source	Wire Feeder	Torch	Product Code
Champ MIG 250 A	ICVR 250	FEEDLITE 20 (NELR)	ADOR TW 252 (E)	F10.37.202.0144
Champ MIG 250 B	ICVR 250	FEEDLITE 20 (NELR)	ADOR MTG 250 (E)	F10.37.202.0146

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

CHAMPMIG 400

The new world class indigenous inverter based GMAW welding outfit

INTRODUCTION :

CHAMP MIG 400 is IGBT inverter based welding outfit suitable for GMAW applications. The IGBT Power module, ferrite core and fast recovery diode are used as key device for power conversion and transmission to assure better efficiency and performance.

The complete system consists of power source, wire feeder, MIG torch and interconnecting cables.



SALIENT FEATURES :

- Inverter based digitally controlled GMAW outfit
- Digital Panel for adjusting the welding parameters
- 25% more Energy efficient than conventional machines
- Maximum Power factor is 0.94
- Excellent dynamic response enables superior arc characteristics
- 2T, 4T operating modes
- Welding dynamic adjustment for better arc control
- Crater voltage and Crater current adjustment through digital panel
- Unique feature of Fresh Tip Transfer (FTT) to avoid globule formation
- Automatic "Weld Stop" facility

DETAILS OF COMPLETE SYSTEM :

Sr. No.	Description	CHAMPMIG 400	CHAMPMIG 400
1	Power Source	ICVR 400	ICVR 400
2	Wire feeder	FEEDLITE 40 (NEMRC)	FEEDLITE 40 (NEMRC)
3	Torch	ADOR TW 402 (E)	ADOR MTG 400 (E)

PROTECTION :

The equipment is provided with following protections.









- Under Voltage and Over Voltage:** Error message is displayed and the equipment shuts down if the supply voltage exceeds the positive or negative limits specified in the Technical Specifications
- Over Temperature:** Error message is displayed and the equipment shuts down if the temperature of the main power components exceeds the safe limits
- Single Phasing Protection:** Error message is displayed and the equipment shuts down if any one of the three phase supply line is absent (single-phasing prevention / protection)

CHAMPMIG 400

The new world class indigenous inverter based GMAW welding outfit

SPECIFICATIONS :



Technical Specifications	Unit	ICVR 400
Input		
Input Supply :		
Voltage 	Volt	415 , +15%, -10%
Phase	No	3 Ø
Frequency	Hz	50/ 60
Input KVA 		
@ 100% duty cycle	KVA	12
@ No Load	KVA	0.24
Output		
Open Circuit Voltage 	Volts +/-5%	65
Welding Current Range 	Amp	50-400
Welding Current (40°C 10 minutes cycle)		
@ 60% duty cycle 	Amp	400
@ 100% duty cycle	Amp	310
Welding Voltage Range	Volt	16-39
Crater Current Range	Amp	50-400
Crater Voltage Range	Volt	16-39
Mode of operation		2 track, 4 track, Gas check, OCV check facility
Remote Control		For setting voltage & current
Power Factor		Max 0.93
Efficiency	%	87% @ 100% duty cycle
General		
Compatibility to International standard		As per Std. EN60974-1
Wire feed speed	m/min	1.5-18
Suitable Welding Wire Diameter	mm	Aluminum 1.2 – 1.6 Steel 0.8,1.0,1.2 & 1.6
Ingress Protection	Class	IP23
Cooling 	Type	Forced Air
Dimensions (Approx.) 		
Length	mm	700
Width	mm	450
Height	mm	600
Weight 	Kg	44
Audio Noise Emission	dB	70

Cont.

CHAMPMIG 400

The new world class indigenous inverter based GMAW welding outfit

SPECIFICATIONS :

Technical Specifications	Unit	FEEDLITE 40 (NEMRC)
Suitable for wire Ø	mm	0.8,1,1.2,1.6
Wirefeed speed	mtr/min	1.5 to 18
Wire roll drive	-	Four
Wire drive motor	Type	Permanent Magnet DC
Wire feeder Motor voltage	V	42
Wire feeder fitted with rollers	-	1.2/1.6 for sold wire 2 no
Suitable for Wire Spool capacity	Kg	15
Dimensions		
Length	mm	563
Width	mm	230
Height	mm	410
Weight (without spool)	Kg	16 (Approx)

TORCH SPECIFICATIONS

Technical Specifications	Unit	ADOR TW 402 (E)	ADOR MTG 400 (E)
Rating	A	400A @ 60% Duty cycle for CO ₂	400A @ 60% Duty cycle for CO ₂
End Connection to Torch	Type	Euro	Euro
Suitable for Wire Ø	mm	0.8, 1.0, 1.2, 1.6	0.8, 1.0, 1.2, 1.6
Torch Length	meter	3	3

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

CHAMPMIG 600

The new world class indigenous inverter based GMAW welding outfit

INTRODUCTION :

CHAMP MIG 600 is an IGBT inverter based welding power source, suitable for GMAW applications. The IGBT Power module, high frequency transformer and fast recovery diode are used as key device for power conversion and transmission to assure better efficiency and performance.

The complete system consists of power source, wire feeder, water cooled or gas cooled torch, water cooling unit (for water cooled systems) and interconnecting cables.



DETAILS OF COMPLETE SYSTEM :

Sr. No.	Description	CHAMPMIG 600 A	CHAMPMIG 600 E
1	Power Source	ICVR 600	ICVR 600
2	Wire feeder	FEEDLITE 40 (NEH-RC)	FEEDLITE 40 (NEH-RC)
3	Torch	ADOR-MTG 600 E.	ADOR TW 502 (E)

SALIENT FEATURES :

- Inverter based digitally controlled GMAW outfit
- Auto "Weld Stop" when welding torch is taken away from weld job
- Digital Panel for adjusting the welding
- 25% more Energy efficient than conventional machines.
- Maximum Power factor is 0.95
- Excellent dynamic response enables superior arc characteristics. 2T, 4T operating modes
- Dynamic Inductance adjustment for better arc control
- Crater voltage and Crater current adjustment through digital panel. Unique feature of Pinch-off pulse to avoid globule formation.
- Automatic "Weld Stop" facility.
- Normal/ Creep feeding selection available on front panel.

PROTECTION :

The equipment is provided with following protections.









- Under Voltage and Over Voltage:** If supply voltage goes lower or higher than set limit, error message is displayed on Display
- Over Temperature:** If the temperature of the main power elements is more than safety limits, error message is displayed
- Single Phasing Protection:** If any one of the three phases (R, Y, and B) is absent, welding will stop. Welding current would not be available in this condition

CHAMPMIG 600

The new world class indigenous inverter based GMAW welding outfit

SPECIFICATIONS :



Technical Specifications	Unit	ICVR 600
Input		
Input Supply :		
Voltage 	Volt	415 , +15%, -10%
Phase	No	3 Ø
Frequency	Hz	50/ 60
Max Input KVA 		
@ 100% duty cycle	KVA	21.5
@ No Load	KVA	0.31
Output		
Open Circuit Voltage 	Volts +/-5%	65
Welding Current Range 	Amp	65-600
Welding Current (40°C 10 minutes cycle)		
@ 60% duty cycle 	Amp	600
@ 100% duty cycle	Amp	465
Welding Voltage Range	Volt	16-45
Crater Current Range	Amp	65-600
Crater Voltage Range	Volt	16-45
Mode of operation		2 track, 4 track, Gas check, OCV check facility
Remote Control		For setting voltage & current
Power Factor		Max 0.94
Efficiency	%	89% @ 100% duty cycle
General		
Compatibility to International standard		As per Std. EN60974-1
Wire feed speed	m/min	1.5-18
Suitable Welding Wire Diameter	mm	Aluminum 1.2 – 1.6 Steel 0.8,1.0,1.2 & 1.6
Ingress Protection	Class	IP23
Cooling 	Type	Forced Air
Dimensions (Approx.) 		
Length	mm	670
Width	mm	450
Height	mm	620
Weight 	Kg	56
Audio Noise Emission	dB	70

Cont.

CHAMPMIG 600

The new world class indigenous inverter based GMAW welding outfit

SPECIFICATIONS :

Technical Specifications	Unit	Feedlite 40 (NEHR)C
Suitable for wire Ø	mm	0.8,1,1.2,1.6 mm
Wirefeed speed	mtr/min	1.5 to 18 mtr/min
Wire roll drive	-	Four
Wire drive motor	Type	Permanent Magnet DC
Wire feeder Motor voltage	V	42
Wire feeder fitted with rollers	-	1.2/1.6 for sold wire 2 no
Suitable for Wire Spool capacity	Kg	15
Dimensions		
Length	mm	563
Width	mm	230
Height	mm	410
Weight (without spool)	Kg	16 (Approx)

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
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- Backed by dedicated customer care package.

CHAMPMULTI 400, 600

The new world class indigenous inverter based
Multipurpose DC welders

SALIENT FEATURES :

- CHAMPMULTI- 400 and CHAMPMULTI- 600 are Multi process welding outfits with Inverter based welding power source.
- The IGBT power module, High frequency transformer and fast recovery diode are used as key device for power conversion and transmission to assure better Efficiency and performance.
- The welding power source has both constant current (CC) and constant voltage characteristics (CV), which are suitable for MMA and MIG/MAG and FCAW applications.
- Set output parameters are constant against input supply variations.
- Power source is protected against single phasing, under voltage, over voltage, short circuit and temperature rise.
- Water cooled version available for CHAMP MULTI 600 as option.
- MMA process with this outfit is most suitable for all kinds of electrodes including CELWEL for fabrication work, pipe welding, site construction etc.
- GMAW process is suitable for welding in semiautomatic/ automatic mechanism for welding MS, SS and Al materials with Solid and Flux core wires (FCAW Mode).
- Both the models can operate with single point Synergic control in MIG/MAG mode.
- The complete system consists of Power Source, wire feeder, torch and inter connecting cables and control cables between wire feeder and power source.
- Available with both Gas cooled and Water cooled MIG Torches for 600 Amp model.
- High efficiency (>85%).
- Single point Synergic control in GMAW.
- User friendly Digital front panel and analog remote controller
- Auto "Weld Stop" when welding torch is taken away from work piece.
- 2T, 4T and SPOT and Multi Spot operating modes in MIG Mode as well as FCAW mode
- Dynamic Inductance adjustment in GMAW process and Arc force adjustment in MMA process for better arc control.
- Crater voltage and Crater current adjustment through digital panel.
- Unique feature of Pinch-off pulse to avoid globule formation.



CHAMPMULTI 400, 600

The new world class indigenous inverter based
Multipurpose DC welders

PROTECTIONS WITH AUTO RESET :

The Equipment is provided with following protections:

- Under / Over Input supply Voltage :
 1. Red LED glows if input supply voltage goes below 330V AC.
 2. Red LED glows if input supply voltage goes above 480V AC
- Over Temperature Trip :

If the temperature of the Semiconductor Component is increased above safety limits then machine goes in safety mode (Trip Mode). In this condition welding voltage will not be available and welding will stop.
- Single phasing protection :

If any one of three phases of input supply (R, Y, B) is absent, then Machine will Trip and Red LED will glow. In this condition welding voltage will not be available and welding will stop.
- Output Short Circuit Protection :

Welding Output is protected against any Short circuit.
- No Output Voltage will be available in both conditions.

DETAILS OF COMPLETE SYSTEM :

Sr. No.	Description	Model	
		Champ Multi 400	Champ Multi 600/600 (W)
1	Power Source	ICCCVR- 401	ICCCVR- 600
2	Wire Feeder	FEEDLITE 40 (NEM)- C	FEEDLITE 40 (NEH - C) / NEHW
3	Torch	TW 402 (E) / MTG 400 (E)	ADOR-TW 600 WE
4	Gas Pressure Regulator Cum Flow Meter (optional)	ARGON Or CO ₂ Regulator	ARGON Or CO ₂ Regulator
5	Gas Heater (optional)	110V AC, In Case of CO ₂ Regulator	110V AC, In Case of CO ₂ Regulator
6	Water Cooling Unit (optional)		WCU-302 For Water Cooled Version Only

DETAILS OF COMPLETE SYSTEM :

Sr. No.	Error Code	Error
1	ERR 001	Under Voltage Error
2	ERR 002	Over Voltage Error
3	ERR 003	Thermal Trip Error
4	ERR 004	No Current Flow Error
5	ERR 005	Feeder Motor Overloading Error
6	ERR 006	Wire Feeder Error
7	ERR 007	Water Pressure Error
8	ERR 008	Communication Error

CHAMPMULTI 400, 600

The new world class indigenous inverter based
Multipurpose DC welders

SPECIFICATIONS :



Parametre	Unit	Value	
		CHAMPMULTI 400	CHAMPMULTI 600
Nominal Input Voltage	V AC	415 V, 3 PH	
Input Voltage Range	V AC	415 (+15% - 10%)	
Phase	No	3	
Frequency	Hz	50/ 60	
Efficiency @ 100% duty cycle	%	>90	>89
Power Factor @ 100% duty cycle		0.93 Max	
Open Circuit Voltage In MMA Mode @415v, 3 Phase	V DC	84 V	90 V
Open Circuit Voltage In MIG Mode @415v, 3 Phase		55 V	65 V
Open Circuit Voltage In TIG Mode @415v, 3 Phase		84 V	90 V
Welding Current Range In MMA Mode	A DC	50-400 A	50-600
Welding Current Range In TIG Mode		10-400	10-600
Welding Current Range In MIG Mode		40-400	40-600
Welding Current @ 100% duty cycle (10 minute cycle)	A DC	310	465
Welding Current @ 60% duty cycle (10 minute cycle)		400	600
Input Power (In MMA Mode) @ 100% duty cycle	KVA	12.0	22.0
Input Power (In MIG Mode) @ 100% duty cycle		11.0	22.0
Input Power (In TIG Mode) @ 100% duty cycle		9.0	16.5
Crater Current Range In MIG Mode		500-400 A	65-600 A
Crater Current Voltage In MIG Mode	-	14-40 V	14-44 V
Cooling	Type	Forced Air	
Class of Insulation	Class	H	
Degree of Protection	-	IP23	
Protections Auto Resettable	-	Over Voltage, Undervoltage, Single-Phasing, Over Temperature	
Suitable Welding Electrode Size Dia. - In MMA Mode	mm	2.5, 3.2 , 4, 5, 6 MM Diameter	
Suitable Welding Electrode Size Dia. - In MIG Mode	mm	0.8, 1.0, 1.2, 1.6 MM Diameter	
Dimensions L x W x H	mm	650 x 450 x 570	700 x 460 x 650
Auxiliary Outputs On Back Panel	V AC	110 V – Gas Heater, 230 V – Water Cooling Unit	
Front Panel Functions	-	Ø MMA /TIG/ MIG /FCAW Process Selection	
	MIG / FCAW MODE	Ø Separate Switches To Check OCV, Gas Flow & Wire Inch.	
		Ø Selection Switches For Wire Dia, Material & Gas For Synergic Application.	
		Ø Welding Mode 2t / 4t / Spot / Multispot Selection Switch.	
		Ø Auto/manual Selection Switch.	

Cont.

CHAMPMULTI 400, 600

The new world class indigenous inverter based Multipurpose DC welders

Cont.

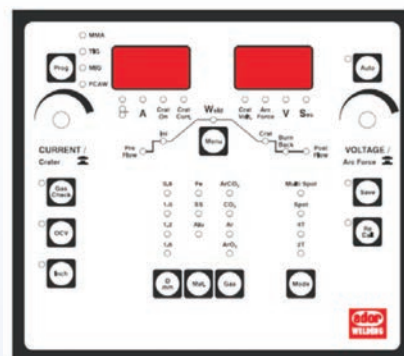
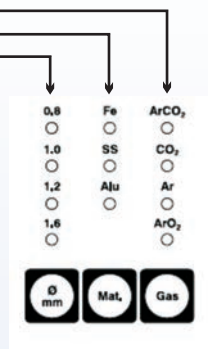
Front Panel Functions	MIG / FCAW Mode	Ø Save & Recall Switches To Save & Recall 10 Programs.	
		Ø Facility To Set Preflow, Post Flow Burnback, Spot & Pause Time Before Welding.	
	-	Ø 3 Digits Digital Display For Voltage and Current.	
	MMA / TIG Mode	Ø Current Setting By Encoder Ø Encoder For Arc Force Setting With On/ Off Facility Switch Only In MMA Mode.	
Remote Control	-	Remote Control With Cable For Setting Voltage and Current	
Mounting Wheels Of The Power Source	-	Wheel Mount Front: Swivel, Rear: Fixed	
Lifting Arrangement		Handle Provided	
Weight (Approx.)	Kg.	52	57

SYNERGIC FUNCTIONS:

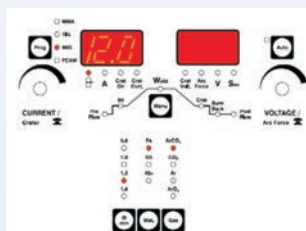
Select the right program

The Synergic Panel shows weld-programs loaded inside the power source

- Shielding Gas selection- ArCO₂ / CO₂ / Ar / Ar O₂
- Weld Material selection- Fe / Al / SS
- Wire Sizes selection- 0.8 / 1.0 / 1.2 / 1.6



Wire Feed Speed is the dominant control parameter for each wire feed speed, a corresponding voltage is programmed into the machine.



Turning the knob, the voltage can be trimmed to suit the best welding if required

Cont.

CHAMPMULTI 400, 600

The new world class indigenous inverter based Multipurpose DC welders

Cont.

TECHNICAL SPECIFICATIONS OF WATER COOLING UNIT – TYPE WCU 302:

Sr. No.	Parameter	Unit	Value
1	Input Supply	V AC	240
2	Phase	No.	1
3	Frequency	Hz	50
4	Cooling Capacity	W	750-1000
5	Maximum Motor Power	W	220
6	Maximum Pump Pressure	Bar	2.5
7	Maximum Pump Flow Rate	L/min	10
8	Tank Capacity	L	8
9	Connector Size	In/out	1/4" X 9
10	Dimensions L X W X H	mm	560 X 325 X 285
11	Weight	Kg.	18

TECHNICAL SPECIFICATIONS OF WIRE FEEDER – TYPE FEEDLITE 40 NEM(C) / NEH(C)

Sr. No.	Parameter	Unit	Value
1	Suitable for Wire Sizes	mm	
	Steel		0.8, 1.0, 1.2, 1.6
	FCW		1.2, 1.6
	Aluminium		1.2, 1.6
2	Wire Feed Speed	m / min	0 - 18
3	Wire Roll Drive	Type	4 Roll
4	Wire Drive Motor	Type	PMDC, 42 V, 80 W
5	Dimensions L X W X H	mm	563 X 230 X 410
6	Weight	Kg.	16

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
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- Backed by dedicated customer care package.

MIG TROLLEY

The world class Fillet welding MIG Torch Tractor

SALIENT FEATURES :

- Fillet welding Torch carrying trolley for MIG/MAG/ FCAW applications
- Light weight and compact design
- Welder friendly for operations
- Strong magnet inside provides grip while traveling
- Four wheel chain drive provides steady traveling
- Ideal for fillet welding for girder and longitudinal welding applications in ship yards and site structural fabrication – Enhances the welding productivity multifold



SALIENT FEATURES :

- Lightweight, compact and easy to carry anywhere
- Operates on 230V AC (+15%, -20%), 50Hz, single-phase mains supply
- Strong magnet provides grip while traveling of tractor
- Rubberised four wheel chain drive provides constant speed without slippage of wheel
- Input supply Protection in case of short circuit of input supply cable

SPECIFICATIONS :

Item	Unit	Technical parameters
Input Supply	V (AC)	230
Supply frequency	Hz	60 /50
I/P supply cable	Mtr	5
Motor power	Watts	6
Motor RPM	RPM	Servo motor 1200/1500
Gear reduction ratio	Ratio	100.1
Torch inclination	Size	Longitudinal and transversal 30mm each
Torch adjustment angle	Angle	38°-60°
Traveling speed	mm/min	0-1140
Dimension L×W×H	mm	210×250×280
Weight (approx.)	Kg	6
Ordering Information		Product Code
MIG Trolley	-	F10.37.101.0072

Cont.

MIG TROLLEY

The world class Fillet welding MIG Torch Tractor

Cont.



Fillet Welding-Horizontal



Fillet Welding -Tractor travelling vertical

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HF 2000 / HF 2000 AD & HF 3000 / HF 3000 AD

The high efficiency, low power consumption World Class DC and AC/DC TIG control units

TYPICAL APPLICATIONS :

- Light Weight, Compact & Portable for greater flexibility in operation
- Suitable for TIG Welding application with SMAW Power Source of any make
- Gas Preflow / Postflow facility
- Gas flow through solenoid valve for Economical consumption of costly Argon gas





SALIENT FEATURES :

- Portable & Light Weight
- Built in high frequency unit for easy arc striking in AC/DC TIG welding process
- HF on/off switch to prevent high frequency interference (In DC mode only)
- Gas flow through solenoid valve for Economical consumption of costly Argon gas
- Auto HF cut off if arc does not strike within 10 seconds
- Built in gas pre-flow / post-flow facility
- In built water cooling unit with HF 3000/ HF 3000AD








SPECIFICATIONS :



Technical Specifications	Unit	HF 2000	HF 2000 AD	HF 3000	HF 3000 AD
Input		Value	Value	Value	Value
Input Supply :					
Voltage 	Volt	230	230	230	230
Phase	No	1	1	1	1
Frequency	Hz	50	50	50	50
Rating					
Welding Current DC					
@ 60% Duty Cycle 	Amps	200	200	300	300
@ 100% Duty Cycle	Amps	150	150	230	230

HF 2000 / HF 2000 AD & HF 3000 / HF 3000 AD

The high efficiency, low power consumption World Class DC and
AC/DC TIG control units

Technical Specifications						
Model		Unit	HF 2000	HF 2000 AD	HF 3000	HF 3000 AD
Input		Unit				
I/P Supply Voltage		V	230	230	230	230
Phase		No	1	1	1	1
Frequency		Hz	50	50	50	50
Rating						
Welding Current DC						
@ 60% Duty Cycle		Amps	200	200	300	300
@ 100% Duty Cycle		Amps	150	150	230	230
Welding Current AC						
@ 60% Duty Cycle		Amps	-	150	-	250
@ 100% Duty Cycle		Amps	-	110	-	180
Gas Preflow Time		Sec.	0.1-5	0.1-5	0.1-5	0.1-5
Gas Postflow Time		Sec.	1-30	1-30	1-30	1-30
General						
Water Tank Capacity		Liter	-	-	8	8
Protection Class		Class	IP23	IP23	IP23	IP23
Mode of Operation		Type	2T / 4T	2T / 4T	2T / 4T	2T / 4T
Arc Striking		Type	HF/Touch	HF/Touch(DC)	HF/Touch	HF/Touch(DC)
Dimensions				DC	DC	
Length		mm	440	560	614	614
Width		mm	165	290	400	400
Heigh		mm	315	438	580	880
Weight		Kg	10	25	46(Without water)	50
Torch Model		Class	IP23	IP23	IP23	IP23
Max. Current Carrying Capacity			HI-PRO TIG 201-4/201-8		HI-PRO TIG 301-4/301-8	
@ 60% DC		Amps DC/AC	200 / 150		300 / 250	
@ 100 % DC		Amps DC/AC	150 / 115		230 / 180	
Length		Mtrs.	4 / 8		4 / 8	
Cooling		Type	Gas		Water	
Electrode Capacity			1.6, 2.4 & 3.2		1.6, 2.4, 3.2 & 4.0	
Ordering Information						
HF 2000 with HI-PRO TIG 201-4	F10.38.001.0010	HF 3000 with HI-PRO TIG 301-4		F10.38.001.0024		
HF 2000 with HI-PRO TIG 201-8	F10.38.001.0011	HF 3000 with HI-PRO TIG 301-8		F10.38.001.0025		
HF 2000 AD with HI-PRO TIG 201-4	F10.38.001.0012	HF 3000 AD with HI-PRO TIG 301-4		F10.38.001.0019		
HF 2000 AD with HI-PRO TIG 201-8	F10.38.001.0017	HF 3000 AD with HI-PRO TIG 301-8		F10.38.001.0020		

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CHAMPTIG 220P

The New Indigenous World Class Inverter Based
DC TIG and DC Pulsed TIG Welders

SALIENT FEATURES :

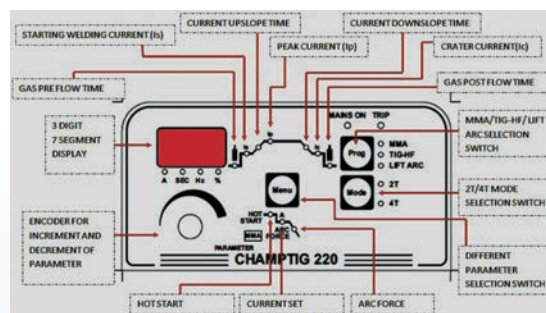
- Single phase (240 V AC) inverter based, high efficiency and high power factor pulse TIG/ MMA DC welder
- Useful for wide variety of material types and thickness.
- Full featured TIG controls possible
- HF ignition
- Intelligent protection: over voltage, line (415V), over Current, temperature
- Latest PWM inverter technology
- High efficiency (Up to 87%)








CONTROL PANEL FEATURES :



Control Panel Features CHAMPTIG 220P



CHAMPTIG 220P Control Panel Operations







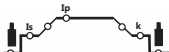




Item	Symbol	Functionality / Description	Mode of Operation
3 Digit Seven Segment Display	 A SEC H% %	 SET CURRENT AND ACTUAL WELDING CURRENT DURING WELDING	MMA-TIG
		 DISPLAYS PREFLOW, POST FLOW, UP-SLOPE AND DOWN-SLOPE TIME DURING PARAMETER SETTING WITH MENU KEY	TIG
		 Frequency of Pulsing in Hz	TIG
		 DISPLAYS HOT START AND ARC FORCE PERCENTAGE DURING PARAMETER SETTING WITH MENU KEY	MMA

Cont.

CHAMPTIG 220P

The New Indigenous World Class Inverter Based
DC TIG and DC Pulsed TIG Welders

Cont.

Item	Symbol	Functionality / Description	Mode of Operation
Power Supply On Indicator		MAINS ON 	MMA-TIG
Machine Trip Indication		TRIP 	MMA-TIG
MMA/TIG HF/LIFT ARC Selection	 <ul style="list-style-type: none"> ○ MMA ○ TIG-HF ○ LIFT ARC 	MMA/TIG HF/ LIFT ARC Selection Through Prog Button (Visual Indications Are Provided For The Same)	MMA-TIG
Panel Encoder		Setting The Welding Current 'A' In MMA Mode & Also The Different Parameters In TIG Mode Clockwise Rotation =>Increase, Anticlockwise Rotation =>Decrease	MMA-TIG
Parameter Setting In MMA Mode	 	MMA Mode Hot Start, Current Set & ARC MMA Force Mode. Visual Indications Are Provided For The Same	MMA-TIG
Parameter Setting In TIG Mode	 	TIG Mode Set Pre Flow Time, Starting Current, Unslope Time, Peak Current, Post Flow Time Respectively. Visual Indications Are Provided For The Same	TIG
Self-Hold On-Off Selection in TIG Mode (2 Track/ 4Track Operation)	 <ul style="list-style-type: none"> ○ 2T ○ 4T 	TIG Mode Set 2T/4T Modes Of Operation. Visual Indications are Provided. Disabled In MMA Mode.	TIG
Menu Key		Menu Key Is Used to Set the Different Parameters In MMA Mode & TIG Mode of Operation in Different Combinations Of 2T, 4T in TIG Mode & Hot Start & ARC Forced In MMA Mode	MMA-TIG
Normal Pulse Selection	 <ul style="list-style-type: none"> ○ PULSE ○ NORMAL 	TIG Mode Select The Modes Pulse/ Normal, Visual Indications Are Provided For The Same. Disabled in MMA Mode.	TIG

Cont.

CHAMPTIG 220P

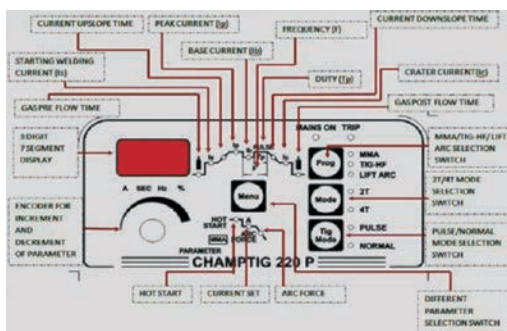
The New Indigenous World Class Inverter Based
DC TIG and DC Pulsed TIG Welders

Cont.

CONTROL PANEL FEATURES :



Control Panel Features CHAMPTIG 220P



CHAMPTIG 220P Control Panel Operations

Parameter	Unit	Value		Parameter	Unit	Value	
		MMA Mode	TIG Mode			MMA Mode	TIG Mode
Hot Start	%	0-100% of Set Current	NA	Hot Start	%	0-100% of Set Current	NA
Welding Current Set	A	10-200	NA	Welding Current Set	A	10-200	NA
ARC Force	%	0-100%	NA	ARC Force	%	0-100%	NA
Gas Pre Flow Time	Sec	NA	0-5	Gas Pre Flow Time	Sec	NA	0-5
Start Current (IS)	A	NA	5-220	Start Current (IS)	A	NA	5-220
Current Unslope Time	Sec	NA	0-10	Current Unslope Time	Sec	NA	0-10
Peck Current (IP)	A	NA	5-220	Peck Current (IP)	A	NA	5-220
Current Down Slope Time	Sec	NA	0-10	Base Current (IB)	A	NA	5-220
Crater Current (IC)	A	NA	5-220	Pulse Fervency	Hz	NA	1-200
				Duty Cycle (TP)	%	NA	10-90
Gas Post Flow Time	Sec	NA	0-20	Current Down Slope Time	Sec	NA	0-10
				Crater Current (IC)	A	NA	5-220
				Gas Post Flow Time	Sec	NA	0-20

CHAMPTIG 220P

The New Indigenous World Class Inverter Based
DC TIG and DC Pulsed TIG Welders

Cont.

TECHNICAL SPECIFICATIONS :



Parameter	Unit	CHAMPTIG 220P	
Input			
Supply Voltage, Phase Frequency :	Volts AC	240 V +10%-15%, 1 Phase, 50/60 Hz	
Max output Input KVA @ 240 V Supply	KVA	MMA Mode	TIG Mode
@ 100% duty cycle		5.6	4
@ 60% duty cycle		6.7	5.5
@ 25% duty cycle		9.80	7.80
Efficiency	%	Upto 87	
Output			
Open Circuit Voltage	Volts DC	78 V DC (+/- 5V)	
Welding Current Range	Amps DC	MMA Mode	TIG Mode
		10-200	5-220
Welding Current (40°C 10 minutes cycle)	Amps DC		
@ 100% duty cycle		120	130
@ 60% duty cycle		150	170
@ 25% duty cycle		200	220
General			
Suitable for Welding Electrode Size	mm	2.5,3.2 Intermittent 4	
Ingress Protection	Type	IP23	
Cooling	Type	Forced Air	
Insulation	Class	F	
Front Panel Functions		1. Menu Switch For Selections Like Gas Preplow, Gas Post Flow, Unslope Time, Downslope Time, Welding Current As Per Selected Mode Operation (TIG Mode only)	
		2. MMA/ TIG HF/ LIFT ARC Mode Selection	
		3. Menu Switch For Selection of Hot Start, Welding Current & ARC Force (In MMA mode only)	
		4. Mains On 'Green' Color Indication	
		5. Trip 'Red' Color LED for indication Machine is Under Protection Mode	
		6. Encoder for Selected Parameter Vaule Increment/Decrement.	
		7. 2T/4T Mode Selection (In TIG Mode only)	

Cont.

CHAMPTIG 220P

The New Indigenous World Class Inverter Based
DC TIG and DC Pulsed TIG Welders

Cont.

Additional Functions Specific to CHAMPTIG 220P only		8. Pulse Normal Mode Selection Switch Base Current, Frequency & Duty Cycle Selection By Menu Switch
Protections		Over Voltage, Under Voltage, Single Phasing, Over Temperature
Dimensions L x W x H (Without handle)	mm	480 x 140 x 255
Weight (Approx)	Kg	9
Ordering Information		
Description	Item Code	
MMA/ Pulse TIG Welding Power source (Inverter Base) Model: Champ TIG 220(P) with Earthing Cable assembly (3mtr), Gas cooled TIG Torch (Hipro TIG-201-4), Gas Hose with end connector (5 mtr)	F10.38.003.0090	
MMA/ Pulse TIG Welding Power source (Inverter Base) Model: Champ TIG 220(P) with Earthing Cable assembly (3mtr), Gas cooled TIG Torch (Hipro TIG-201-8), Gas Hose with end connector (5 mtr)	F10.38.003.0094	

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

CHAMPTIG 300P

The new world class inverter based Pulse TIG DC welder

SALIENT FEATURES :

- Three phase inverter based, High efficiency and High Power Factor Pulse TIG/ MMA DC Welder
- Full featured TIG controls possible
- Power source with built in HF ignition
- Intelligent protection: over/under voltage, over current / temperature
- Option of water cooled Torch with water cooling unit available
- Smooth and stable arc with spatter less welding
- HF start ignition
- Pulse TIG for precision welding






Gas Cooled System

Water Cooled System

SPECIFICATIONS :










Technical Specifications	Unit	CHAMPTIG 300P	
Input			
Input Supply :			
Voltage 	Volt	415 , +15%, -10%	
Phase	No	3	
Frequency	Hz	50/60	
		MMA Mode	TIG Mode
Efficiency @ 100% duty cycle	%	82	77
Power Factor @ 100% duty cycle	OSØ	0.93	0.93
Input KVA 			
@ 100% duty cycle	KVA	7.5	7
@ No Load	KVA	0.19	0.19
Output			
Open Circuit Voltage 	Volt	70	
Welding Current Range		MMA Mode	TIG Mode
Welding Current	Amps	50-250	5-300
@ 100% duty cycle	Amps	195	230
@ 60% duty cycle (10 min cycle)	Amps	250	300

Cont.

CHAMPTIG 300P

The new world class inverter based Pulse TIG DC welder

Cont.

Pulse TIG Parameters		
Duty Ratio	%	10-90
Pulse Frequency	Hz	0.5-10
Base Current	Amps	5 - 90% of Ipulse current
Pulse Current (Ipulse)	Amps	5-300
General		
Start current	Amps	5-300
Current unpslope time	Sec	0-10
Current down slope control	Sec	0-10
Pre-Flow	Sec	0-5
Post-Flow	Sec	1-20
Crater current	Amps	5-300
Current / Voltage Display		7 –Segment LED Display for Current & Other parameters
Ingress Protection	Class	IP23
Cooling 	Type	Forced Air
Insulation	Class	H
Welding Output Terminals	-	Cam Lock connections
Dimensions 		
Length	mm	610
Width	mm	295
Height	mm	480
Weight (approx.) 	Kg	38
Water Cooling Unit		
Input Supply Voltage (AC)	Volts	230
Phase	-	1
Frequency	Hz	50-60
Water Reservoir Capacity	Liters	8
Flow rate	Ltr/min	10
Dimensions 		
Length	mm	560
Width	mm	325
Height	mm	285
Weight (approx.) 	Kg	18
Trolley		
Dimensions 		
Length	mm	660
Width	mm	525
Height	mm	415
Weight (approx.) 	Kg	10

Cont.

CHAMPTIG 300P

The new world class inverter based Pulse TIG DC welder

Cont.

Ordering Information	Product Code
Champ TIG 300P with 4 meter water cooled Torch and water	F10.38.003.0057
Champ TIG 300P with 8 meter water cooled Torch and water	F10.38.003.0058
Champ TIG 300P with 4 meter Gas cooled Torch	F10.38.003.0062
Champ TIG 300P with 8 meter Gas cooled Torch	F10.38.003.0061
Foot Control Switch (Optional)	S17.01.003.1121
Remote control Unit (10 meter, Optional)	S17.01.001.0083
Welding cable Assembly with clamp in MMA mode (Optional)	S17.01.001.2554
Earthing Cable Assembly	S17.01.001.2553
Gas Hose Assembly	S17.01.001.0041
Argon Gas Regulator	S12.08.001.0007

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CHAMPTIG 400P

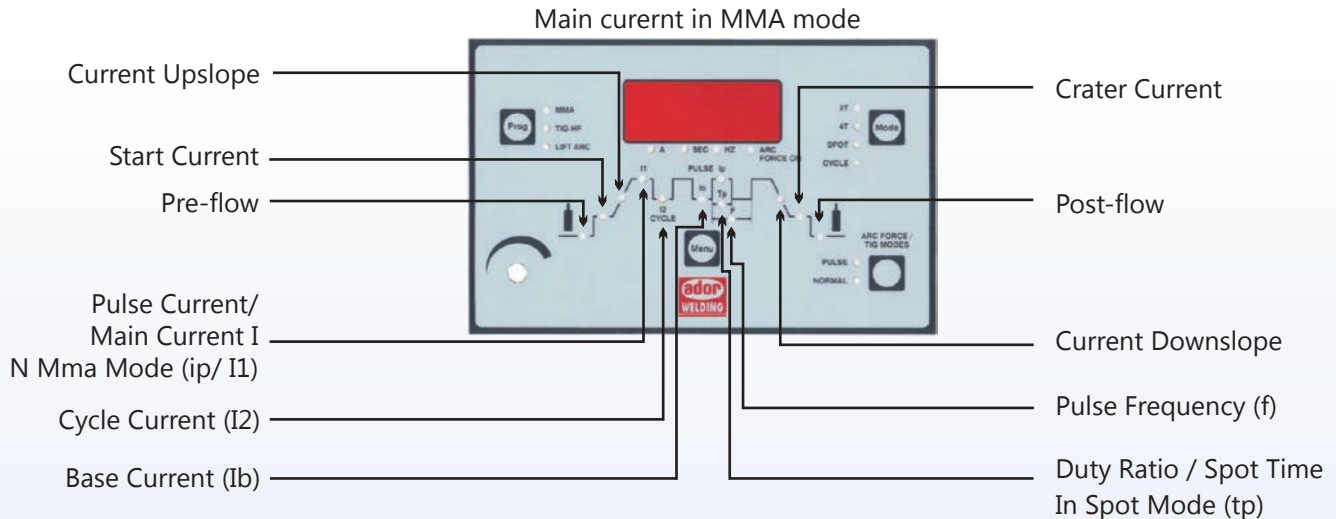
The New Indigenous World Class Inverter Based DC TIG
and DC Pulsed TIG Welder

SALIENT FEATURES :

- Three phase inverter based, High efficiency and High Power Factor Pulse TIG/ MMA DC Welder
- Useful for wide variety of material types and thickness.
- Full featured TIG controls possible
- HF ignition
- Intelligent protection: over/under voltage, over current / temperature
- Water cooled Torch with water cooling unit option.
- Latest PWM inverter technology
- High efficiency (>85%)
- Smooth and stable arc with spatter less welding



CONTROL PANEL FUNCTIONS :



SPECIFICATIONS :











Technical Specifications	Unit	CHAMPTIG 400P
Input		
Input Supply :		
Voltage	Volt	415 , +15%, -10%
Phase	No	3
Frequency	Hz	50/60
Efficiency @ 100% duty cycle	%	85
Power Factor @ 100% duty cycle		0.94 Max

Cont.

CHAMPTIG 400P

The new world class inverter based Pulse TIG DC welder

Cont.




Input KVA			MMA Mode	TIG Mode
@ 100% duty cycle		KVA	13	10
@ No Load		KVA	0.13	0.13
Output				
Open Circuit Voltage		Volt	70	
Welding Current Range			MMA Mode	TIG Mode
Welding Current		Amps	50-400	10-400
@ 100% duty cycle		Amps	310	
@ 60% duty cycle (10 min cycle)		Amps	400	
Pulse TIG Parameters				
Duty Ratio		%	10-90	
Pulse Frequency		Hz	0.5-10	
Base Current		Amps	10 - 90% of Ipulse current	
Pulse Current (Ipulse)		Amps	10-400	
General				
Start current		Amps	10-400	
Current unslope time		Sec	0-10	
Current down slope control		Sec	0-10	
Pre-Flow		Sec	0-5	
Post-Flow		Sec	0.1-20	
Crater current		Amps	10-400	
Current / Voltage Display			7-Segment LED Display for Current & Other parameters	
Ingress Protection		Class	IP23	
Cooling		Type	Forced Air	
Insulation		Class	H	
Welding Output Terminals		-	Cam Lock connections	
Dimensions				
Length		mm	660	
Width		mm	315	
Height		mm	485	
Weight (approx.)		Kg	46	
Water Cooling Unit				
Input Supply Voltage (AC)		Volts	230	
Phase		-	1	
Frequency		Hz	50-60	
Water Reservoir Capacity		Liters	8	
Flow rate		Ltr/min	10	
Dimensions				
Length		mm	560	
Width		mm	325	
Height		mm	285	

Cont.

CHAMPTIG 400P

The new world class inverter based Pulse TIG DC welder

Cont.

Weight (approx.)		Kg	18
Trolley			
Dimensions			
Length		mm	1005
Width		mm	500
Height		mm	109
Weight (approx.)		Kg	35
Ordering Information		Model Name	Product Code
TIG Outfit		-	F10.38.003.0059 (With 4 Mtr Torch)
			F10.38.003.0064 (With 8 Mtr Torch)
Power Source		-	F10.38.003.0060
TIG Torch		HIPRO TIG 401-4	S15.01.003.0586 (4Mtr)
		HIPRO TIG 401-8	S15.01.003.0587 (8Mtr)
Water cooling Unit		WCU - 302	S17.01.005.2598
Trolley For WCU		-	017.01.003.1112
Foot Control Switch (Optional)		-	S17.01.003.1117
Remote control Unit (10 meter, Optional)		-	S17.01.002.0067
Welding cable Assembly with clamp in MMA mode (Optional)		-	S17.01.002.0642
Earthing Cable Assembly		-	S17.01.002.0643
Gas Hose Assembly		-	S17.01.001.0041
Argon Gas Regulator		-	S12.08.001.0007

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CHAMPTIG 300 AD

Indigenous Inverter Based AC/DC Mixed Pulsed TIG Welding System

SALIENT FEATURES :

- Large input supply voltage range with under/over voltage
- Single phase protection
- Higher efficiency & power factor
- Lower power consumption
- Light weight and compact TIG welding system
- Latest PWM inverter technology
- In built spot TIG welding facility, AC/DC as well as mixed TIG Welding facility. In built pulse TIG welding controls with Independent settings of all parameters from front panel. Optionally welding current variation possible by using remote Control (hand held) or foot control regulator
- Cleaning width control in ac TIG welding enables user to adjust Oxide cleaning as well as penetration of weld puddle according to his choice
- Constant current characteristics irrespective of arc length variation
- High efficiency (82%)
- Smooth and stable arc with spatter less welding



TECHNICAL SPECIFICATIONS :



Parameter	Unit	Value	
Input			
Supply Voltage, Phase Frequency :	Volts, AC	415 (+15%-10%) 3 Phase, 50/60 Hz	
Max output Input KVA @ 416 V Supply	KVA	MMA Mode	TIG Mode
@ 100% duty cycle		7	7.5
@ 60% duty cycle		10	11
Power Factor		Upto 0.92	
Efficiency	%	Upto 82	
Output			
Open Circuit Voltage @ 416 V Supply	Volts, DC	75 V DC (+/- 3V)	
Welding Current Range		AC TIG Mode 20-300 DC TIG Mode 10-300	MMA Mode 50-250
Welding Current (40°C 10 minutes cycle)	Amps		
@ 60% duty cycle		TIG Mode 300 Amps	MMA Mode 250 Amps
@ 100% duty cycle		TIG Mode 230 Amps	MMA Mode195 Amps
General			
Remote Controller	10 Meter	Provide as Optional for Current Settings	
Foot Switch Control	10 Meter	Provide as Optional for Current Settings	

Cont.

CHAMPTIG 300 AD

Indigenous Inverter Based AC/DC Mixed Pulsed TIG Welding System

Cont.

Protections		Over Voltage, Under Voltage, Single Phasing, Over Temperature
Front Panel Functions		MMA TIG Selection Switch
		2T/ 4T / Spot/ Cycle Selection Switch
		DC+/ DC-/ AC Welding Method Selection Switch
		Gas Check Switch
		Pulse/ Normal Mode Selection Switch
		HF On/ HF Off Selection Switch
		Normal/ Foot Selection Switch
		Menu Switch for Selecting All Functions Via Gas Pre Flow, Start Current, Up slope Time, Base Current, Pulse Current, Down Slope Time, Crater Current, Gas Post Flow Time, Cleaning for AC, AC Frequency, AC Offset, Pulse Width/Spot Time, Pulse Frequency, As Per Mode Selection Operation
		Torch Switch Connector
		Foot Switch Connector
		Remote Connector
		Gas Out
		CAMLOCK output Connector
		Mains On 'Green' Color Indication
		Trip 'Red' Color LED for indication Machine is Under Protection Mode
		Water/Gas Cooled Selection Switch
		Encoder for Selected Parameter Vaule Increment/Decrement.
Cooling	Type	Forced Air
Ambient Temperature Rating	°C	40
Class of Insulation	-	H
Degree of Protection	-	IP23
Dimensions L x W x H (Without handle)	mm	650 x 425 x 515
Weight (Approx)	Kg	50

Cont.

CHAMPTIG 300 AD

Indigenous Inverter Based AC/DC Mixed Pulsed TIG Welding System

TIG Welding Parameter Setting

SPECIFICATIONS :

Parameter	Unit	Value
Gas Pre Flow Time	Sec	0-5
Start Current	Amp	5-300
Current Unslope Time	Sec	0-10
Base Current	A	5-300
Pulse Current	A	5-300
Pulse Width	%	10-90% of Width of Pulse Current
Pulse Frequency	Hz	0.5 to 500
Current Down Slope Time	Sec	0-10
Crater Current	A	5-300
Gas Post Flow Time	Sec	0.1-20
Spot Time	Sec	1-10
Cleaning Control	%	(-40) - (+40)
AC Frequency Control	Hz	20-100
AC Offset	%	(-50) - (+30)

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MAESTRO SERIES 800, 1000, 1200

A range of SUBMERGED Arc Welding Equipment to suit a wide range of applications

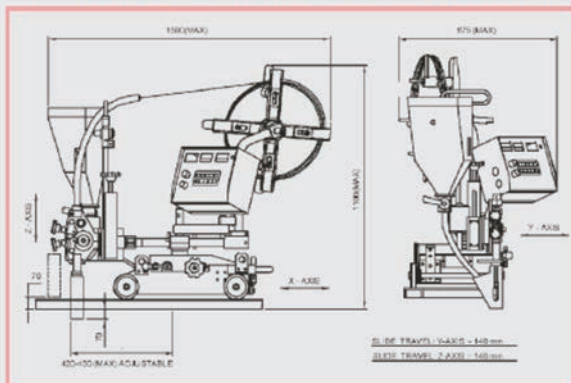
SALIENT FEATURES :

- Choice of Boom mounted or Tractor mounted Welding head models offered with Diode or Thyristorized Power Source
- Boom mounted head comes with a choice of manual, semi – motorized and fully motorized cross slides
- Programmed sequential operations of Power Source, Wire feed and carriage through built-in solid state circuitry
- **Twin Wire Attachment** : Twin Wire Attachment is available for the Tractor as well as boom mounted welding heads. The arrangement consists of one set of each of wire drive roll and nozzle for 2 and 2.5 mm size wire to feed two wires in tandem and increase the deposition rate substantially. These arrangements is ideal for applications like cladding of hard surfaces as well as for filling weld metal in extra large size preparation grooves. Twin 2.5 mm wires can deliver up to 20% higher deposition rates than a single 5 mm wire at the same welding current and arc voltage parameters.
- **Fillet Welding Attachment** : To enhance the usability of SAW Outfits, a Fillet Welding attachment can be provided to increase shop-floor productivity.
- **Spot Light Projector** : This facility is especially useful for welding operations inside cylindrical jobs where a light source is required to examine the seam

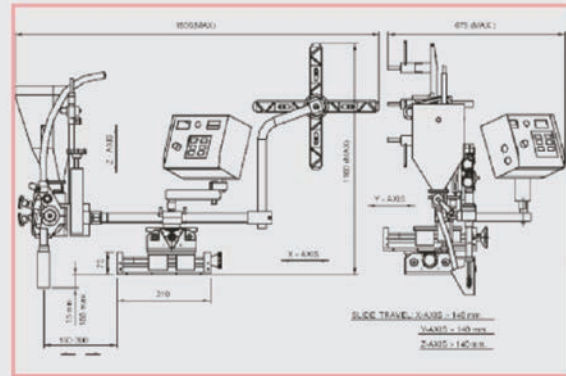


The Welder - friendly tractor or boom mounted welding head with Diode / Thyristorized Power sources perfectly match; Adopted to local conditions; offering a range of models to suits every budget and need

TRACTOR MOUNTED WELDING HEAD WH-15 (F) & WH-15 T(F)



BOOM MOUNTED WELDING HEAD WH-15-01 (F) & WH-15-01 T(F)




Cont.

MAESTRO SERIES 800, 1000, 1200

A range of SUBMERGED Arc Welding Equipment to suit a wide range of applications

Cont.

TECHNICAL SPECIFICATIONS DOIDE BASED SYSTEMS:				
<div><div>3 Phase</div><div>CV</div><div></div></div>				
Power Source	Unit	PS 800 (F)	PS 1000 (F)	PS 1200 (F)
Input				
Input Supply:				
Voltage	Volts, AC	415	415	415
Phase	No	3	3	3
Frequency	Hz	50	50	50
Input Kva @ 100% Duty Cycle	KVA	37	45	54
Recommended Switch Fuse Rating	Amps, AC	TP-60	TP-80	TP-100
Output				
Static Characteristics	Type	CV	CV	CV
Open Circuit Voltage Range (max. With IPT)	Volts, DC	35-63	35-63	35-63
Open Circuit Voltage Range (Actual)		29-54	29-54	29-54
Welding Voltage		21.15-44	24-44	24-44
Welding Current Range	Amps, DC	150-800	200-100	200-1200
Welding current @ 60% duty cycle		800	100	1200
Welding current @ 100% duty cycle		650	800	1000
General				
Insulation	Class	H	H	H
Cooling	Type	Forced Air	Forced Air	Forced Air
Dimensions L x W x H	mm	1225x800x900	1225x800x900	1225x800x900
Weight (Approx)	Kg	350	365	390

TECHNICAL SPECIFICATIONS THYRISTOR BASED SYSTEMS:				
Power Source	Unit	PS 800 T(F)	PS 1000 T(F)	PS 1200 T(F)
Input				
Input Supply:				
Voltage	Volts, AC	415	415	415
Phase	No	3	3	3
Frequency	Hz	50	50	50
Input Kva @ 100% Duty Cycle	KVA	44	50	63
Recommended Switch Fuse Rating	Amps, AC	TP-70	TP-80	TP-100
Output				
Static Characteristics	Type	CV	CV	CV
Open Circuit Voltage Range (max.)	Volts, DC	62	62	62
Open Circuit Voltage Range		150-800	200-1000	200-1200
Welding current @ 60% duty cycle	Amps, DC	800	100	1200
Welding current @ 100% duty cycle		650	800	1000

Cont.

MAESTRO SERIES 800, 1000, 1200

A range of SUBMERGED Arc Welding Equipment to suit a wide range of applications

Cont.

General				
Insulation	Class	H	H	H
Cooling	Type	Forced Air	Forced Air	Forced Air
Dimensions L x W x H	mm	1225x800x1060	1225x800x1060	1225x800x1060
Weight (Approx)	Kg	350	365	390

ORDERING INFORMATION OPTIONAL ACCESSORIES :	
Description	Product Code
Set Of Welding Cables SAC 800, For PS 800 (F), 800 T (F)	S10.36.011.0005
Set Of Welding Cables SAC 1000, For PS 800 (F), 1000 T (F)	S10.36.011.0006
Set Of Welding Cables SAC 1200, For PS 800 (F), 1200 T (F)	S10.36.011.0004
Description	Product Code
WAS : Set Of Welders Accessories - All Models	S10.36.041.0001
SLP: Spotlight Projector - All Models	S10.36.031.0001
FWA: Fillet Welding Attachment - All Models	S10.36.021.0001
TWA: Twin Wire Attachment (2 And 2.5 Mm) - All Models	S10.36.021.0003

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MAESTRO SERIES 800, 1000, 1200

A range of SUBMERGED Arc Welding Equipment to suit a wide range of applications

Cont.

ORDERING INFORMATION MAIN OUTFITS							
SUBARC Outfit	Power Source	Welding Head	Product Code	SUBARC OUTFIT	Power Source	WELDING HEAD	PRODUCT CODE
MAESTRO 800 (F)	PS 800 (F)	WH - 15 (F)	F10.36.004.0045	MAESTRO 800 T(F)	PS 800 T(F)	WH - 15 T(F)	F10.36.004.0061
MAESTRO 800-01(F)		WH - 15-01 (F)	F10.36.004.0046	MAESTRO 800 -01 T(F)		WH - 15- 01 T(F)	F10.36.004.0036
MAESTRO 800-02 (F)		WH - 15-02 (F)	F10.36.004.0047	MAESTRO 800 -02 T(F)		WH - 15- 02 T(F)	F10.36.004.0063
MAESTRO 800-03 (F)		WH - 15 -03 (F)	F10.36.004.0048	MAESTRO 800 -03 T(F)		WH - 15- 03 T(F)	F10.36.004.0064
MAESTRO 1000 (F)	PS 1000 (F)	WH - 15 (F)	F10.36.004.0049	MAESTRO 1000 T(F)	PS 1000 T(F)	WH - 15 T(F)	F10.36.004.0068
MAESTRO 1000-01(F)		WH - 15-01 (F)	F10.36.004.0050	MAESTRO 1000 -01 T(F)		WH - 15- 01 T(F)	F10.36.004.0037
MAESTRO 1000-02 (F)		WH - 15-02 (F)	F10.36.004.0051	MAESTRO 1000 -02 T(F)		WH - 15- 02 T(F)	F10.36.004.0059
MAESTRO 1000-03 (F)		WH - 15 -03 (F)	F10.36.004.0052	MAESTRO 1000 -03 T(F)		WH - 15- 03 T(F)	F10.36.004.0070
MAESTRO 1200 (F)	PS 1200 (F)	WH - 15 (F)	F10.36.004.0053	MAESTRO 1200 T(F)	PS 1200 T(F)	WH - 15 T(F)	F10.36.004.0069
MAESTRO 1200-01(F)		WH - 15-01 (F)	F10.36.004.0054	MAESTRO 1200 -01 T(F)		WH - 15- 01 T(F)	F10.36.004.0038
MAESTRO 1200-02 (F)		WH - 15-02 (F)	F10.36.004.0055	MAESTRO 1200 -02 T(F)		WH - 15- 02 T(F)	F10.36.004.0060
MAESTRO 1200-03 (F)		WH - 15 -03 (F)	F10.36.004.0056	MAESTRO 1200 -03 T(F)		WH - 15- 03 T(F)	F10.36.004.0072

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- Backed by dedicated customer care package.

MAESTRO 1200 (I)

The new world class indigenous inverter based
Submerged Arc Welding Outfit

SALIENT FEATURES :

- Inverter based digitally controlled Welding head and Power source.
- High efficiency and high power factor – resulting in substantial energy saving over conventional SAW outfits
- Enhanced Reliability due to SMD technology.
- Power source is CC-CV type and capable for MMA/GOUGING and SAW processes.
- *****SAW Welding can be done in either CV or CC modes. In the Constant Current mode of SAW welding, advanced Adaptive control technology is utilized to obtain the most stable arc parameters, highest level of penetration, and excellent weld bead finish*****
- The complete system consists of inverter based power source; tractor / boom mounted welding head and interconnecting cables. SAW flux is used for shielding weld metal against external atmosphere.
- Inverter based power source is energy efficient giving almost 30% energy saving over conventional type of machines.
- User can save and recall up to ten programs.
- Better user interface having 128 X 64 character LCD display for selecting various modes and button, LED and indicator lamp, which helps in easy operation of the equipment.
- Automatically selects the MMA or SAW mode based on welding head connections to power source.



FRONT PANEL FUNCTIONS :

- Mains On 'Green' Colour Led Indication
- Operation Mode Indications (MMA / Gouging, Saw, Remote)
- Trip 'Red' Colour Led Indication of machine is Under Protection Mode.
- 4 digit digital displays for Voltage and Current.
- Current adjustment Encoder .



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MAESTRO 1200 (I)

The new world class indigenous inverter based
Submerged Arc Welding Outfit

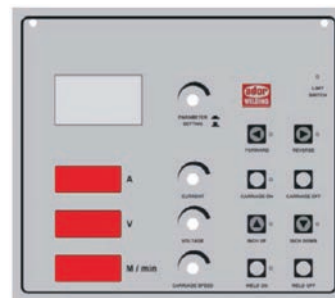
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WELDING HEAD CONTROL PANEL :

The Welding Head Control panel consists of four encoders for selecting welding parameters selection, welding current selection, welding voltage selection and carriage speed selection respectively.

1) Welding parameters can be seen on 128*64 character LCD as

- MATERIAL: MS/SS
- DIAMETER: 2-5mm
- WIRESPEED: 0-4 M/MIN
- UP TIME: 01-10 sec
- SAVE: 01-10
- RECALL: 01-10



2) Proper parameters can be selected by rotating the respective encoders.

3) A facility has been given for saving the welding parameters settings in at most 10 memory locations. So the same settings can again be recalled even after turning On the machine, by rotating RECALL option.

4) Another special feature of UP TIME is given to the user in between 1 second to 10 second, so that after welding is OFF, wire won't stick in to the weld pool. In this case wire feeder motor will rotate in opposite direction to pull out the wire for the specified seconds.

5) The Front panel consists of seven tact switches, for selecting various functions such as carriage movement direction (FORWARD / REVERSE) selection, carriage motor ON / OFF command, wire inch UP / DOWN switch and welding ON / OFF switch.

6) CC-CV Mode Selection switch for SAW is provided on panel to suit specific SAW Welding requirements

TECHNICAL SPECIFICATIONS WELDING HEAD (WH 15 I) :

Input	Unit	Value
Input Supply:		
Voltage	Volt	42 V (From Power Source)
Output		
Welding Current Range	Amps	100-1200
Duty Cycle 100% Continues	Amps	1000
Welding Voltage Range	Volts, DC	26-44
Welding Carriage Speed	M/Min	0.1-1.6
Wire Feed Speed	M/Min	0-4
General		
Range Of Adjustment Vertical	mm	140
Transverse To Head Travel - Horizontal		140
Parallel To Head Travel - Horizontal		140
Max Swivel :		
Transverse To Hand Travel	Degree	45°

Cont.

MAESTRO 1200 (I)

The new world class indigenous inverter based
Submerged Arc Welding Outfit

Cont.

Parallel To Head Travel	Degree	30°
Horizontal Open Swing		270°
Standard Bored Spool	mm	285-315 (Adjustable)
Welding Flux-Hooper Capacity	Kg./Ltr.	10/7
Wire Spool Weight	Kg	25
Suitable Welding wire Diameter	mm	2.0,2.5,3.15,4.0,5.0
Dimension (L x W x H)	mm	1500 x 1030 x 580
Total Weight Without Flux & Wire	Kg.	95

TECHNICAL SPECIFICATIONS :



Parameter	Unit	Value
Input		
Supply Voltage, Phase Frequency :	Volts AC	415 V +15% -10%, 1 Phase, 50/60 Hz
Input Power @ 415 VAC @ 100% duty cycle	KVA	55
Input Power @ 415 VAC @ 60% duty cycle		66
Input Supply Current @ 415 VAC @ 100% duty cycle (1000)	Amps DC	76
Input Supply Current @ 415 VAC @ 60% duty cycle (1200)		92
Efficiency	%	≥ 85
Power Factor		Upto 0.93
Output		
Open Circuit Voltage @415 V Input Supply	Volts DC	90 V
Welding Current Range (CC-GOUGING Mode)	Amps	100-1200
Welding Voltage Range (CC-SAW Mode)		26-44
Welding Current (40°C) @ 100% duty cycle	Amps DC	1000
Welding Current (40°C) @ 60% duty cycle (10 min DC)		1200
Welding Electrode Sizes (Dia.) In MMA Application	mm	3.2,4,5,6.3 mm
Welding Electrode Sizes (Dia.) In GOUGING Application		Upto 12 mm
SAW Welding Wire Size (Dia.)	mm	2.5,3.2,4,5 mm
Remote Controller Optional (Can be Used In MMA/GOUGING Process only)	10 Meter	Provide as Optional for Remote Current Setting
General		
Front Panel Functions		Mains On 'Green' Colour Indication
		Operation Mode Indications (MMA/GOUGING, SAW, REMOTE)
		Trip 'Red' Colour LED for indication Machine is Under Protection Mode
		4 Digit Display for Voltage & Current Current Adjustment Encoder

Cont.

MAESTRO 1200 (I)

The new world class indigenous inverter based
Submerged Arc Welding Outfit

Cont.

Protections	-	Over Voltage, Under Voltage, Single Phasing, Over Temperature Over Temperature Protection
Cooling	Type	Forced Air
Class Of Insulation	-	H
Degree Of Protection	-	IP23
Dimensions L x W x H (Without handle)	mm	930 x 525 x 950
Weight (Approx)	Kg	115

- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.

DRYING OVEN

For Welding Electrodes and Submerged Arc Welding Fluxes

TYPICAL APPLICATIONS :

Reliable Ovens which works hour after hour, day after day the same faithful consistency.

Temperature Control : Provided with thermostat control for precise setting of drying temperature required for various types of electrodes.

Flawless Welds : Totally dry welding consumables yield radiographic quality welds.



SALIENT FEATURES :

- Heavy duty drying ovens for welding electrode & submerged arc welding fluxes.
- Robust constructions.
- Heavy duty metallic body.
- User friendly.
- Uniform heating of charged materials.
- Heavy duty thermostats for accurate temperature controls throughout range.

TECHNICAL SPECIFICATIONS:

Models	ADORPORT	ADORPORT 110V/220V	ADORDRY-I	ADORDRY-II	ADORDRY-III	ADORFLUX
Input						
Voltage	230 V	110V / 220V AC	230V AC	230V AC	230V AC	415V AC
Current (Amps)	2	4/2	7.5	10	20	10
Phase	1 Phase	1 Phase	1 Phase	1 Phase	1 Phase	3 Phase
Frequency	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
Watts	0.5 KW	0.5 KW	1.75 KW	2.25 KW	4.5 KW	12 KW
Output						
Temperature	50°C - 250°C	50°C - 250°C	50°C - 250°C	50°C - 350°C	50°C - 500°C	50°C - 400°C

Cont.

DRYING OVEN

For Welding Electrodes and Submerged Arc Welding Fluxes

Cont.

Models	ADORPORT	ADORPORT 110V/220V	ADORDRY-I	ADORDRY-II	ADORDRY-III	ADORDRY-III
General Specifications						
Capacity	About 4 kg. of 450 mm electrodes	About 4 kg. of 450 mm electrodes	About 25 kg. of 450 mm electrodes	About 25 kg. of 450 mm electrodes	About 25 kg. of 450 mm electrodes	About 100 kg. of Flux
Working Space	80 mm dia. X 445 mm depth (Approx.)	80 mm dia. X 445 mm depth (Approx.)	440 x 450 x 490mm(HWD) Height(Approx.)	440 x 450 x 490mm(HWD) Height(Approx.)	440 x 450 x 490mm(HWD) Height(Approx.)	600 x 600 x 750mm(HWD) Height(Approx.)
No.of Shelves	-	-	Five	Five	Five	Six
Air Circulation	Natural Convection	Natural Convection	Natural Convection	Natural Convection	Natural Convection	Forced Air
Temp. Control	THERMOSTAT	THERMOSTAT	THERMOSTAT	THERMOSTAT With Electronic Controller	THERMOSTAT With Electronic Controller & Digital Temperature Indicator	

UNI - MAESTRO RETROFIT UNIT FOR SAW

The customized Retrofit unit (complete with new welding head) for
Interfacing new welding head (diode based) with old model of SAW Power Source



**INTERFACE UNIT WITH
INTERCONNECTION CABLE**

**INTERFACE UNIT WITH
INTERCONNECTION CABLE**

- The UNI-MAESTRO retrofit box is a "BORN AGAIN PACKAGE (Rejuvenate)" to upgrade productivity from existing old working power source, Model: CPR-1204 / CPR-1205 / PS-1200, but with welding head which is in non-working condition or the customer is not having welding head.
- Old version of "UP-15-CP / WH-15" series Welding Heads are upgraded with New "Feather-Touch controlled WH-15 (F)" series (Diode based) Welding Heads, as old version of "UP-15-CP / WH-15" are discontinued from AWL production range.
- The complete outfit consists of Retrofit box, tractor mounted or boom mounted submerged arc welding unit, inter-connection control cable between Power source and Retrofit box. These are interfaced with suitable capacity of old power source CPR-1204 / CPR-1205 / PS-1200, which is already available with the customer.

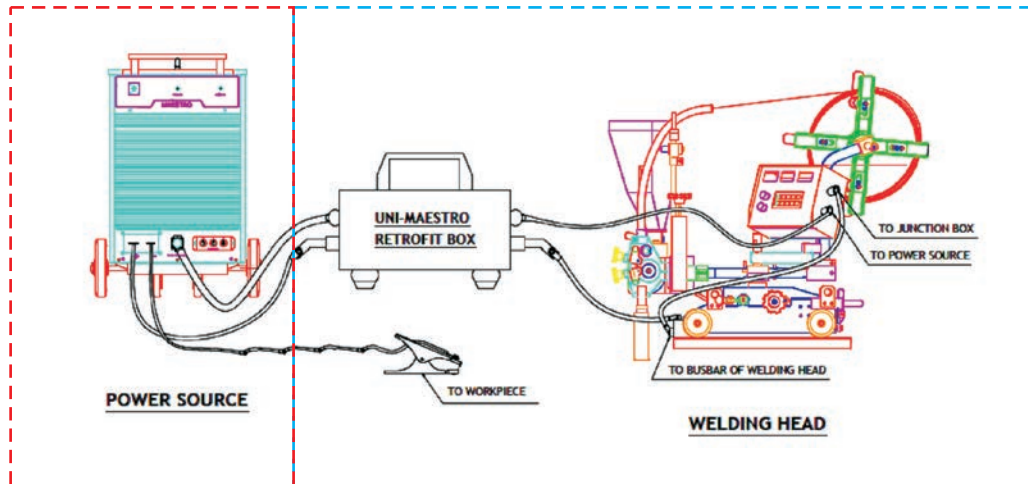
COMPLETE SYSTEM:

The complete system or outfit consists of:

1. Retrofit Box (Interface Box)
2. Welding Head type WH 15 (F) or WH 15-01 (F) => suitable for Diode based systems only
3. Interconnection control cable between power source & Welding Head - 10 meters length

UNI - MAESTRO RETROFIT UNIT FOR SAW

CONNECTION SYSTEM



EXISTING OLD DIODE BASED
SAW POWER SOURCE - CUSTOMER

WELDING HEAD

ORDERING INFORMATION:

UNI - MAESTRO RETROFIT UNIT (Comprising of Interface box, Welding Head Assembly type WH – 15 (F) Tractor mounted, 10 Meter Interconnection cable between Interface Box and Welding Head)	S15.01.001.0601
UNI - MAESTRO RETROFIT UNIT (Comprising of Interface box, Welding Head Assembly type WH – 15 01 (F) Boom mounted, 10 Meter Interconnection cable between Interface Box and Welding Head)	S15.01.001.0602

COMBO MS 600

Mechanised Attachment for GMAW / FCAW and SAW processes
Optimizing welding machine utilization and cost
Ideal for medium thickness structural / vessel fabrication jobs

SALIENT FEATURES :

- Optimum use of existing MIG welding machines
- Economical - Minimum investment since there is no need to buy complete SAW outfit
- Flexibility in machine utilization for GMAW/FCAW and SAW welding processes
- Increased welding productivity wherever possible, by using SAW welding process instead of GMAW or FCAW process
- Increase in welding productivity even in GMAW/FCAW welding process by using mechanized MIG torch travel instead of manual MIG torch travel used in semiautomatic GMAW/FCAW welding



INTRODUCTION

SMAW and GMAW welding processes are very common processes used for fabrication jobs. Most small and medium size fabrication and production shops use these processes. The GTAW and SAW welding processes are not that common and hence are not used in every welding fabrication shop. Thus welding equipments used for SMAW and GMAW welding processes are observed in most fabrication shops. When these shops are required to use SAW welding processes to either increase the welding productivity on existing jobs or for some new odd jobs which may not be very regular but SAW welding is mandatory for these jobs, then they have to invest in purchasing SAW welding equipments, just to complete such odd jobs and once these jobs are completed then the new SAW welding equipments purchased may remain unused for quite some period. The power source characteristics required for welding equipments for GMAW and SAW welding processes are the same i.e. constant voltage (CV), hence it is possible to convert GMAW welding equipment for SAW welding process. In SAW process flux is required to shield the arc instead of shielding gas used in GMAW welding process. Thus in such situation instead of purchasing a complete SAW equipment, if only tractor type motorized welding head with flux dispensing arrangement is procured, then this SAW welding head can be used for both SAW and GMAW welding processes (with the existing MIG power source of 600 amps) by mounting GMAW torch head on this tractor as illustrated in the pictures given on next pages.

ADOR WELDING LIMITED has developed the Mechanization attachment (Model – Combo MS 600) mounted on travel carriage for GMAW / FCAW / SAW welding (to be used with standard Co_2 welding machine) which is very useful and handy to complete above mentioned jobs without really purchasing the new SAW welding outfit, Ranger 600 consisting of power source and welding head.

Thus the complete set up including mechanization attachment mentioned above, can be used for the combination of welding processes like GMAW, FCAW and SAW etc.

Cont.

COMBO MS 600

Mechanised Attachment for GMAW / FCAW and SAW processes
Optimizing welding machine utilization and cost
Ideal for medium thickness structural / vessel fabrication jobs

Cont

WHAT IS MECHANIZATION ATTACHMENT AND THE COMPLETE SYSTEM?

In this arrangement, existing MIG outfit with power source, wire feeder and torch is used. From this outfit, standard MIG welding torch is mounted on the travel carriage (customized SAW welding head) and the existing wire feeder is used for wire feeding purpose. Using this mechanized set up GMAW/FCAW welding can be done. The SAW welding can be done using the same mechanized set up by connecting flux hopper, flux hose and flux dispenser provided with the attachment. User has the option to carry out normal semiautomatic CO₂ / MIG welding using MIG torch manually or mechanized GMAW / FCAW / SAW welding using the carriage on which above mentioned MIG torch is mounted. The operator/welder has to start shielding gas flow when he needs to use MIG process and use the flux (after stopping shielding gas flow) through flux hopper & dispenser when SAW process is to be used. This mechanization arrangement thus enables the fabricator to carry out manual and semiautomatic GMAW and FCAW welding as well as mechanized GMAW / FCAW / SAW welding of pipes / plates from 7 mm to 20 mm thickness. In case user does not have the MIG or GMAW outfit, then he can also buy a complete new set up consisting of MIG power source, Wire feeder and Torch, apart from the mechanization attachment, Model-Combo MS 600. Thus the total scope of supply will be as follows



COMBO MS 600

Mechanised Attachment for GMAW / FCAW and SAW processes
Optimizing welding machine utilization and cost
Ideal for medium thickness structural / vessel fabrication jobs

SCOPE OF SUPPLY:

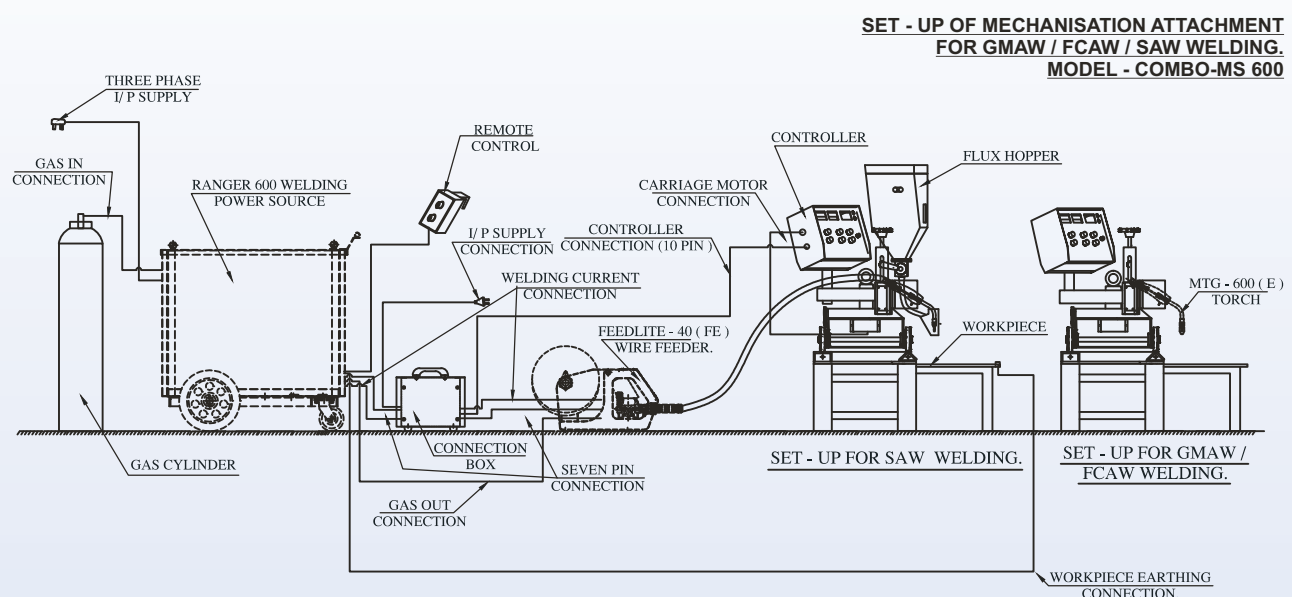
A. When MIG outfit is not available with the user

1. **RANGER-600** consisting of Power source, Model: TCVR-600, Wire feeder, Model: **FEEDLITE- 40 (NEH)** & welding torch, **MTG-600(E)** with standard accessories.
2. **Mechanized Attachment Model – Combo MS 600** consisting of customized SAW welding carriage trolley with manual horizontal and vertical slides, necessary brackets for mounting the torch, controller having controls for carriage drive, weld controls, wire feed controls, flux hopper with flux hose and flux dispenser, attachments for fillet welding, pointer assembly etc.
3. A **Connection Box** for connecting RANGER 600 with the trolley assembly Necessary **Inter connection cables** for joining RANGER-600 to connection box and connection box to mechanized trolley.

B. When MIG outfit is available with the user

1. **Mechanized Attachment Model – Combo MS 600** consisting of customized SAW welding carriage trolley with manual horizontal and vertical slides, necessary brackets for mounting the torch, controller having controls for carriage drive, weld controls, wire feed controls, flux hopper with flux hose and flux dispenser, attachments for fillet welding, pointer assembly etc.
2. A **Connection Box** for connecting RANGER 600 with the trolley assembly
3. Necessary **Inter connection cables** for joining RANGER-600 to connection box and connection box to mechanized trolley.

The entire set up and connection arrangements between the power source, connection box and the welding tractor head is shown in the photograph and connections between various components are illustrated below for easy understanding






Note: Power source, wire feeder & welding torch not in the standard scope of supply

COMBO MS 600

Mechanised Attachment for GMAW / FCAW and SAW processes
Optimizing welding machine utilization and cost
Ideal for medium thickness structural / vessel fabrication jobs

Cont.

SPECIFICATIONS :		
Technical Specifications	Unit	COMBO MS 600
Max. Welding current		
@ 60% duty cycle	A	600
@ 100% duty cycle	A	465
Wire diameter	mm	1.2, 1.6, 2.0,
Speed range		
Wirefeed	m/min.	1.2 to 18
Carriage	m/min.	0.1 to 1.5
Input to controller	-	42V from connection box
Range of adjustment		
Vertical (manual)	mm	140
Transverse to head travel		
Horizontal (manual)	mm	140
Max. swivel :		
Transverse to head travel	Degree	45
Parallel to head travel 	Degree	30
Horizontal open swing	Degree	270
Weight of the spool (Max.)	Kg	15
Flux hopper capacity	Kg/Ltr	10/7
Dimensions: 		
Length	mm	1100
Height	mm	810
Width	mm	760
Total weight without flux and wire 	Kg	95

ORDERING INFORMATION:		
	Product	Product Code
Mechanised Outfit	COMBO MS-600	F10.36.004.0108

ORDERING INFORMATION:				
CO2/MIG Welding Torches	ADOR TW-402(E)	S15.01.002.0117	MTG-600 (BM)-1	S15.01.002.0951
	MTG-600 E	S15.01.002.0083	MTG-600 (BM)-2	S15.01.002.0952
			MTG-600 (BM)-3	S15.01.002.0953

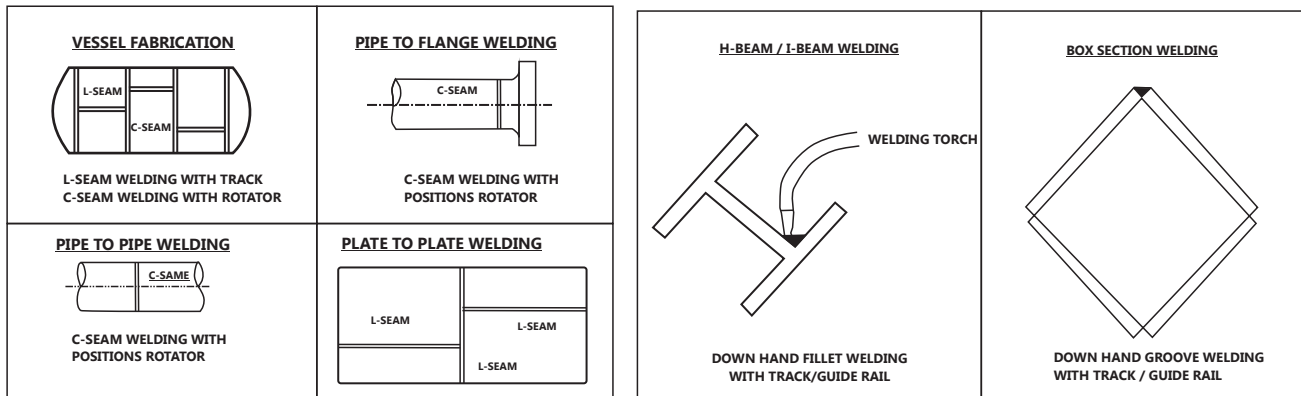
Cont.

COMBO MS 600

Mechanised Attachment for GMAW / FCAW and SAW processes
Optimizing welding machine utilization and cost
Ideal for medium thickness structural / vessel fabrication jobs

Cont.

SPECIFIC APPLICATION WHERE THIS MECHANIZATION CAN BE IDEALLY USED



- **Warranty** : One year from the date of commissioning. ADOR WELDING LIMITED warrants that all new equipment sold from Plant/Area Offices / Authorised Distributors are free from defects in materials and workmanship and will perform in full accordance with applicable specifications.
- In view of continuous development, ADOR WELDING LIMITED reserves the right to modify/change the design and /or the specifications without any prior notice.
- Backed by dedicated customer care package.



Welding Automations & Cutting Systems

ADOR BRINGS ORBITAL GMAW / FCAW WELDING SYSTEM
CNC CUTTING MACHINE KING CUT PRO SERIES
ADVANCE ROBOTIC WELDING SOLUTIONS
SPM's FOR AUTOMATED SOLUTIONS
AUTOMATIC PLUS/H/BOX BEAM WELDING SOLUTION
TILTING SYSTEM | V BLOCK | ROTATORS | POSITIONERS
COLUMN & BOOM

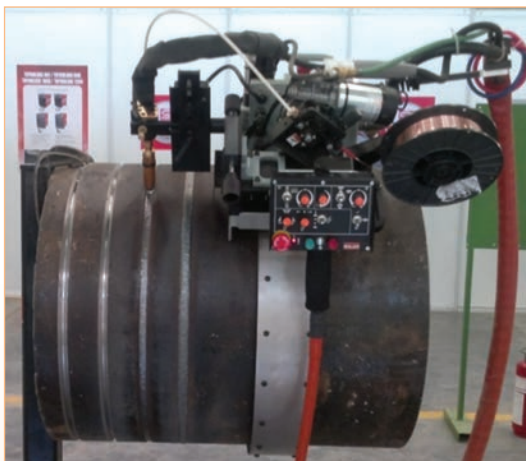
ADOR BRINGS ORBITAL GMAW / FCAW WELDING SYSTEM

In association with GULLCO International CA, in India.

INTRODUCTION :

A practical, affordable alternative to manual welding of heavy wall pipes 10" (254 mm) O.D and up. It produces x-ray quality welds with robotic consistency and precision, making it ideal for pipeline on-site work.

The PIPE KAT® is integrated with the ADOR Power source for single point control of welding parameters. Total carriage weight less wire spool 42 lbs. (19 kgs). The unit is mounted on pipe by means of quick mount pipe band, which is available for all standard and custom pipe diameters. The welding torch is mounted on one side providing full open access to the weld joint area. The PIPE KAT® can be easily converted for straight line welding on tanks, shipbuilding, etc.



CNC CUTTING MACHINE KING CUT PRO SERIES

INTRODUCTION :

Our gantry cutting machine offers you maximum flexibility: plasma and oxy - fuel cutting in combination or separately - both options are possible. You can start cutting more quickly and simply and achieve optimal results.



STANDARD EQUIPMENT

- Basic machine package with CNC controller
- 1 torch for the selected fuel-gas
- Central gas diffusion with manometers
- Remote flame ignition
- Additional equipment as required by Customer

OPTIONAL

- Extension of the longitudinal rail in multiples of 0.5 mtrs - Max up to 20 mtrs
- Additional cutting head
- Programming software MOST 2D
- Support table for sheet metal with segment extraction system
- Extraction-filter system
- Laser position indicator (determining the cutting point)

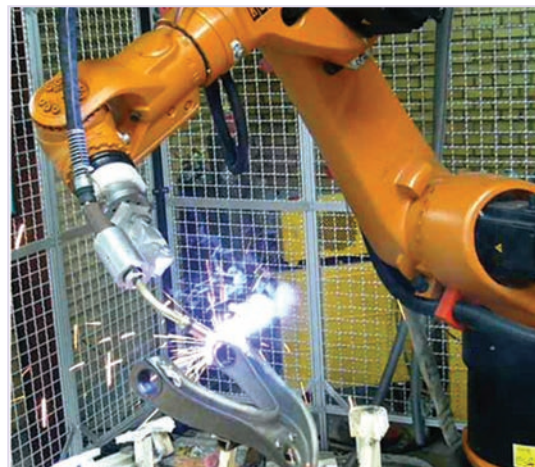
PRODUCT SPECIFICATIONS :

Technical Chart	KING CUT PRO 2000	KING CUT PRO 2500	KING CUT PRO 3000	KING CUT PRO 350	KING CUT PRO 4000
CNC controller	BURNY Phantom	BURNY Phantom	BURNY Phantom	BURNY Phantom	BURNY Phantom
Work width	1500 mm	2000 mm	2500 mm	3000 mm	3500 mm
Work length	5000 mm	5000 mm	5000 mm	5000 mm	5000 mm
Cutting heads			6 x flame + 2 x plasma		
Drive version			AC servo motor YASKAWA		
Max. positioning speed			15000 mm/min		
Programming accuracy			± 0.01 mm		
Repeatability			± 0.1 mm		
Torch height control version			CAPACITIVE (flame) ARC VOLTAGE (plasma)		

ADVANCE ROBOTIC WELDING SOLUTIONS

INTRODUCTION :

- ADOR provides high end Robotic Solutions to serve Indian industry's needs. We provide Robotic MIG systems for automobile, material handling and heavy engineering. We also carry Robot integration job
- With 6 axis robot we can achieve high precision and greater productivity
- Robot can be interfaced with external axis to increase the reach ability and complex weld positions



CHAMPMIG 400 R

INTRODUCTION :

- ADOR has developed its own Inverter based 400 Amps MIG welding outfit for Robotic welding solution, CHAMP MIG 400 R.
- Highly engineered indigenous Inverter designs provide reliable welding proces



SPM's FOR AUTOMATED SOLUTIONS

L SEAM WELDING SPM



- Linear Welding of Rolled Sheet
- With pneumatic clamping No need of pre tack component
- AC VFD Drive for linear motion
- Mandrel with Copper backing and gas purging arrangement for good penetration
- Flux Recovery Unit (Optional)

APPLICATION:

Dairy Industry, Automotive Industry, Household utensils mfg.

CONCEPT:

In this construction of machine torch will move and job will be stationary.

C SEAM WELDING SPM



- Twin head SAW welding set-up
- Pneumatic head stock -Tail stock fixuring
- AC VFD Drive for Head stock
- Multi pass for wider welding bead
- Flux recovery unit. (Optional)

APPLICATION:

Automotive and non automotive industry.

CONCEPT:

In this construction of machine – Job will rotate and torch will be stationary but in some application job and torch will move in synchronized speed.

SQUARE AXLE WELDING MACHINE



- All Servo Drive Control
- Dual Welding Station
- Oscillation with auto height control
- Continuous Multi pass

APPLICATION:

Automotive Industry for axel welding.

CONCEPT:

In this construction of machine – Job will rotate and torch will be stationary but in some application job and torch will move in synchronized speed.

SPM's FOR AUTOMATED SOLUTIONS

PIPE WELDING SPM



- 2" to 6" Pipe welding
- Pneumatic rollers for holding of pipe
- AC VFD drive for speed variation
- Pipe to flange welding also possible

APPLICATION:

Pipe line industry.

CONCEPT:

In this construction of machine torch will be stationary and job will move.

VALVE WELDING SPM



- Ring Groove Welding application
- Inlay continuous cladding with job rotation and torch retract function
- Seat-pocket welding also possible

APPLICATION:

High pressure Industrial valve mfg industry.

CONCEPT:

In this construction of machine during welding job will rotate and torch will be stationary but in some application job and torch will move with synchronized speed.

TORCH ROTARY MACHINE



- Extremely useful for automotive circular joints
- Completely PLC controlled high end automation
- Consistent quality and high productivity
- Different jobs can be welded by changing fixture on the same machine
- Popular in exhaust system manufacturers

APPLICATION:

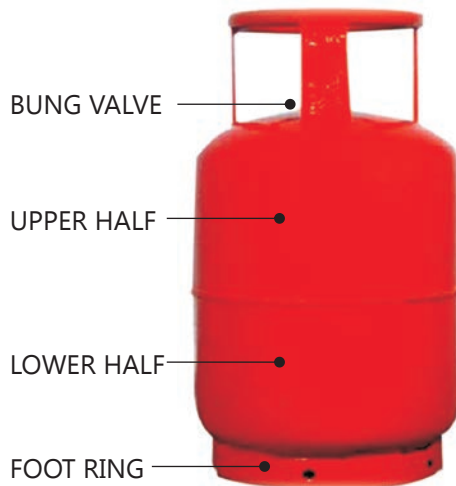
Automotive and non automotive Industry.

CONCEPT:

In this construction of machine torch will rotate and job will be stationary.

SPM's FOR AUTOMATED SOLUTIONS

CYLINDER WELDING SPM



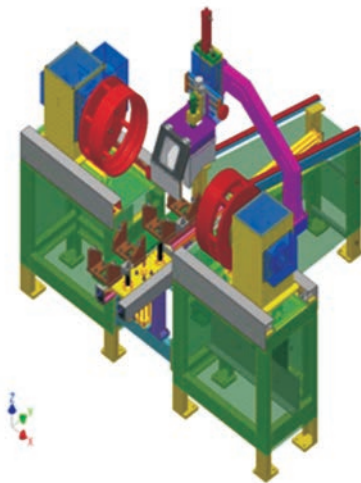
SECTOR : LPG Cylinder

APPLICATION:

1. Upper Shell to Lower Shell welding,
2. Foot Ring to Lower Shell Welding,
3. Bung Valve to Upper Shell Welding

ADVANTAGE :

1. Good productivity
2. Good and consistent weld quality
3. Automatic loading and unloading so this will reduce the human efforts



SECTOR : Domestic LPG Cylinder

APPLICATION :

Upper Shell to Lower Shell Welding of Domestic LPG Cylinder

ADVANTAGE :

1. Higher Productivity
2. Good and consistent weld quality
3. Auto Loading - unloading station
4. Less man power
5. On single machine minimum and maximum sizes of jobs can be weld

AUTOMATIC PLUS/H/BOX BEAM WELDING SOLUTION

SYSTEM CONSISTS OF

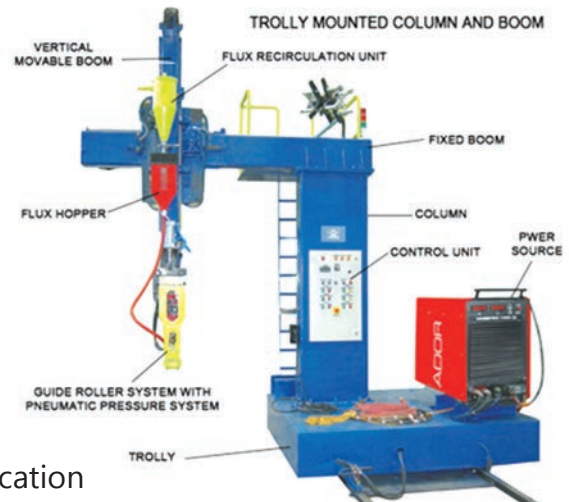
- Trolley Mounted Column & Boom
- V Blocks for Beam Support
- Tilting System for beam rotation
- 1200 Amps SAW outfit with Flux Recovery Unit
- A remote pendant for operation

APPLICATION:

Structural welding and heavy fabrication sector

Concept :

In this construction of machine job is stationary and torch will move with Gantry but in some application welding torches will be stationary and job will push & pull. This type of construction of machine is called pull through welding.



TILTING SYSTEM

INTRODUCTION

- Tilting mechanism is fabricated from channel and plates. Each is equipped with heavy chain, with which beams can be lifted and rotated
- Lifting System works on Hydraulic



V BLOCK

INTRODUCTION

V blocks are used to rest the beam during welding. V blocks and Tilting system are aligned in-line and exact parallel to trolley movement.



ROTATORS

WELDING ROTATORS & IDLERS

- Pedestal and Trolley mounted type
- Range : 5T to 150T
- Digital speed read out
- Foot Switch (Optional)

APPLICATIONS

- Pipe Welding
- Pressure vessels & Boilers
- Tanks
- Wind Tower
- Street pole Industry



Concept:

This is used to rotate the job, depending on weight of job this rotator model can be selected.

POSITIONERS

WELDING POSITIONERS

- Variable rotational speed
- Motorised Tilting
- Digital Read out
- Foot Switch (Optional)

APPLICATIONS

- Pipe Welding
- Pipe-Flange Welding
- Valve Industry
- Crusher Industry
- Automotive and non Automotive sector



Concept:

This is used to rotate the job, depending on weight of job this rotator model can be selected.

COLUMN & BOOM

APPLICATIONS

Vibration & Jerk free Column & Boom can be used to manipulate the weld head position to weld variety of applications viz Linear, circular welding of sheets.

- Range : 2020 to 6060
- AC VFD Drive for Longitudinal movement
- Anti-fall mechanism to protect in case of accident
- Available in pedestal as well as trolley mounted design
- Joy stick controlled XY Slides (Optional)
- Vision System (Optional)
- Seam Tracker (Optional)
- Oscillator (Optional)

APPLICATIONS:

Pressure vessel industry, Pole industry, High pressure industrial Valve welding

Concept: This is used for long seam welding of pressure vessel and pole industry.

This model can be selected according to job length and min & max diameter of the job.





Gas Cutting Products, Personal Protective Equipment (PPE) & Accessories

PORTABLE GAS CUTTING MACHINES
KING CUTTING TORCHES
KING REGULATOR
PERSONAL PROTECTIVE EQUIPMENT (PPE)
WELDING ACCESSORIES

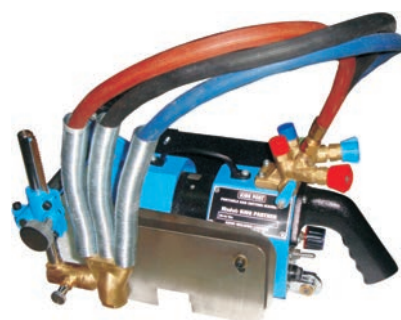
PORTABLE GAS CUTTING MACHINES

PANTHER NM

PORTABLE GAS CUTTING MACHINE

KEY FEATURES :

- No backfire during cutting because of "Nozzle-Mix" technology.
- Aluminium die cast body with ventilation holes reduces overheating of motor and other electrical parts.
- Unbreakable, smooth and precise horizontal and vertical adjustment of torch.
- Bevel setting with locking facility means bevel accuracy during long cutting.
- Remote mounted gas control knobs make flame adjustment during cutting operation easy.
- Single lever ON-OFF control for cutting Oxygen makes the stopping and restarting of cutting very easy and saves Oxygen.
- Stainless steel heat reflectors (2 nos. with air gap), protect the motor from heat during cutting thus adding to the life of the machine.
- Travels on standard 1.8 mtr extruded Aluminum rail.



BRIEF SPECIFICATIONS :

Cutting Capacity	100 mm of mild steel with NMC-100S torch.
Straight Cut	In 1.8 mtr length or multiplies by adding rails.
Circle Cutting	150 to 1200 mm diameter.
Bevel Cutting	Up to 45 degrees.
Cutting Speed	100 to 1000 mm/min.
Power Supply	220/240 V, 1ph, 50Hz.
Weight	10.8 kg. approx.
Overall Dimension	420 mm x 280 mm W x 450 mm (approx).
Horizontal Adjustment to touch	80 mm.
Vertical Adjustment to touch	60 mm.

PORTABLE GAS CUTTING MACHINES

KING PANTHER-IM

2 SEAT INJECTOR MIX TYPE

KEY FEATURES AND SPECIFICATIONS :

- Unique design with louvers for ventilation which reduces overheating of motor and electrical parts
- Unbreakable, smooth and precise horizontal and vertical adjustment of torch
- Bevel setting with locking facility ensures bevel accuracy during continuous cutting operation
- Heat reflector with air gap, which protects the motor and other electrical parts from overheating
- Non-metallic moulded lifting handle, hence machine can be lifted easily even if when it is hot
- Travels on standard 1.8 meter long extruded Aluminium rail track
- Versatile light weight and rugged machine designed for long, trouble free operation



TECHNICAL SPECIFICATIONS:

SPECIFICATIONS	VALUE
Cutting Capacity	Up to 75 mm thick Plate
Straight Cutting	In 1.8 meters length or its multiples by adding extra track
Circle Cutting (Optional)	From Ø150 mm to Ø1200 mm.
Bevel Cutting	Up to 45°, 50 mm thick plate
Cutting Speed	Min.: 0-200 mm/min.(approx) Max.: 800-1000 mm/min.(approx.)
Horizontal Adjustment of Cutting Torch	80 mm
Vertical Adjustment of Cutting Torch	60 mm
Weight of the machine	8 Kgs. (Approx.)
Power Supply	220/250V, 1Ø, 50 Hz, or 220/250V DC
Speed Control	Wire Wound Potentiometer
Inlet Gas Hose connections for Gas Torch	1/4" BSP RH & LH
Cutting Nozzles (Optional)	75 mm Length, A type for Oxy-Acetylene and P type for Oxy-LPG

PORTABLE GAS CUTTING MACHINES

TIGER NM

HEAVY DUTY PORTABLE FLAME CUTTING MACHINE

SALIENT FEATURES & BENEFITS:

- Heavy duty portable gas cutting machine with facility of clutch arrangement for easy manual movement.
- Machines can be used for gas cutting with two torches simultaneously (this facility is however optional)
- Torch is with nozzle mix technology for gas cutting with 3 seat nozzles
- Tiger NM is supplied with steel rail of 1.8mtr length - sturdy, does not get easily damaged. There is a provision to lock tracks in to each other.
- Speed variation is through mechanical cone-pulley arrangement (maintenance free)



TECHNICAL SPECIFICATIONS:

SPECIFICATIONS	UNIT	VALUE
Model Name		TIGER NM
Input Supply Voltage	V	220 / 240
Phase	No.	1
Frequency	Hz	50
Cutting Capacity	mm	100 THK.
Cutting Speed	mm / min	150 – 800
Straight Cut	mtrs.	1.8 Or in multiples by adding Rails
Circle Cutting	mm	200 TO 2000MM DIA.
Bevel Cutting	Deg.	Upto 45 Deg.
Horizontal Adj. (Torch)	mm	100
Vertical Adj. (Torch)	mm	70
Overall Dimensions (L X W X H)	mm	350 X 220 X 175
Weight of Machine	Kgs	9.8 (W/O TRACK)
Weight of Track	Kgs	6.2

STANDARD SCOPE OF SUPPLY:

SR.NO.	DESCRIPTION	PRODUCT CODE	QTY
1	TIGER NM Flame Cutting Machine With Steel Track (1.8mtr)	S10.64.551.0058	1
	OPTIONAL ACCESSORIES		
1	Circle Cutting attachment for TIGER NM	S41.04.022.0131	1
2	Straight Rail 1.8 Mtrs.	S41.04.022.0132	1

KING CUTTING / WELDING / HEATING TORCHES

KING JOIN - AGWT /3W

GAS WELDING BLOW PIPE (TORCH)

KEY FEATURES :

- This is a well balanced blowpipe for versatile applications using oxygen & acetylene / lpg gases.
- Best suitable for gas welding / brazing from 0.5 mm to 3mm thick plates.
- Torch is designed with safety protections to give dependable performance against backfire.
- 5 tips (LPG) are supplied as a standard scope along with torch for gas welding / brazing applications.
- Torch can be used with both Oxy-LPG as well as oxy-acetylene tips are optional.



KING TORCH-NM

GAS CUTTING TORCH

KEY FEATURES :

- King Cutting Torch has several advantages owing to its nozzle mix system. King Cutting Torch is available with ANM nozzle for use with Acetylene as fuel gas and PNM nozzle for use with LPG as fuel gas.
- NOZZLE-MIX CUTTING IS SAFEST: King Cutting Torches unique "positive-suction" NM nozzles are designed according to the fuel gas being used, to safeguard the torch and operator from "sustained backfire" or "flashback". This is especially advantageous when different fuel gases are used on the same shopfloor.
- WIDER RANGE OF OPERATION: King Cutting Torches can be employed for a wide range of cutting jobs. All you need is to change the nozzle to suit the job. Extra long torches and straight head torches are also available.
- EASY MAINTENANCE: The all metal design makes KING NM a rugged torch that can withstand rough handling by shopfloor workers.



BRIEF SPECIFICATIONS :

Maximum cutting thickness	300 mm
Length of torch	470 mm
Weight of torch	1.3 kg

Manufactured as per IS: 7653 – 1975 and Certified by Bureau of Indian Standards. Marked with ISI and certification license number CM/L 7226061

KING CUTTING / WELDING / HEATING TORCHES

KING JOIN - AGHT / HT-1

GAS HEATING TORCH

KEY FEATURES :

- Torch designed to use with LPG gas.
- Torch is designed with safety purpose to give dependable performance.
- 3 sizes of heating nozzles are provided with this torch.



KING JOIN - AGWT /25W

GAS WELDING BLOW PIPE (TORCH)

INTRODUCTION :

This balanced blowpipe is for versatile applications using Oxygen and Acetylene gases. It is most suitable for Gas welding and Brazing applications in general workshops and welding shops of large organisations.

KEY FEATURES :

- Torch is designed with safety purpose to give dependable performance.
- Only 5 tips are able to cater for Gas Welding / Brazing from 0.8 mm to 6 mm thick plates. These are swaged copper tubes.
- This is a better engineered safety product designed to give dependable protection against backfire.
- This blowpipe has been designed as all metallic from outside.



BRIEF SPECIFICATIONS :

Maximum plate thickness that can be welded	6 mm
Number of tips	5 sizes
Tip inlet thread	M 10 X 1 P
Length of torch	290 mm
Weight of torch (without tip)	750 gms
Blowpipe inlet connections	3 /8" BSP R.H. for Oxygen 3/8" BSP L.H. For Acetylene

GAS CUTTING NOZZLE

KEY FEATURES :

- ANM type nozzle for Oxy-Acetylene
- PNM type Nozzle for Oxy. - LPG
- Nozzle length – 90 mm – Non-turbulent and smooth gas flow / flame
- Swaged nozzle ends – Faster cutting due to concentrated and forceful gas flow/ flame



NOTE:

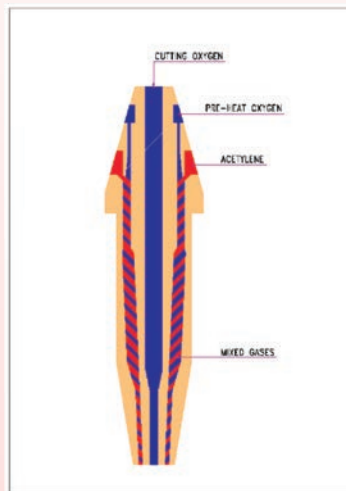
- Use ANM type nozzle for Oxy - Acetylene gas cutting
- Use PNM type nozzle for Oxy - LPG gas cutting

OPERATING DATA FOR ANM / PNM GAS CUTTING NOZZLES:

(At Normal Neutral Flame)

Nozzle Size	Plate Thickness	Acetylene Pressure	Propane Pressure	Oxygen Pressure
Inch	mm	Kg / Sq.cm.	Kg / Sq.cm.	Kg / Sq.cm.
1/32	3-6	0.2	1.5	1.5
3/64	6-20	0.2	2	2
1/16	20-75	0.25	3	3
5/64	75-125	0.3	3	3
3/32	125-175	0.3	3	3
7/64	175-225	0.3	4	4
1/8	225-300	0.4	4.5	4.5

Three Seat Oxy/Acetylene Gas Cutting Nozzle



KING REGULATORS

KING REGULATOR SERIES

(TWO-STAGE) GAS REGULATORS

KEY FEATURES :

- Stainless steel diaphragm in first stage to absorb shock of inlet pressure up to 230 bar. Flexible rubber diaphragm in second stage for fine gas control.
- Forged brass bonnet in first stage and die cast special alloy bonnet in second stage for higher strength.
- Plastic moulded valve and stainless steel spindle in the valve assembly capsule in both stages for leak-proof performance.
- Distinctive colour for bonnet, pressure gauge and pressure adjusting knobs.
- Second stage plenum chamber volume is six times than first stage ensuring very stable flow characteristics.
- Double protection through separate safety valves in first and second stage.
- Triple filter: one in inlet and two wire mesh in the valve assembly protect the sensitive internal parts from any dust particles. Weight 2.40 Kg.



BRIEF SPECIFICATIONS :

Gas	Regulator Type	Max. Inlet Pressure Bar	Max. Outlet Pressure Bar	Max. Flow Lpm	End Connections	
					Inlet	Outlet
Oxygen	KING REGULATOR	230	10	1000	5/8" BSP RH (MALE)	3/8" BSP RH (MALE)
Acetylene	KING REGULATOR	20	1.5	250	5/8" BSP LH (MALE)	3/8" BSP LH (MALE)
Argon	KING REGULATOR	230	-	25	5/8" BSP RH (MALE)	3/8" BSP RH (MALE)
Nitrogen	KING REGULATOR	230	10	1000	5/8" BSP RH (MALE)	3/8" BSP RH (MALE)

Manufactured as per IS:6901-2009

Certified by Bureau of Indian standards. Regulators are marked with ISI and certification licence number CM/L 7225968.

KING REGULATORS

KING REGULATOR SERIES

(SINGLE-STAGE) GAS REGULATORS

KEY FEATURES :

- Unbreakable moulded pressure adjusting knob.
- Unique profile rubber diaphragm.
- Stainless steel machined & ground valve spindle with hard plastic moulded valve at the heart of the regulator.
- Sintered filter in the inlet, wire mesh filter in valve assembly.
- Side inlet for horizontal cylinder valve
- Self-adjusting safety valve.
- Weight 1.10 Kg approx.



BRIEF SPECIFICATIONS :

Gas	Regulator Type	Max. Inlet Pressure Bar	Max. Outlet Pressure Bar	Max. Flow Lpm	End Connections	
					Inlet	Outlet
Oxygen	KING REGULATOR	200	10	1000	5/8" BSP RH (MALE)	3/8" BSP RH (MALE)
Acetylene	KING REGULATOR	20	1	250	5/8" BSP LH (MALE)	3/8" BSP LH (MALE)
Argon	KING REGULATOR	200	-	25	5/8" BSP RH (MALE)	3/8" BSP RH (MALE)
Co2	KING REGULATOR	200	-	25	BSW 0.86 X 14 TPI RH (FEMALE)	3/8" BSP RH (MALE)
LPG	KING REGULATOR	25	1.5	200	BSW 0.86 X 14 TPI LH (FEMALE)	3/8" BSP LH (MALE)

Manufactured as per IS:6901-2009

Certified by Bureau of Indian standards. Regulators are marked with ISI and certification licence number CM/L 7225968.

LPG Regulators are required be used with KING ADAPTORS for fitting to the LPG gas cylinder.

Two types of KING ADAPTORS are available to suit to Private and Govt. LPG gas Cylinders.

KING ADAPTOR

KING ADAPTOR

ADAPTOR FOR LPG GAS REGULATOR

INTRODUCTION:

LPG gas is used in industries for Gas cutting, Heating, Welding purposes. This LPG gas is stored in LPG Cylinders for continuous supply of gas for the required operations. LPG gas regulator is required to regulate the supply of LPG gas which is stored in the LPG Cylinders. An ADAPTOR is required for fitting these LPG Regulators on the LPG cylinder.

AWL has following sizes of Vertical type Adaptors for above applications with model name as KING ADAPTOR.



BRIEF SPECIFICATIONS :

PART NO.	SIZE	APPLICATION
S10.64.510.0077	22 MM	KING ADAPTOR FOR PVT. CYLINDER
S10.64.510.0078	25.6MM	KING ADAPTOR FOR GOVT. CYLINDER

TECHNICAL SPECIFICATIONS:

- 1) Outlet Connection Threads: EXT W21.8 X 1.814 mm (0.860 BSW X 14 TPI) LH
- 2) Inlet Pressure: 0.3 to 17 Bar
- 3) Outlet Pressure: Unreduced
- 4) Flow Rate: 8 Kg/ Hour
- 5) Over all Dimensions: Ø 62 mm X 76 mm H

SALIENT FEATURES & BENEFITS:

- 1) This KING ADAPTOR delivers the LPG gas supply at an unreduced delivery pressure which is required for the operation of Gas cutting, Welding / Heating torches, Machines, burners etc.
- 2) It is fitted with non-return valve which prevents reverse gas flow to the cylinder.
- 3) It has a moulded knob for gas on/off control.
- 4) Easy spring loaded fitting ADAPTORS to the LPG gas cylinders with no tools required.
- 5) It is fitted to LPG cylinder valve by means of stainless steel balls, which holds the collar of the cylinder valve under the pressure of a spring loaded locking ring. The snap-in action of the black moulded coupling ensures a gas tight connection between the Adaptor & cylinder valve. This ensures gas leak proof fitting.
- 6) The body is pressure die casting made up of special Zinc material, and other parts are corrosion-resistant to suit LPG gas, materials such as brass, stainless steel etc.
- 7) These ADAPTORS are fitted with "O" ring at the inlet to eliminate any gas leakage.
- 8) It is supplied with Protective Covers to avoid transit/ thread damages & entry of dirt/ dust in these Adaptors.





KING PROTECT FLASHBACK ARRESTORS

KING PROTECT - T FLASHBACK ARRESTOR FOR TORCH

KING PROTECT - T/O - FLASHBACK ARRESTOR FOR OXYGEN GAS - TORCH MOUNTED

KING PROTECT -T/A - FLASHBACK ARRESTOR FOR FUEL GAS - TORCH MOUNTED

Flashback arrestors for reliable protection against dangerous reverse gas flows and flashbacks. Every flashback arrestor is 100% tested.

APPROVALS :	ISO	EN	ISO
	9001	730-1	5175

KEY FEATURES :

- The flashback arrestors are installed at the inlet of the blowpipe.
- A large surface area flame arrestor constructed of stainless steel extinguishes any dangerous flash- backs entering the device from any direction.
- A spring loaded non-return valve prevents slow or sudden reverse gas flow which could form explosive mixtures in the gas supply.



BRIEF SPECIFICATIONS :

Model	Max. Working pressure		Inlet Male thread	Outlet Female thread	Weight	Material
KING PROTECT-T	Gas	(Bar)			(gms)	
	Acetylene (A)	1.5	3/8" BSP LH	3/8" BSP LH	110	Brass, Elastomer
	LPG (P)	5.0				
	Oxygen (O)	30.0	3/8" BSP RH	3/8" BSP RH		

KING PROTECT FLASHBACK ARRESTORS

KING PROTECT - R FLASHBACK ARRESTOR FOR REGULATOR

The Best Flashback Arrestors In The World

KING PROTECT - R/O - FLASHBACK ARRESTOR FOR OXYGEN GAS - REGULATOR MOUNTED

KING PROTECT -R/F - FLASHBACK ARRESTOR FOR FUEL GAS - REGULATOR MOUNTED

Flashback Arrestors for reliable protection against dangerous reverse gas flow and flash backs. Every Arrestor 100% tested.

APPROVALS :	ISO	EN	ISO
	9001	730-1	5175

FEATURES :

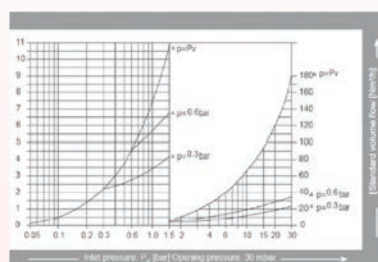
- A large surface area flame arrestor of stainless steel construction extinguishes any dangerous flashback entering the device in any direction
- A temperature sensitive cut-off valve extinguishes sustained flashbacks long before the internal temperature of the arrestors reaches a dangerous level.
- A spring loaded non-return valve prevents slow or sudden reverse gas flow forming explosive mixtures in the gas supply.
- A filter at the gas inlet protects the arrestor against dirt contamination, extending the service life.



OPERATION / USAGE :

- Flashback Arrestors are used to protect gas cylinders and pipeline outlet points (hoses and any equipment) against dangerous reverse gas low and flashbacks.
- For pipeline outlets and single cylinders.
- The maximum ambient / working temperature is 70°C / 158°F.

CONVERSION FACTOR :



KING PROTECT - R

Acetylene x 1.04
Propane x 0.80
Oxygen x 0.95

BRIEF SPECIFICATIONS :

Model	Max. Working pressure		Inlet Female thread	Outlet Male thread	Weight	Material
KING PROTECT-R	Gas	(Bar)			(gms)	
	Acetylene (A)	1.5	3/8" BSP LH	3/8" BSP LH	180	Housing - Brass, Flame Arrestor - Stainless Steel Seal - Elastomer
	LPG (P)	5.0				
	Oxygen (O)	30.0	3/8" BSP RH	3/8" BSP RH		



PERSONAL PROTECTIVE EQUIPMENT (PPE)

KING SHIELD-HAND (83 X 108 MM) :

KEY FEATURES :

Hand shield made of flame retardant glass filled nylon having 2.0 mm shell thickness with flat front. Weighing less than 500 gms., it has a concealed handle with good grip to protect the hand and reduce welder's fatigue. It is suitable for lens size of 83 x 108 mm.



KING SHIELD-AUTO :

KEY FEATURES :

This Auto-darkening helmet is of classical design, excellent ergonomic structure, comfortable and convenient to use. Light weight shell with comfortable head gear offers ample mask space and superior face, head, neck & ear protection. The shell is made of special nylon which is strong and can well withstand operating welding temperature. High quality multilayer interactive filter provides clear view and permanent UV/IR protection up to DIN13. An external shade adjustment knob enables operator to select between DIN9 to DIN13. Step less Delay and Sensitivity can be adjusted by the user from inside for easy and comfortable operation. This helmet is suitable for all position MMA, MIG/MAG & TIG welding.



KING GLOVE – GP :

Superior Rigger Gloves designed for material handling in tough environment

KEY FEATURES :

- Strong 1.2 / 1.3 mm chrome leather for high abrasion resistance
- Double leather on palm for enhanced protection
- Cotton backing for breathability and comfort
- Rubberised cuff for enhanced wrist protection
- Vein patch and knuckle protector for increased wearer safety
- Fleece lined palms for additional comfort
- Elasticated back for secure fit
- Approved to EN 388 Cat II



PERSONAL PROTECTIVE EQUIPMENT (PPE)

KING GLOVE – MP :

Multipurpose Gloves made of chrome leather

KEY FEATURES :

- Reversible all leather gloves 35 cm (14 inch.)
- Ambidextrous style
- 15cm heavy split leather cuff
- Palm and Back fully lined for protection
- Kevlar® stitched



KING GLOVE – MIG :

Heavy duty Gloves for MIG/MAG/MMA Welding made of heavy chrome leather for robust wear yet comfortable feel.

KEY FEATURES :

- Full five finger welder's gauntlet
- One piece back 35 cm (14 inch).
- Fully welted, no exposed seams
- Kevlar® sewn throughout
- Comfortable soft full lining
- Approved to EN 388 and EN 12477 type A



KING GLOVE – TIG :

Flexible high quality Welders gauntlet for TIG welding

KEY FEATURES :

- Nappa Grain leather palm and fingers ensure high dexterity
- 15cm leather cuff provides robust protection
- Kevlar® sewn throughout
- Reinforced thumb crotch for additional protection
- Approved to EN 12477 type B, EN 388





PERSONAL PROTECTIVE EQUIPMENT (PPE)

KING GLOVE – HR :

Heat Resistant heavy duty Gloves for MIG/MAG/MMA Welding made of specially treated rust heat resistant leather

KEY FEATURES :

- Heat Resistant Welder Gauntlet 35 cm
- Fully blanket lined for extra protection
- Robust yet soft comfortable fit
- Tested to 250 deg C convective heat
- Kevlar® sewn throughout
- Approved to EN 388 and EN 12477 type A



KING APRON:

KEY FEATURES :

Heavy duty Welding Apron made of high quality chrome leather, Kevlar® sewn throughout, light weight, reinforced with rivets and leather straps for comfortable wear.



KING SLEEVE GUARD:

KEY FEATURES :

Sleeve Guard is made of soft chrome leather, Kevlar® sewn throughout. Elasticated cuff with velcro arm fastener and knitted wrist for comfort, 18½ inch long sleeve guard ensures full protection of welders sleeve.



KING LEG GUARD:

KEY FEATURES :

Leg Guard is made of high quality split leather, Kevlar® sewn throughout to protect footwear during welding. Elasticated toe hold and Velcro fastener ensures snug fit.



PERSONAL PROTECTIVE EQUIPMENT (PPE)

SAFETY SHOE - BISON :

IS-15298 COMPLIANT SAFETY SHOES FOR GENERAL ENGINEERING, CHEMICAL, CEMENT, SERVICE & CONSTRUCTION INDUSTRIES

KEY FEATURES :

- Genuine full grain leather barton print
- Steel toe as per IS 15298 & EN 20345 standard
- Imported red mesh breatheble lining
- Synthetic pu crespny black collar with extra cushioning
- Moulded full socks
- Light weight for extra comfort
- Direct injected light weight pu sole
- Antistatic & slip resistant
- Meet standard is 15298 (part II)
- Available in sizes UK - 5 to 11
- Value for money



SAFETY SHOE - RHINO :

HIGH QUALITY SAFETY SHOES AS PER IS-15298 FOR GENERAL ENGINEERING CHEMICAL, CEMENT, CONSTRUCTION AND SERVICE INDUSTRIES

KEY FEATURES :

- High quality genuine tan / black suede leather
- Steel toe as per IS 15298 & EN 20345 standard
- Imported black cambrelle breatheble lining
- Imported black tetron collar with extra cushioning
- Moulded full socks
- Light weight for extra comfort
- Direct injected light weight pu sole
- Antistatic & slip resistant
- High quality black mettalic hooks
- Meet standard is 15298 (part II)
- Available in sizes UK - 5 to 11



WELDING ACCESSORIES

HOLDER HC-600 :

KEY FEATURES :

This electrode holder is Type 'B', semi insulated, heavy duty for use in project sites and workshops. Spatter protection guard of this holder is moulded from FR grade plastic. Its handle and lever is made of 'Paper Hylum' which ensures good heat resistant quality and ensures minimum welder's fatigue due to its light weight. This holder conform to IS: 2641.



HOLDER KING COOL-600 :

KEY FEATURES :

Crocodile style type 'B' fully insulated electrode holder, conform to IS-2641. Its handle, lever, spatter protection guards are made of fire retardant and heat resistant imported material. Special quality of copper alloy as main conductor & brass jaws ensure good contact with electrode and continuous duty cycle. This holder is very light weight and suitable for cables up to Al120/Cu70 sq.mm.



HOLDER KING SWORD-600 :

KEY FEATURES :

This is a type 'B' electrode holder with fully insulated head to resist spatter. Sturdy handle made of fibreglass polyamide is light weight and for heavy duty application. Insulation resistant above 1 mega ohm and dielectric strength up to 3000 volts ensures enhanced safety. This holder is suitable for cables up to Al120/Cu70 sq.mm. and CE certified as per European standard EN60974-11.



EARTH CLAMP-600 :

KEY FEATURES :

Earth clamp made of zinc coated steel and copper plated jaws provide very good contact with the work piece. Jaws can be opened up to 60mm. and most suitable for heavy duty applications.



WELDING ACCESSORIES

KING HOSE

PREMIUM QUALITY WELDING & CUTTING HOSE

KEY FEATURES :

- Specially designed for Oxy-Acetylene welding and cutting.
- Manufactured as per IS 447.

SALIENT FEATURES :

- Highly flexible
- Excellent Electrical Resistant
- Light in weight
- High Abrasion Resistant
- Supplied in 50 meter lengths packed in box
- Supplied in both 8mm and 10mm inside dia.
- Blue colour for Oxygen gas & Red colour for fuel gas



SPECIFICATIONS :

Technical Specifications	KING HOSE
Core:	Plasticized PVC
Reinforcement:	High Tensile Polyester Yarn
Cover:	Hyper Flame Retardant Thermo-compound
Temperature Range:	-40°C to +55°C

Specification	Size	Product code	Hose ID (NOM)		Hose ID (NOM)		Working Pressure		Min. Bursting Pressure		Min. Bursting Radius	
			Inch	mm	Inch	mm	Psi	bar	Psi	bar	Inch	mm
King Hose-Blue	8 mm	S41.22.013.0238	5/16	8	0.63	16.0	200	15	800	55	1.0	25
King Hose-Red	8 mm	S41.22.013.0239	5/16	8	0.63	16.0	200	15	800	55	1.0	25
King Hose-Blue	10 mm	S41.22.013.0109	3/8	10	0.71	18.0	200	15	800	55	1.52	38
King Hose-Red	10 mm	S41.22.013.0110	3/8	10	0.71	18.0	200	15	800	55	1.52	38

WELDING ACCESSORIES

KING WELDING CABLE

KEY FEATURES :

- Made in accordance with IS 9857/90
- Conductors tested in accordance with IS 8130/84
- Jacketing tested in accordance with IS 6380/84
- Excellent Heat, Flame and Wear resistant
- Excellent flexibility
- Highly recommended for use in Automatic Welding Machines



CONSTRUCTION :

- Ador welding cables are manufactured with rope-lay stranded, bunched members of Plain/Annealed Copper /Aluminium in accordance with IS 8130/84.
- A polyester tape separates the conductor from the rubber insulation.
- The cable is covered with black General Purpose grade rubber Type SE-1 or HOFR Type SE-3 in accordance with IS 6380/84

APPLICATION :

- Ador Welding Cable is suitable for use in industrial and light to medium mining application and heavy-duty service.
- The cable has been specially designed for transmitting high currents between the welding generator and the electrode.
- The high degree of flexibility avoids forming of knots in cable because of which internal conductor will not break.

FLEXIBLE WELDING CABLE WITH BENDING RADIUS : APPROX. 15 X CABLE Ø

	Copper Conductor					Aluminium Conductor				
Cross Sec (Sq.mm)	Approximate No. of Wires x Single WireØ	Radial thickness of sheathing	Approximate overall diameter	Max Resistance @ 20°C		Approximate No. of Wires x Single WireØ	Radial thickness of sheathing	Approximate overall diameter	Max Resistance @ 20°C	
	(mm)	(mm)	(mm)	(ohm/km)		(mm)	(mm)	(mm)	(ohm/km)	
1x25	783 x 0.2	2.0	12.0	0.780		--	--	--	--	
1x35	497 x 0.3	2.0	13.7	0.554		497 x 0.3	2.0	13.7	0.901	
1x50	702 x 0.3	2.2	15.3	0.386		702 x 0.3	2.2	15.3	0.634	
1x70	999 x 0.3	2.4	17.3	0.272		999 x 0.3	2.4	17.3	0.445	
1x95	1302 x 0.3	2.6	20.5	0.206		1302 x 0.3	2.6	20.5	0.334	
1x120	1702 x 0.3	2.8	22.7	0.161		1702 x 0.3	2.8	22.7	0.256	

CURRENT RATING FOR SHEATHED WELDING CABLE

Cross Sec (Sq.mm)	Current Rating At Max Duty Cycle for General Purpose Cable								Current Rating At Max Duty Cycle for HOFR Cable							
	Copper Conductor				Aluminium Conductor				Copper Conductor				Aluminium Conductor			
	Current Rating In Amps				Current Rating In Amps				Current Rating In Amps				Current Rating In Amps			
	100%	85%	60%	30%	100%	85%	60%	30%	100%	85%	60%	30%	100%	85%	60%	30%
1x25	125	136	161	228	--	--	--	--	177	192	228	343	--	--	--	--
1x35	156	169	201	285	123	133	159	225	221	240	285	403	176	191	227	321
1x50	197	214	254	360	155	168	200	283	279	303	360	509	222	241	287	405
1x70	248	269	320	453	196	213	253	358	352	382	454	643	280	304	361	511
1x95	299	342	386	546	237	257	306	433	424	460	547	774	339	368	438	619
1x120	--	--	--	--	283	307	365	517	--	--	--	--	404	438	522	738

WELDING ACCESSORIES

ADOR HANDY

THE NEW ADOR PORTABLE ELECTRODE DRYING OVEN

KEY FEATURES :

- Provided with thermostat control for precise setting of drying temperature for various types of electrodes
- Reliable ovens with continuous operation
- Light weight oven- Easy to carry
- Moulded plastic lifting handle-Easy to carry when it is hot
- Uniform heating of electrodes



SPECIFICATIONS :

Type	230 V with Thermostat
Weight	3.8 Kgs.
Temperature Range	Variable from 50 – 300°C.
Dimension	
a) External	515 mm (L) X 190 mm (W) + 190 mm (H)
b) Internal	435mm (L) X 62 mm (Dia.)
Capacity	5Kgs.of electrodes
Power Supply Cable length	2 meter

USAGE :

Normally Electrodes are first heated in Drying Oven at 250 to 300°C for total moisture removal and then preheated electrodes are put inside Carry ovens at 160 to 180°C. However, with ADOR HANDY Thermostatic Control Ovens, electrodes can be heated directly inside carry ovens at 250 to 300°C and subsequently after moisture removal, temperature can be lowered to 170°C.

ORDERING INFORMATION :

DESCRIPTION: ADOR HANDY, ITEM CODE: S10.64.001.0059

Our Global Footprints



-  Regd. & Corporate Office
-  Manufacturing Facilities
-  Central Marketing Office

INDIA



- Delhi
- Jaipur
- Ahmedabad
- Indore
- Silvassa
- Mumbai
- Pune
- Bengaluru
- Coimbatore
- Chennai
- Hyderabad
- Raipur
- Kolkata

MIDDLE EAST



- Dubai
- Sharjah
- Abu Dhabi
- Muscat
- Sohar
- Doha
- Kuwait
- Tehran
- Jordan
- Iraq
- Jubail
- Dammam
- Manama
- Riyadh
- Sanaa
- Jeddah

AFRICA



- Nairobi
- Kampala
- Dar E salaam
- Blantyre
- Khartoum
- Algiers
- Senegal
- Ghana
- Lagos
- Cairo
- Addis Ababa
- Mombasa
- Congo
- Angola

ASIA, EUROPE & US



- Kathmandu
- Myanmar
- Vietnam
- Singapore
- Jakarta
- Lahore
- Baku Azerbaijan
- Italy
- Salt Lake City
- Utah

Disclaimer: This map is not to the scale. It is only geographical representation. Company does not take any responsibility of the accuracy of the same.



WELDERS TO THE NATION SINCE 1951
ADOR WELDING LIMITED
 (Formerly Advani-Oerlikon Ltd.)

CIN: L70100MH1951PLC008647 | www.adorwelding.com



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