ADOR WELDING LIMITED

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WELDING ELECTRODES

MILD STEEL GENERAL PURPOSE | C-MN STEELS | CELLULOSIC | LOW ALLOY STEEL
STAINLESS STEEL | CAST IRON | HARD FACING | NON FERROUS

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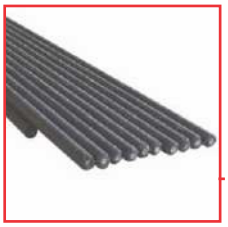


MAXBOND

MILD STEEL GENERAL PURPOSE (MSGP)

General Purpose Mild Steel Electrode for Structural and Repair Work

CLASSIFICATION : ISO 2560-A

E38 Z R 1 1

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 % :

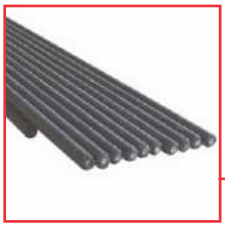
	C	Mn	Si	S	P
Typical	0.09	0.5	0.2	0.02	0.02
Specification	0.2 max	1.2 max	1.0 max	-	-

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.	17 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



SUPERBOND

MILD STEEL GENERAL PURPOSE (MSGP)

Mild Steel Electrode for General Purpose Welding

CLASSIFICATION : ISO 2560-A	IS 814	APPROVALS :
E38 0 R 1 1	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 % :

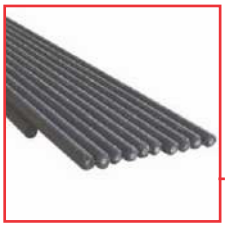
	C	Mn	Si	S	P
Typical	0.07	0.5	0.2	0.02	0.02
Specification	0.2 max	1.2 max	1.0 max	-	-

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		430 min	330 min	17 min	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



SUPERBOND S

MILD STEEL GENERAL PURPOSE (MSGP)

Mild Steel Electrode for Radiographic Quality Welding

CLASSIFICATION : ISO 2560-A	IS 814	APPROVALS :
E38 0 R 1 2	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, SA 285/285M Gr.A/B/C, SA 414/414M Gr.A/B

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

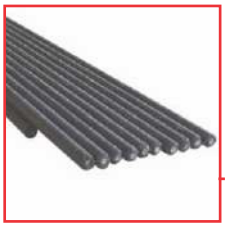
	C	Mn	Si	S	P
Typical	0.06	0.5	0.2	0.02	0.02
Specification	0.2 max	1.2 max	1.0 max	-	-

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		430 min	330 min	17 min.	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 : ISO 2560-A	IS 814	APPROVALS :
E38 0 RR 1 3	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 % :

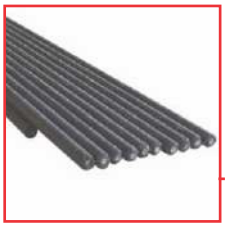
	C	Mn	Si	S	P
Typical	0.06	0.45	0.2	0.02	0.02
Specification	0.2 max	1.2 max	1.0 max	-	-

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		430 min	330 min	17 min	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



KINGBOND

MILD STEEL GENERAL PURPOSE (MSGP)

Mild Steel Electrode for All Position General Fabrication

CLASSIFICATION :	ISO 2560-A	IS 814	APPROVALS :
	E38 0 R 1 1	ER 4211X	BIS/RDSO

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 % :

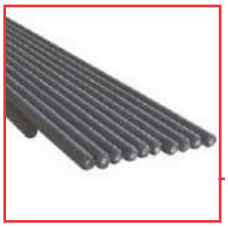
	C	Mn	Si	S	P
Typical	0.1	0.4	0.3	0.02	0.02
Specification	0.2 max	1.2 max	1.0 max	-	-

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		430 min	330 min	17 min	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



KINGBOND S

MILD STEEL GENERAL PURPOSE (MSGP)

Mild Steel Electrode for General Purpose Structural Fabrication

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

KEY FEATURES :

- Rutile type coating
- Superior welding characteristics
- All position welding capability
- Radiographic weld quality

WELDING POSITION : 

AC (50 OCV)/DCEN

TYPICAL APPLICATIONS :

- General purpose fabrication
- Light construction work
- Sheet metal work
- Steel furniture

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

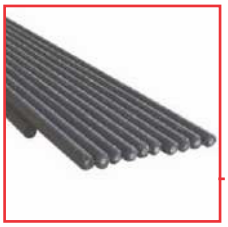
	C	Mn	Si	S	P
Typical	0.2 max	1.2 max	1.0 max	-	-

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	430 min	330 min	22 min	47 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box	Approx. Pcs/Box
2.50 x 300	60-85	150	6	900
3.15 x 350	90-130	90	6	540
3.15 x 450	90-130	90	6	540
4.0 x 450	140-180	60	6	360
5.0 x 450	180-240	40	6	240



METALBOND

MILD STEEL GENERAL PURPOSE (MSGP)

Mild Steel Electrode for General Purpose Structural Application

CLASSIFICATION : ISO 2560-A	IS 814	APPROVALS :
E38 0 R 1 2	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 % :

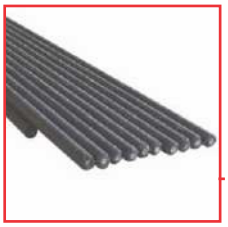
	C	Mn	Si	S	P
Typical	0.09	0.4	0.25	0.02	0.02
Specification	0.2 max	1.2 max	1.0 max	-	-

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		430 min	330 min	17 min.	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



MAGNABOND

MILD STEEL GENERAL PURPOSE (MSGP)

Mild Steel Electrode for Sheet Metal Work Application

CLASSIFICATION : ISO 2560-A	APPROVALS :
E38 0 R 1 1	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 % :

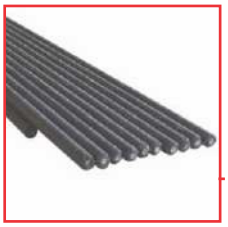
	C	Mn	Si	S	P
Typical	0.09	0.4	0.25	0.02	0.02
Specification	0.2 max	1.2 max	1.0 max	-	-

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		430 min	330 min	17 min	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 % :

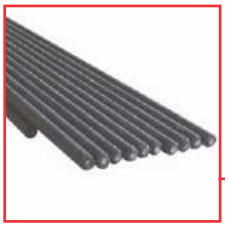
	C	Mn	Si	S	P
Typical	0.08	0.35	0.25	0.02	0.02
Specification	0.2 max	1.2 max	1.0 max	-	-

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 min	330 min	17 min	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



E BOND M

MILD STEEL GENERAL PURPOSE (MSGP)

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 % :

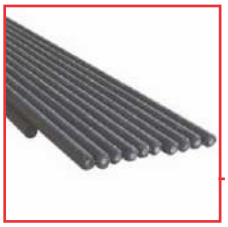
	C	Mn	Si	S	P
Typical	0.08	0.3	0.1	0.02	0.02
Specification	0.2 max	1.2 max	1.0 max	-	-

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	330 min	17 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



OPTO BOND

MILD STEEL GENERAL PURPOSE (MSGP)

General Purpose Electrode for Welding Mild Steel and Low Carbon Steels

CLASSIFICATION : ISO 2560-A EN ISO 2560-A

E35 2 RA 1 2 E35 2 RA 1 2

KEY FEATURES :

- Low hydrogen Ilmenite coated welding electrode
- Suitable for major structural work
- Ideal for mild steel and low carbon Mn steel with UTS of 430-540 MPa

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

TYPICAL APPLICATIONS :

- Sheet metal work
- Storage tanks
- Vehicles, Railway wagons
- Shipbuilding, Pipes
- Steel furniture
- General structural application
- TWelding IS 2062 and equivalent grades upto 25 mm thick

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

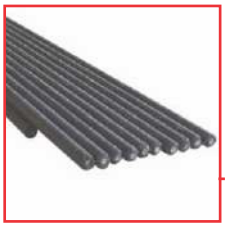
	C	Mn	Si	S	P
Typical	0.08	0.60	0.25	0.02	0.02
Specification	0.2 max	1.2 max	1.0 max	-	-

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	490	435	30	60
Specification		430 min.	330 min.	22 min.	27 min.

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 350	100-130	5	4	20
3.15 x 450	100-130	5	4	20
5.0 x 450	140-180	5	4	20
5.0 x 450	180-240	5	4	20



SUPABASE 60

C-Mn STEEL (Low Hydrogen)

Covered Electrode For 450 MPa High Tensile Strength Steel

CLASSIFICATION : ISO 2560-A

E 38 3 B32 H5

KEY FEATURES :

- Basic coated electrode
- Low hydrogen iron powder type
- Medium penetration
- High deposition rate
- Radiographic weld quality
- All position welding except vertical down

WELDING POSITION : AC (70 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Repairs and tie-ins in oil and gas transport pipe lines
- 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	0.03 max	0.6 max	0.4 max	0.015	0.025 max
Specification	0.2 max	1.2 max	1.0 max	-	-

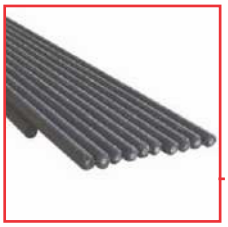
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C
Typical	As Welded	430 min	330 min	22 min	27 min
Specification		430 min	330 min	22 min	22 min

Hardness, 3 Layer: 200 BHN max **Diffusible H2 Content: <5 ml/100 gm**

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Carton/Box
2.5 x 350	60-90	4
3.15 x 450	100-130	4
4.0 x 450	140-180	4
5.0 x 450	180-240	4



SUPABASE

C-Mn STEEL (Low Hydrogen)

Special Welding Electrode for Pressure Vessels and Bridges

CLASSIFICATION : ISO 2560-A	AWS A/SFA 5.1	IS 814	APPROVALS :
E 42 3 B32 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 : 250-300°C for minimum 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	0.15 max	1.6 max	0.75 max	0.035 max	0.035 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

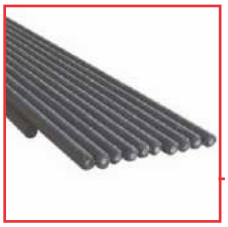
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact , J	
					-20°C	-30°C
Typical	As Welded	540	470	26	66	48
Specification		490 min	400 min	22 min	50-80	30-70

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



SUPABASE X PLUS

C-Mn STEEL (Low Hydrogen)

Covered Electrode for 500 MPa High Tensile Strength Steel

CLASSIFICATION : ISO 2560-A	AWS A/SFA 5.1	IS 814	APPROVALS :
E 42 3 B 32 H5	E 7018	E B5426H_3JX	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 : 250-300°C for minimum 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	0.015	0.02
Specification	0.15 max	1.6 max	0.75 max	0.035 max	0.035 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

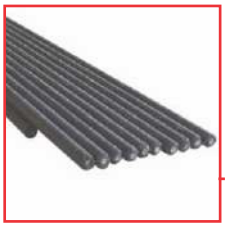
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at	
					-20°C	-30°C
Typical	As Welded	555	480	26	67	48
Specification		490 min	400 min	22 min	50-80	30-70

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	60-90	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 : ISO 2560-A	AWS A/SFA 5.1	APPROVALS :
E 42 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 : 250-300°C for minimum 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	0.15 max	1.6 max	0.75 max	0.035 max	0.035 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

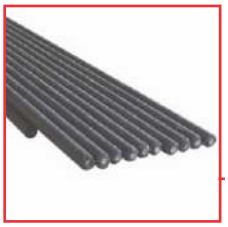
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Typical	As Welded	525	440	26	55
Specification		490 min	400 min	22 min	27 min

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 Z PLUS

C-Mn STEEL (Low Hydrogen)

Welding Electrode with Excellent Mechanical & Impact Properties at Low Temperature

CLASSIFICATION : ISO 2560-A	IS 814	EN ISO 2560-A	APPROVALS :
E 42 4 B 32 H5	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 : 250-300°C for minimum 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	0.15 max	1.6 max	0.75 max	0.035 max	0.035 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

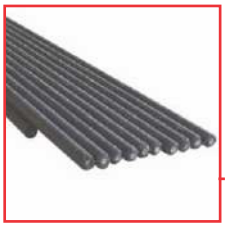
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -45°C, J
Typical	As Welded	560	480	27	58
Specification		490 min	400 min	22 min	40-70

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



TENALLOY S PLUS

C-Mn STEEL (Low Hydrogen)

Welding Electrode for fabrication works with Superior Low Temperature Impact Properties

CLASSIFICATION : ISO 2560-A	IS 814	EN ISO 2560-A	APPROVALS :
E 42 5 B 32 H5	E B5629H_3JX	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 : 250-300°C for minimum 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	0.15 max	1.6 max	0.75 max	0.035 max	0.035 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

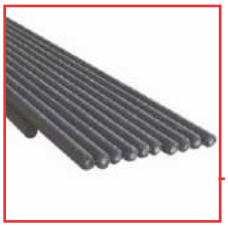
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact , J	
					-46°C	-60°C
Typical	As Welded	550	470	28	56	34
Specification		490 min	400 min	22 min	45-65	25-45

Hardness, 3 Layers: 200 BHN max. **Diffusible H2 Content: <5 ml/100 gm**

SPECIAL TEST : HIC and SSCC (NACE), CTOD at -10°C, Hot tensile at 200 deg.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



TENALLOY HH SPL

C-Mn STEEL (Low Hydrogen)

Welding Electrode for joining High Tensile Steels

CLASSIFICATION : ISO 2560-A	AWS A/SFA 5.1	IS 814	APPROVALS :
E 42 5 B 32 H5	E 7018-1	E B5629H_3JX	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 : 250-300°C for minimum 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	0.15 max	1.6 max	0.75 max	0.035 max	0.035 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

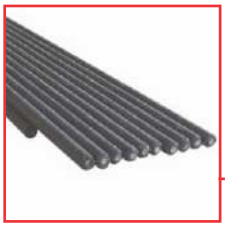
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact , J	
					-30°C	-46°C
Typical	As Welded	550	465	26	70	52
Specification		490 min	400 min	22 min	50-100	30-60

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



TENALLOY R

C-Mn STEEL (Low Hydrogen)

Coated Welding Electrode with Excellent Subzero Temperature Properties

CLASSIFICATION : ISO 2560-A E 42 5 B 32 H5 **IS 814** E B5629H$_3$JX

KEY FEATURES :

- Basic type iron powder electrode
- Deposition efficiency approx 110%
- Exhibit excellent impact at subzero 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 upto 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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

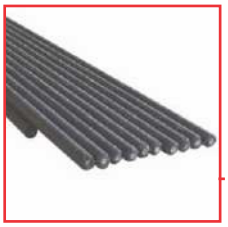
	C	Mn	Si	S	P
Typical	0.06	1.2	0.3	0.02	0.02
Specification	0.04-0.09	0.8-1.6	0.20-0.45	0.03 max	0.03 max

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		490	400	22	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



TENALLOY 38R SPL

C-Mn STEEL (Low Hydrogen)

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

CLASSIFICATION :	ISO 2560-A	AWS A/SFA 5.5
	E 42 5 B 32 H5	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 : 250-300°C for minimum 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	

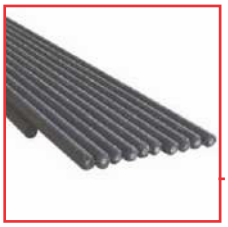
MECHANICAL PROPERTIES OF ALL WELD METAL :

	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		490 min	400 min	22 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 : ISO 2560-A	AWS A/SFA 5.1	IS 814	
E 42 3 B 12 H5	E 7016	E B5426H_3X	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 : 250-300˚C for minimum 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	0.15 max	1.6 max	0.75 max	0.035 max	0.035 max

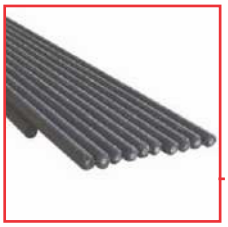
MECHANICAL PROPERTIES OF ALL WELD METAL :

	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		490 min	400 min	22 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



TENALLOY 16W

C-Mn STEEL (Low Hydrogen)

Stick Electrode for difficult to weld and unknown steels

CLASSIFICATION :	ISO 2560-A	AWS A/SFA 5.1	IS 814
	E 42 3 B 12 H5	E 7016	E B5426H_3X

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 : 250-300°C for minimum 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	0.15 max	1.6 max	0.75 max	0.035 max	0.035 max

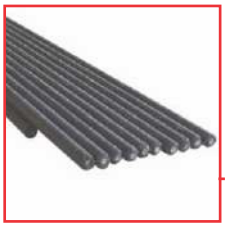
MECHANICAL PROPERTIES OF ALL WELD METAL :

	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		490 min	400 min	22 min	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 16G

C-Mn STEEL (Low Hydrogen)

Welding Electrode with Excellent Low Temperature Properties

CLASSIFICATION : ISO 2560-A E 42 3 1Ni B 12 H5 **AWS A/SFA 5.5** 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 : 250-300°C for minimum 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	0.15 max	1.6 max	0.75 max	0.035 max	0.035 max	0.035 max

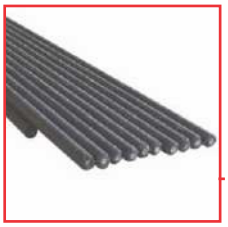
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact At -30°C , J
Typical	As Welded	540	450	28	58
Specification		490 min	400 min	22 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



TENALLOY 16 SPL

C-Mn STEEL (Low Hydrogen)

Welding Electrode specially for Nace Quality Carbon Steel Welding

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

E 42 5 B 12 H5 E 7016-1

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 : 250-300°C for minimum 1 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	0.15 max	1.6 max	0.75 max	0.035 max	0.035 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

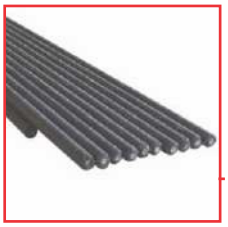
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -50°C, J
Typical	As Welded	550	470	25	52
Specification		490 min	400 min	22 min	40-60

Diffusible H2 Content: <5 ml/100 gm

SPECIAL TEST : HIC & SSCC (NACE). 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	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



SUPABASE X PLUS (S)

C-Mn STEEL (Low Hydrogen)

High Deposition Efficiency Electrode For 500 MPa Tensile Strength Steel

CLASSIFICATION :	ISO 2560-A	AWS A/SFA 5.1	IS 814
	E 42 3 B 32 H5	E 7018 H4 R	E B5426H_3JX

KEY FEATURES :

- Basic coated electrode
- Smooth surface finish
- Low hydrogen iron powder type
- Medium penetration
- High deposition efficiency typical 125%
- 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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.05	1.3	0.5	0.015	0.02
Specification	0.15 max	1.6 max	0.75 max	0.035 max	0.035 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

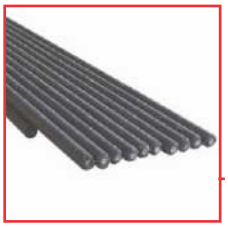
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Typical	PWHT: 620°C for 5 hrs	535	440	34	120
Typical	As Welded	560	480	32	60
Specification		490 min	400 min	22 min	27 min

Hardness, 3 Layer: 200 BHN max **Diffusible H2 Content: <4 ml/100 gm**

Typical Deposition Efficiency: 125 %

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	100-130	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	180-240	5	4	20



TENALLOY Z PLUS (S)

C-Mn STEEL (Low Hydrogen)

High Deposition Efficiency Electrode with excellent Mechanical and Impact Properties

CLASSIFICATION :	ISO 2560-A	AWS A/SFA 5.1	IS 814
	E 42 5 B 32 H5	E 7018-1 H4 R	E B5629H_3JX

KEY FEATURES :

- Basic coated iron powder type
- Smooth surface finish
- Excellent toughness down to -45°C
- High deposition efficiency typical 125%
- All position capability
- Radiographic weld deposit

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	S	P
Typical	0.06	1.4	0.3	0.02	0.02
Specification	0.15 max	1.6 max	0.75 max	0.035 max	0.035 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

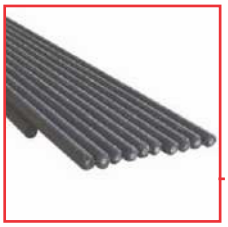
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -45°C, J
Typical	As Welded	570	485	27	58
Specification		490 min	400 min	22 min	27 min

Hardness, 3 Layer: 200 BHN max **Diffusible H2 Content: <4 ml/100 gm**

Typical Deposition Efficiency: 125 %

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	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	180-240	5	4	20



TOPSTAR

C-Mn STEEL (High Efficiency)

Stick Electrode for Mild Steel Welding

CLASSIFICATION :	ISO 2560-A	IS 814
	E 38 0 A 13	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 d signed 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 % :

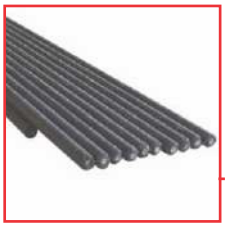
	C	Mn	Si	S	P
Typical	0.08	0.5	0.2	0.02	0.02
Specification	0.2 max	1.2 max	1.0 max	-	-

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		430 min	330 min	22 min	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



TOPSTAR 110

C-Mn STEEL (High Efficiency)

Welding Electrode known for it's High Welding Speed

CLASSIFICATION : ISO 2560-A **IS 814**

E 42 A RR 31 E RR5222 JX

KEY FEATURES :

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

WELDING POSITION : **AC/DCEN**

TYPICAL APPLICATIONS :

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

REDRYING CONDITION : 150°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

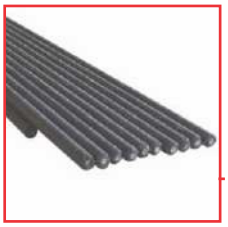
	C	Mn	Si	S	P
Typical	0.08	0.45	0.22	0.01	0.01
Specification	0.15 max	1.25 max	0.9 max	0.035 max.	0.035 max.

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		490 min	400 min	17 min	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 : **ISO 2560-A** E 42 0 RR 53 **IS 814** 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 % :

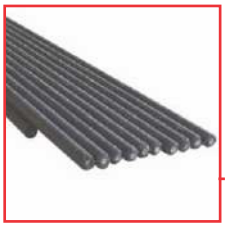
	C	Mn	Si	S	P
Typical	0.07	0.6	0.2	0.02	0.02
Specification	0.15 max	1.25 max	0.9 max	0.035 max	0.035 max

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		490 min	400 min	17 min	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



TOPSTAR 140 SPL

C-Mn STEEL (High Efficiency)

Mild Steel Welding Electrode for Heavy Structural Welding

CLASSIFICATION : ISO 2560-A

E 42 2 RR 53

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 % :

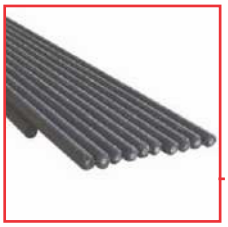
	C	Mn	Si	S	P
Typical	0.06	0.8	0.4	0.02	0.02
Specification	0.15 max	1.25 max	0.9 max	0.035 max	0.035 max

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		490 min	400 min	22 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



SUPABASE 180

C-Mn STEEL (Low Hydrogen)

Welding Electrode for Mild Steel Structural Fabrication

CLASSIFICATION : ISO 2560-A

E 42 2 B 73 H5

APPROVALS :

KEY FEATURES :

- Heavy coated electrode
- Hydrogen controlled iron powder type
- Smooth arc, low spatter, fine and uniform ripples
- Deposition efficiency is 180% approximately
- High weld metal recovery
- Radiographic quality weld

WELDING POSITION :

AC/DCEP

TYPICAL APPLICATIONS :

- Heavy steel structures like cranes and bridge girders
- Heavy machine parts, in ship building, pressure vessels, boilers
- Assembly of earthmoving equipment
- Suitable for ASTM SA414/414M, Gr.55, Gr.60 steels of SA515/516M

REDRYING CONDITION : 300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

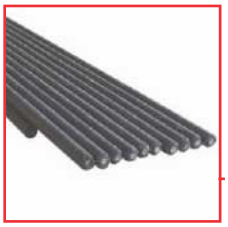
	C	Mn	Si	S	P
Typical	0.15 max	1.6 max	0.9 max	0.035 max	0.035 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -20°C, J
Specification	As Welded	490 min	400 min	22 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	170-230	5	4	20
5.0 x 450	220-300	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 % :

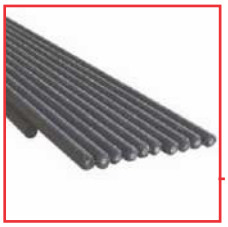
	C	Mn	Si	S	P
Typical	0.05	0.15	0.02	0.02	0.02
Specification	0.08 max.	0.10-0.30	0.03 max	0.03 max	0.03 max

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

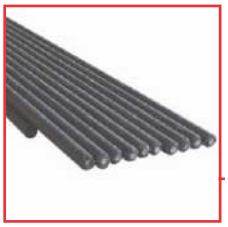
	C	Mn	Si	S	P
Typical	0.05	0.5	0.03	0.02	0.02
Specification	0.08 max	0.3-0.8	0.04 max	0.03 max	0.03 max.

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



ADOR SP-6

C-Mn STEEL (Special Purpose)

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

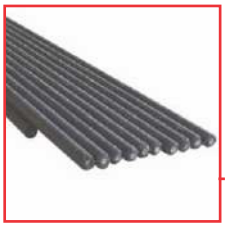
	C	Mn	Si	S	P
Typical	0.04	1.1	0.4	0.02	0.02
Specification	0.02-0.06	0.6-1.5	0.15-0.65	0.025 max.	0.025 max.

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		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



CELWEL 60

CELLULOSIC

Welding Electrode for Pipeline Welding

CLASSIFICATION : 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	0.2 max	1.2 max	1.0 max	-	-

MECHANICAL PROPERTIES OF ALL WELD METAL :

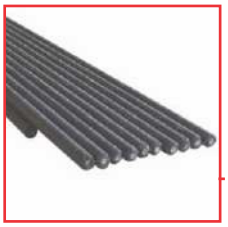
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact , J	
					-20°C	-30°C
Typical	As Welded	525	410	26	78	52
Specification		430 min	330 min	22 min	70-90	48-70

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



CELWEL 60S

CELLULOSIC

Electrode for Welding Pipeline and Structural Fabrication

CLASSIFICATION : ISO 2560-A	AWS A/SFA 5.1
E 38 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 % :

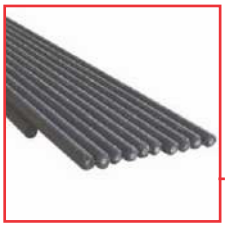
	C	Mn	Si	S	P
Typical	0.12	0.5	0.2	0.01	0.01
Specification	0.2 max	1.2 max	1.0 max	-	-

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		430 min	330 min	22 min	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



CELWEL 70G

CELLULOSIC

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 % :

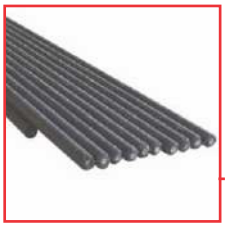
	C	Mn	Si	Mo	S	P
Typical	0.1	0.5	0.2	0.35	0.01	0.01
Specification	0.12 max	0.40-0.80	0.10-0.30	0.30-0.40	0.015 max.	0.015 max.

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: 620ºC for 1Hr	490	415	22 min	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



CELWEL 70P

CELLULOSIC

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 % :

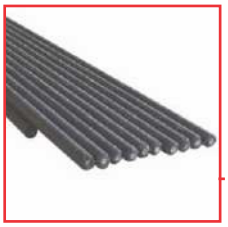
	C	Mn	Si	Cr	Ni
Typical	0.1	0.8	0.3	0.1	0.7
Specification	0.2 max	1.2 max.	0.6 max.	0.3 max.	1.0 max.
	Mo	**V**	**S**	**P**	
Typical	0.1	0.05	0.02	0.02	
Specification	0.5 max.	0.1 max.	0.03 max.	0.03 max.	

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.	27 min.

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



CELWEL 80G

CELLULOSIC

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 % :

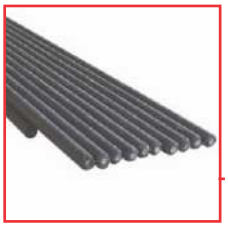
	C	Mn	Si	Cr	Ni
Typical	0.1	1.0	0.2	0.2	0.9
Specification	0.2 max.	0.6-1.2	0.05-0.3	0.1-0.3	0.75-1.0
	Mo	**V**	**S**	**P**	
Typical	0.05	0.05	0.01	0.01	
Specification	0.1 max.	0.1 max.	0.015 max.	0.015 max.	

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



CELWEL 80P

CELLULOSIC

Electrode for Welding higher strength Pipelines

CLASSIFICATION :	EN ISO 2560-A	AWS A/SFA 5.5
	E 46 3 1Ni C 21	E 8010-P1

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 % :

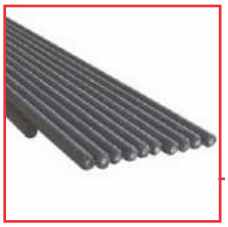
	C	Mn	Si	Cr	Ni
Typical	0.1	1.0	0.2	0.2	0.9
Specification	0.2 max	1.2 max	0.6 max	0.1-0.3	0.75-1.0
	Mo	**V**	**S**	**P**	
Typical	0.1	0.05	0.01	0.01	
Specification	0.50 max	0.1 max	0.03 max	0.03 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact, 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 1 Hr	550 min	460 min	19 min	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 ISO 3580-A	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 : 250-300°C for minimum 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	0.12 max	0.9 max	0.8 max	0.4 - 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 for 1 hr.	550	460	27	165
Specification		490 min	390 min	22 min	140-200

Hardness, 3 Layer: 200 BHN max

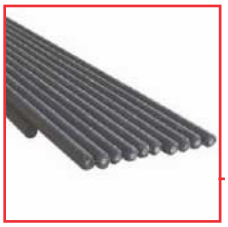
Diffusible H2 Content: <5 ml/100 gm

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



CROMOTEN 1

LOW ALLOY STEEL (High Temperature)

0.5Cr-0.5Mo type Low Alloy Welding Electrode

CLASSIFICATION :EN ISO 3580-A	AWS A/SFA 5.5	APPROVALS :
E CrMo0.5 B 32 H5	E 8018-B1	

KEY FEATURES :

- Basic coated iron powder electrode
- Typical 0.5Cr-0.5Mo weld deposit
- Smooth and stable arc
- Resistance to stress cracking
- Maximum service temperature 550°C

WELDING POSITION : 

AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of 0.5Cr-0.5Mo and similar creep resistant steels
- For high temperature and high pressure boilers, chemical and oil refining industries
- Cr and Cr-Mo bearing steels at elevated temperature service for steam production plants, steam pipes
- Electric power plant, Super heaters

REDRYING CONDITION : 250-300°C for minimum 1 hr (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	S	P
Specification	0.05 - 0.12	0.9 max	0.8 max	0.4 - 0.65	0.4 - 0.65	0.03 max	0.03 max

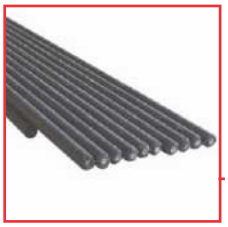
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Specification	PWHT: 690°C for 1 hr.	550 min	460 min	19 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	5	4	20
3.15 x 450	100-140	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	190-250	5	4	20



CROMOTEN 15

LOW ALLOY STEEL (High Temperature)

Cr-Mo Alloyed Welding Electrode for Elevated Temperature Creep Resistance

CLASSIFICATION : EN ISO 3580-A	AWS A/SFA 5.5
E CrMo1 B 32 H5	E 8015-B2

KEY FEATURES :

- Non Synthetic, 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	0.055	0.7	0.45	1.15	0.6	0.01	0.01
Specification	0.05 - 0.12	0.9 max	1.0 max	1.0 - 1.5	0.4 - 0.65	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

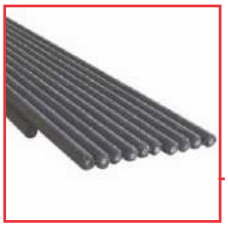
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -18°C, J
Typical	PWHT: 690°C for 1 hr.	615	525	24	70
Specification		550 min	460 min	19 min	-

Meets X factor requirement, X factor = (10P + 5Sb + 4Sn + As)/100<12ppm

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	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



CROMOTEN 16

LOW ALLOY STEEL (High Temperature)

Cr-Mo ALLOYED WELDING ELECTRODE FOR ELEVATED TEMPERATURE CREEP RESISTANCE

CLASSIFICATION : EN ISO 3580-A **AWS A/SFA 5.5**

E CrMo1 B 32 H5 E 8016-B2

KEY FEATURES :

- Non Synthetic, basic coated electrode for root run
- 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	0.055	0.7	0.45	1.15	0.6	0.01	0.01
Specification	0.05 - 0.12	0.9 max	0.6 max	1.0 - 1.5	0.4 - 0.65	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

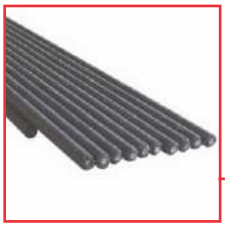
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -18°C, J
Typical	PWHT: 690°C for 1 hr.	615	525	24	70
Specification		550 min	460 min	19 min	-

Meets X factor requirement, X factor = (10P + 5Sb + 4Sn + As)/100<12ppm

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	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



CROMOTEN

LOW ALLOY STEEL (High Temperature)

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

CLASSIFICATION :	EN ISO 3580-A	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 : PA PB PC PD PE PF PG

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 : 250-300°C for minimum 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 - 0.12	0.9 max	0.8 max	1.0 - 1.5	0.4 - 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 for 1 hr.	615	525	24	68
Specification		550 min	460 min	19 min	50-100

Diffusible H2 Content: <5 ml/100 gm

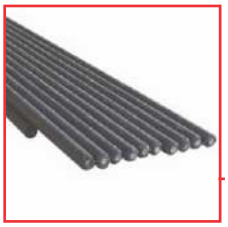
CREEP TESTS DATA :

Condition	Temperature,°C	Stress, MPa	Duration, Hrs	Strain% after 1000 Hrs
PWHT: 695°C for 1 hr.	500	300	1000	0.40
	500	140	1000	0.68

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 STC

LOW ALLOY STEEL (High Temperature)

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

CLASSIFICATION : EN ISO 3580-A	AWS A/SFA 5.5
E CrMo1 B 32 H5	E 8018-B2

KEY FEATURES :

- Non Synthetic, 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 : 250-300°C for minimum 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	S	P
Typical	0.055	0.7	0.45	1.15	0.6	0.01	0.01
Specification	0.05 - 0.12	0.9 max	0.8 max	1.0 - 1.5	0.4 - 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 -18°C, J
Typical	PWHT: 690°C for 1 hr.	615	525	24	70
Specification		550 min	460 min	19 min	-

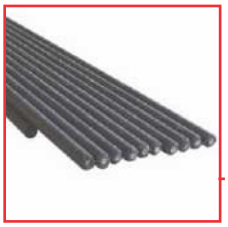
Diffusible H2 Content: <5 ml/100 gm

Meets X factor requirement, X factor = (10P + 5Sb + 4Sn + As)/100<12ppm

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	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



CROMOTEN S PLUS

LOW ALLOY STEEL (High Temperature)

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

CLASSIFICATION : EN ISO 3580-A	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 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
- Suitable for similar composition creep resistant steels used for boilers, oil refineries, chemical and power plants

REDRYING CONDITION : 250-300°C for minimum 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	0.9 max	0.8 max	2.0 - 2.5	0.9 - 1.2	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

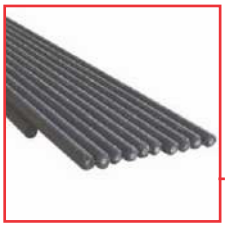
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -18°C, J
Typical	PWHT: 690°C for 1 hrs	570	475	22	54
Specification		620 min	530 min	17 min	40 min

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 - 15

LOW ALLOY STEEL (High Temperature)

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

CLASSIFICATION : EN ISO 3580-A E CrMo2 B 31 H5 **AWS A/SFA 5.5** E 9015-B3

KEY FEATURES :

- Non synthetic, basic coated electrode
- Meets X factor requirement
- 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
- Recommended for Pipe Welding
- 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
- Joining of P5A materials

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	S	P
Typical	0.075	0.55	0.4	2.2	1.0	0.01	0.01
Specification	0.05 - 0.12	0.9 max	1.0 max	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%	CVN Impact at -30°C, J
Typical	PWHT: 690°C for 1 Hr	645	570	22	42
Specification		620 min	530 min	17 min	-

		CVN Impact in J at,				
		+25°C	0°C	-20°C	-40°C	-50°C
PWHT: 690°C for 6 Hr		196	176	144	86	72
PWHT + Step cooling	Temp. (°C)	593	538	524	496	468
	Time (Hrs)	1	15	24	60	100

Meets X factor requirement, X factor = (10P + 5Sb + 4Sn + As)/100<12ppm

Hardness, 3 Layer: 180-200 BHN

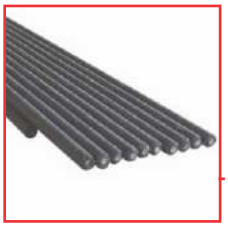
Diffusible H2 Content: <5 ml/100 gm

SPECIAL TESTS :

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

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Carton/Box	wt. of the Box, Kg.
2.5 x 350	60-90	4	20
3.15 x 450	100-140	4	20
4.0 x 450	140-180	4	20
5.0 x 450	190-250	4	20



CROMOTEN C - 16

LOW ALLOY STEEL (High Temperature)

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

CLASSIFICATION : EN ISO 3580-A E CrMo2 B 31 H5 **AWS A/SFA 5.5** E 9016-B3

KEY FEATURES :

- Non synthetic, basic coated electrode
- Meets X factor requirement
- 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
- Recommended for Pipe Welding
- 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
- Joining of P5A materials

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	S	P
Typical	0.075	0.55	0.4	2.2	1.0	0.01	0.01
Specification	0.05 - 0.12	0.9 max	0.6 max	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%	CVN Impact at -30°C, J
Typical	PWHT: 690°C for 1 Hr	645	570	22	42
Specification		620 min	530 min	17 min	-

		CVN Impact in J at,				
		+25°C	0°C	-20°C	-40°C	-50°C
PWHT: 690°C for 6 Hr		196	176	144	86	72
PWHT + Step cooling	Temp. (°C)	593	538	524	496	468
	Time (Hrs)	1	15	24	60	100

Meets X factor requirement, X factor = (10P + 5Sb + 4Sn + As)/100<12ppm

Hardness, 3 Layer: 180-200 BHN

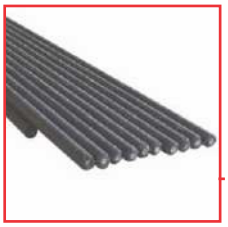
Diffusible H2 Content: <5 ml/100 gm

SPECIAL TESTS :

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

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Carton/Box	wt. of the Box, Kg.
2.5 x 350	60-90	4	20
3.15 x 450	100-140	4	20
4.0 x 450	140-180	4	20
5.0 x 450	190-250	4	20



CROMOTEN C

LOW ALLOY STEEL (High Temperature)

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

CLASSIFICATION : EN ISO 3580-A	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

REDRYING CONDITION : 250-300°C for minimum 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	2.4	1.0	0.02	0.02
Specification	0.05 - 0.12	0.9 max	0.8 max	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 for 1 Hr	660	580	22
Specification		620 min	530 min	17 min

Hardness, 3 Layer: 180-200 BHN

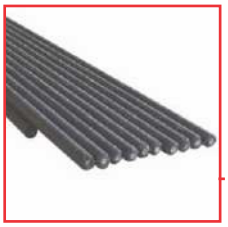
Diffusible H2 Content: <5 ml/100 gm

CREEP TEST DATA:

Condition	Temperature, °C	Stress, MPa	Duration, Hrs	Strain% after 1000 Hrs
PWHT: 690°C for 1 Hr	550	140	1000	0.84
	600	80	1000	1.15

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 2 STC

LOW ALLOY STEEL (High Temperature)

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

CLASSIFICATION : EN ISO 3580-A	AWS A/SFA 5.5
E CrMo2 B 32 H5	E 9018-B3

KEY FEATURES :

- Non synthetic, basic coated iron powder electrode
- 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

REDRYING CONDITION : 250-300°C for minimum 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	2.4	1.0	0.01	0.012
Specification	0.05 - 0.12	0.9 max	0.8 max	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%	CVN Impact at -10°C, J
Typical	PWHT: 690°C for 1 Hr	660	580	22	100
Specification	625-740	620 min	530 min	17 min	-

		CVN Impact at,				
		+25°C	0°C	-20°C	-40°C	-50°C
PWHT: 690°C for 7 Hr		195	175	157	84	66
PWHT+Step cooling	Temp. (°C)	593	538	524	496	468
	Time (Hrs)	1	15	24	60	100

Meets X factor requirement, X factor = (10P + 5Sb + 4Sn + As)<12ppm

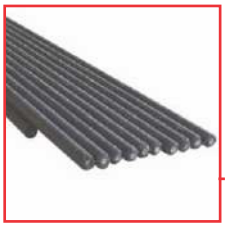
Hardness, 3 Layer: 180-200 BHN

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 S PLUS

LOW ALLOY STEEL (High Temperature)

Low Carbon Cr-Mo Type Creep Resistant Steel Electrode

CLASSIFICATION : EN ISO 3580-A	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 : 250-300°C for minimum 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	0.9 max	0.8 max	2.0-2.5	0.9-1.2	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

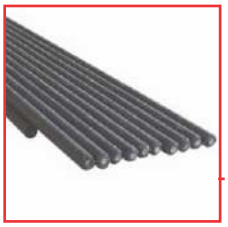
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	PWHT: 690°C for 1 hr.	600	525	20
Specification		550 min	460 min	17 min

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 5 Cr-0.5 Mo steels.

CLASSIFICATION : EN ISO 3580-A	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 5 Cr-0.5 Mo 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 : 250-300°C for minimum 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 - 0.1	1.0 max	0.9 max	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 min	460 min	19 min	80-140

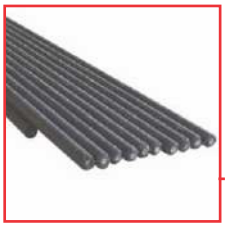
Hardness, 3 Layer: 225 BHN max

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

EQUIVALENT : GMAW wire: Automig 80S-B6 **GTAW Filler : Tigfil-80S-B6**



CROMOTEN D S PLUS

LOW ALLOY STEEL (High Temperature)

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

CLASSIFICATION :	EN ISO 3580-A	AWS A/SFA 5.5
	E CrMo5L B 32 H5	E 8018-B6L

KEY FEATURES :

- Basic coated electrode
- Low carbon 5 Cr-0.5 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
- 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
- P5B materials and similar steels

REDRYING CONDITION : 250-300°C for minimum 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	1.0 max	0.9 max	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 :

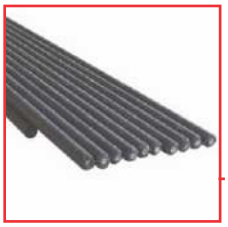
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 27°C, J
Typical	PWHT: 740°C for 1 hr.	650	580	24	108
Specification		550 min	460 min	19 min	80-140

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 90D

LOW ALLOY STEEL (High Strength)

Low Hydrogen Basic Type Electrode For Welding 5 Cr - 0.5 Mo Steels

CLASSIFICATION :	EN ISO 3580-A	AWS A/SFA 5.5
	E CrMo5 B 31 H5	E 9018-B6

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
- Joining P5B materials e.g. SA 336/336M Gr.F5, SA 387/387M Gr.5
- Application in refineries, chemical and power plants, pressure vessels, boilers

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	S	P
Typical	0.07	0.8	0.5	5.2	0.5	0.1	0.02	0.02
Specification	0.05 - 0.1	1.0 max	0.9 max	4.0-6.0	0.45-0.65	0.40 max	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

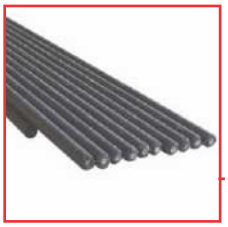
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 27°C, J
Typical	PWHT: 740°C for 1 hr.	650	550	21	100
Specification		620 min	530 min	17 min	70-120

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 9 Cr type low alloy Welding Electrode.

CLASSIFICATION : EN ISO 3580-A	AWS A/SFA 5.5	APPROVALS :
E CrMo9 B 32 H5	E 8018-B8	DNV

KEY FEATURES :

- Basic type heavy coating
- 9 Cr 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 : 250-300°C for minimum 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 - 0.1	1.0 max	0.9 max	8.0 - 10.5	0.85 - 1.2	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

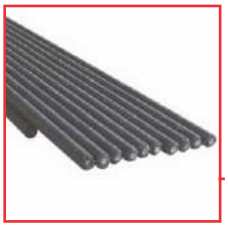
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	PWHT: 740°C for 1 hr	605	495	22
Specification		550-650	460-540	19-26

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 9L

LOW ALLOY STEEL (High Temperature)

Basic coated Extra Low Carbon 9 Cr type Low Alloy Steel Electrode

CLASSIFICATION : EN ISO 3580-A	AWS A/SFA 5.5
E CrMo9L B 32 H5	E 8018-B8L

KEY FEATURES :

- Basic type heavy coating
- Extra low carbon 9 Cr 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

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 : 250-300°C for minimum 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	S	P
Typical	0.04	0.7	0.5	9.0	1.0	0.01	0.02
Specification	0.05 max	1.0 max	0.9 max	8.0-10.5	0.85-1.20	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

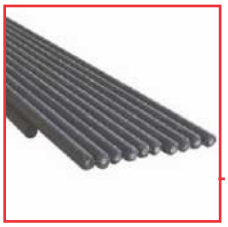
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	PWHT: 740°C for 1 hr.	610	500	22
Specification		550 min	460 min.	19 min.

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



CROMOTEN 9M

LOW ALLOY STEEL (High Temperature)

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

CLASSIFICATION : EN ISO 3580-A	AWS A/SFA 5.5	APPROVALS :
E CrMo91 B 32 H5	E 9018-B91	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 & 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 : 250-300°C for minimum 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	0.2	9.4	1.0	0.4	0.2
Specification	0.08-0.13	1.20 max	0.30 max	8.0-10.5	0.85 -1.2	0.80 max	0.15-0.30
	Cu	**Al**	**Nb**	**N**	**S**	**P**	
Typical	0.1	0.01	0.06	0.04	0.006	0.005	
Specification	0.25 max	0.04 max	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 for 2 hr.	675	590	20	55
Specification		620-720	530-625	17-22	47 min

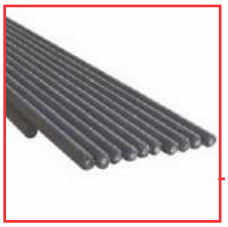
Hardness, 3 Layer: 240 BHN max

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 ISO 3580-A	AWS A/SFA 5.5
E CrMo91 B 42 H5	E 9015-B91

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 :   **DCEP**

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 : 250-300°C for minimum 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	Ni
Typical	0.1	0.6	0.15	9.1	0.9	0.4
Specification	0.08-0.13	1.20 max	0.3 max	8.0-10.5	0.85-1.10	0.80 max
	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 for 4 hrs	670	580	22	58	44
Specification		620 min	530 min	17 min	45 min	27 min

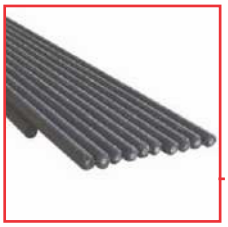
Hardness, 3 Layer: 220 BHN max

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 ISO 3580-A	AWS A/SFA 5.5	APPROVALS :
E CrMo91 B 32 H5	E 9016-B91	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 & F91 steels to provide improved long term creep properties
- Fabrication of turbine and boilers e.g. turbine casings
- Application in Power plants, Petrochemical plants, Oil refineries, Coal liquefaction and Gasification plants
- Welding of X10CrMoVNb9-1

REDRYING CONDITION : 250-300°C for minimum 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	0.4	0.2
Specification	0.08-0.13	1.2 max	0.3 max	8.0-10.5	0.85 -1.2	0.80 max	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 :

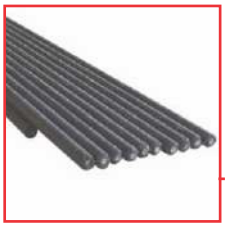
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 18°C, J
Typical	PWHT: 760°C for 2 hr.	675	590	20	56
Specification		620 min	530 min	17 min	45 min

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 ISO 3580-A	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 % :

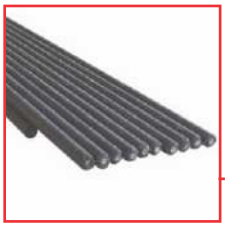
	C	Mn	Si	Cr
Typical	0.07	0.6	0.3	1.3
Specification	0.05-0.09	0.40-0.65	0.15 - 0.35	1.0-1.50
	Mo	**V**	**S**	**P**
Typical	0.5	0.25	0.02	0.01
Specification	0.40-0.65	0.20-0.40	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	PWHT: 690°C for 1 hr.	610	530	26
Specification		550 min	460 min	16 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	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 ISO 3580-A	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 & chemical plants
- Suitable for P.No.3 Group No.1 & 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 % :

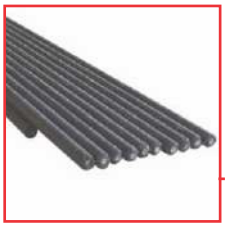
	C	Mn	Si	Cr	Mo	S	P
Typical	0.07	0.6	0.3	1.3	0.5	0.02	0.01
Specification	0.09 max	0.40-0.75	0.20-0.40	1.0-1.50	0.40-0.65	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	PWHT: 690°C for 1 hr.	625	540	24
Specification		550 min	460 min	16 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	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 ISO 3580-A** E CrMo2 R 12 **AWS A/SFA 5.5** 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 % :

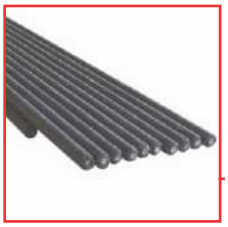
	C	Mn	Si	Cr	Mo	S	P
Typical	0.07	0.5	0.4	2.2	1.1	0.02	0.02
Specification	0.05-0.09	0.45-0.75	0.20-0.45	2.0-2.50	0.90-1.25	0.03 max	0.03 max

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 70A

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 : 250-300°C for minimum 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	0.12 max	1.25 max	0.80 max	2.0-2.75	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

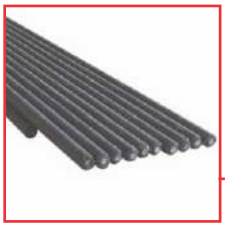
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -60°C, J
Typical	As Welded	610	515	26	57
Specification		550 min	460 min	19 min	30-80

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 70B

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 : 250-300°C for minimum 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	0.80 max	3.0-3.75	0.03 max	0.03 max

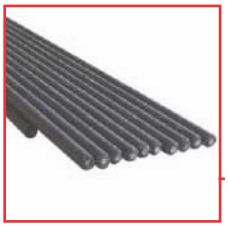
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -75°C, J
Typical	PWHT: 600°C for 1 hr.	590	500	26	52
Specification		550 min	460-550	19 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	122	4	41
4.0 x 450	140-180	80	4	63
5.0 x 450	190-250	50	4	100



TENALLOY 70BL

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	S	P
Specification	0.05 max	1.25 max	0.50 max	3.0-3.75	0.025 max	0.03 max

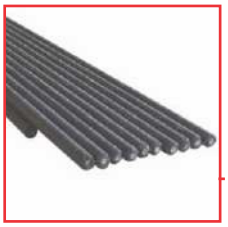
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -100°C, J
Specification	PWHT: 600°C for 1 Hr	490 min	390 min	22 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	122	4	41
4.0 x 450	140-180	80	4	63
5.0 x 450	190-250	50	4	100



TENALLOY 70C

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 : 250-300°C for minimum 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	0.12 max	0.4 - 1.25	0.80 max	0.80-1.10	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 - 40°C, J
Typical	As Welded	600	530	26	78
Specification		550 Min	470-550	24 min	50-100

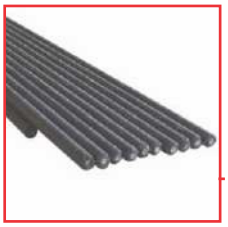
Hardness, 3 Layer: 200 BHN max

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 70CL

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
	E 38 5 1Ni B 32 H5	E 7018-C3L

KEY FEATURES :

- Basic coated low carbon electrode
- Typical Ni-Mo type welds
- Excellent fracture toughness at -50°C
- Superior crack resistance
- Radiographic quality welds
- All position capability

WELDING POSITION : 

AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of high tensile steels and fine grained steels like HY 80, HY 90, HY 100
- Storage tanks for low temperature
- Off shore platforms, bridge
- Application in refineries, power plants e.g. pressure vessels and heat exchangers, machinery

REDRYING CONDITION : 250-300°C for minimum 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Mo	S	P
Typical	0.05	1.0	0.3	1.0	0.3	0.01	0.02
Specification	0.08 max	0.4 - 1.40	0.50 max	0.80-1.10	0.35 max	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

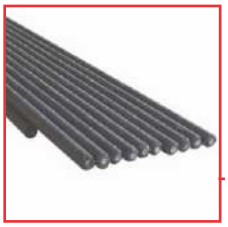
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -50°C, J
Typical	As Welded	530	440	26	50
Specification		490 min	390 min	22 min	40-90

Hardness, 3 Layer: 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	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 : 250-300°C for minimum 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		550 min	460 min	19 min	50 avg.

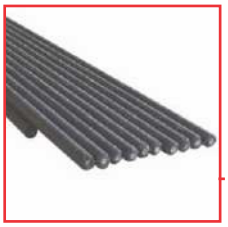
Diffusible H2 Content: <5 ml/100 gm

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

FCAW wire: Automig FC 81T1-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 : 250-300°C for minimum 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

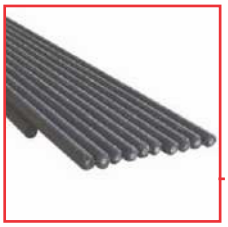
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -50°C, J
Typical	As Welded	605	520	26	54
Specification		550 min	460 min	19 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 : 250-300°C for minimum 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.	0.02 max.

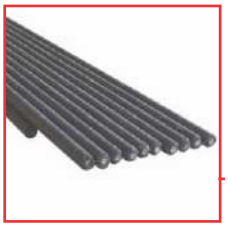
MECHANICAL PROPERTIES OF ALL WELD METAL :

	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	19 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



TENALLOY 60D-3

LOW ALLOY STEEL (High Strength)

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 : 250-300°C for minimum 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 - 1.8	0.8 max	0.90 max	0.40-0.65	0.03 max	0.03 max

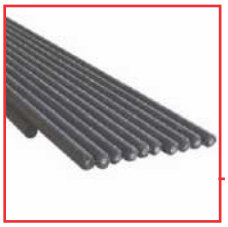
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -51°C, J
Typical	PWHT: 620°C for 1 Hr	605	510	24	45
Specification		550 min	460-560	19 min	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



TENALLOY 80P2

LOW ALLOY STEEL (High Strength)

Basic Coated Electrode for Vertical-down Welding, Pipe Welding

CLASSIFICATION :	EN ISO 2560-A	AWS A/SFA 5.5
	E 46 5 1Ni B 4 5	E 8045-P2 H4R

KEY FEATURES :

- Basic type coating
- Easy to use with controllable slag system
- Deposit is extremely crack resistant
- High toughness and a very low hydrogen content
- Suitable for filler and cover pass welding in pipeline construction

WELDING POSITION : 

AC (90 OCV)/DCEP

TYPICAL APPLICATIONS :

- Vertical-down welds of large diameter pipelines and for structural work
- It can be used in sour gas application
- Fill and cap pass welding on up to X70 grade pipe

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	S	P
Typical	0.06	1.3	0.6	0.9	0.01	0.02
Specification	0.12 max	0.90 – 1.70	0.8 max	1.0 max	0.03 max	0.03 max

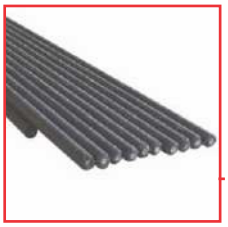
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Typical	As Welded	600	500	23	60
Specification		550 min	460 min	19 min	27 min

Diffusible H2 Content: <4 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	5	4	20
3.15 x 450	100-140	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	190-250	5	4	20



TENALLOY 70D1

LOW ALLOY STEEL (High Strength)

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Mo	S	P
Specification	0.12 max	1.0-1.75	0.8 max	0.90 max	0.25-0.45	0.03 max	0.03 max

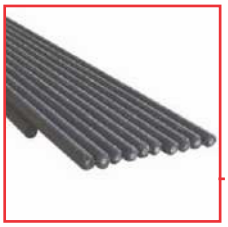
MECHANICAL PROPERTIES OF ALL WELD METAL :

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



TENALLOY 90D3

LOW ALLOY STEEL (High Strength)

Welding Electrode Depositing Mn-Mo Type Low Alloy Steel Weld

CLASSIFICATION : AWS A/SFA 5.5

E9018-D3

KEY FEATURES :

- Basic coated electrode
- Mn-Mo type weld deposit
- Excellent welding characteristics
- High strength with excellent fracture toughness down to -50°C
- 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
- Welding of Q&T fine grained steels
- Penstocks, Earth moving equipments
- Suitable for low alloy structural steels

REDRYING CONDITION : 250-300°C for minimum 1 hr

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Mo	S	P
Specification	0.12 max	1.0-1.80	0.80 max	0.90 max	0.40-0.65	0.025 max	0.025 max

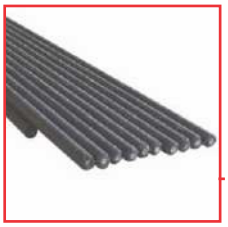
MECHANICAL PROPERTIES OF ALL WELD METAL :

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



TENALLOY 65

LOW ALLOY STEEL (High Strength)

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

CLASSIFICATION :	EN ISO 18275-A	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 : 250-300°C for minimum 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

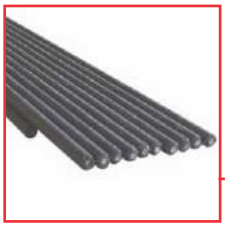
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -60°C, J
Typical	As Welded	655	580	23	54
Specification		620 min	530 min	17 min	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 ISO 18275-A	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 : 250-300°C for minimum 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 for 2 hrs.	665	600	23	58
Specification		620 min	530 min	17 min	27 min

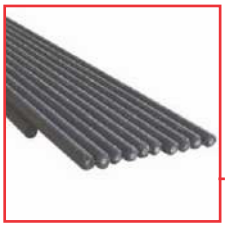
Hardness, 3 Layer: 200 BHN max

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 ISO 18275-A | **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 : 250-300°C for minimum 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

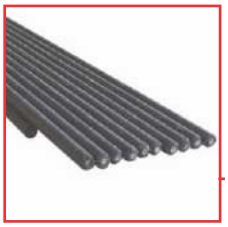
MECHANICAL PROPERTIES OF ALL WELD METAL :

	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 75D-2

LOW ALLOY STEEL (High Strength)

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

CLASSIFICATION : EN ISO 18275-A	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 : 250-300°C for minimum 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

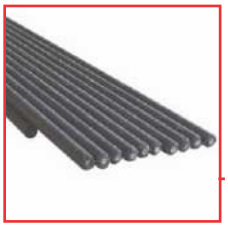
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at - 50°C, J
Typical	PWHT: 620°C for 1 Hr	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 ISO 18275-A	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 : 250-300°C for minimum 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	0.10 max	1.30-1.80	0.6 max	1.25-2.50	0.25 - 0.50	0.03 max	0.03 max

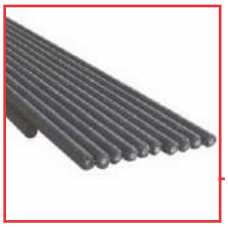
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at - 50°C, J
Typical	As Welded	765	705	23	57
Specification		690 min	610 - 690	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 75G

LOW ALLOY STEEL (High Strength)

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

CLASSIFICATION : EN ISO 18275-A E 55 5 Z B 32 H5 **AWS A/SFA 5.5** 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 : 250-300°C for minimum 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	

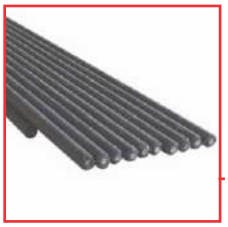
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at - 50°C, J
Typical	As Welded	710	630	22	56
Specification		760 min	670 min	15 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 80

LOW ALLOY STEEL (High Strength)

Welding Electrode for high strength steel with subzero impact.

CLASSIFICATION : EN ISO 18275-A	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
- Penstocks, Earthmoving equipments
- 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

REDRYING CONDITION : 250-300°C for minimum 1 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	0.10 max	1.30-1.80	0.6 max	1.25 - 2.50	0.25 - 0.50
	Cr	**V**	**S**	**P**	
Typical	0.3	0.02	0.02	0.02	
Specification	0.40 max	0.05 max	0.03 max	0.03 max	

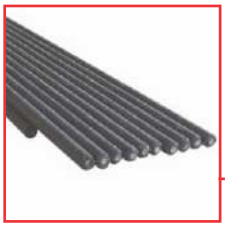
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at - 50°C, J
Typical	As Welded	820	730	22	55
Specification		760 min	680 - 760	20 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	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 80HH SPL

LOW ALLOY STEEL (High Strength)

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

CLASSIFICATION : EN ISO 18275-A	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 : 250-300°C for minimum 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	0.10 max	1.30 - 1.80	0.6 max	1.25-2.50	0.40 max
	Mo	**V**	**S**	**P**	
Typical	0.4	0.02	0.005	0.007	
Specification	0.25 - 0.50	0.05 max	0.03 max	0.03 max	

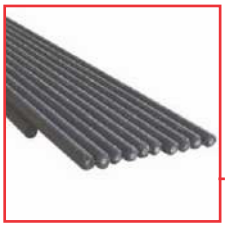
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at - 50°C, J
Typical	As Welded	820	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 110

LOW ALLOY STEEL (High Strength)

Extra Low Hydrogen Low Alloy Welding Electrode For High Strength With Subzero Application

CLASSIFICATION : EN ISO 18275-A

E 11018-G H4R

KEY FEATURES :

- Extra low hydrogen electrode
- Low alloy high tensile steel electrode
- Good impact toughness at -50°C
- Weld metal exhibit better ductility
- 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	0.15
Specification	0.012 max	1.20-1.80	0.30-0.70	1.25-2.50	0.30 max
	Mo	**V**	**S**	**P**	
Typical	0.2	0.02	0.01	0.01	
Specification	0.30 max	0.05 max	0.012 max	0.015 max	

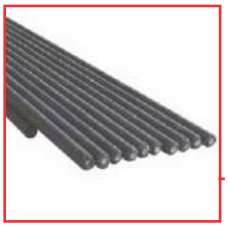
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at - 50°C, J
Typical	As Welded	790	700	22	44
Specification		760 min	670 min	15 min	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 120

LOW ALLOY STEEL (High Strength)

Welding Electrode for joining high strength Steel

CLASSIFICATION : EN ISO 18275-A

E 69 4 Z B 32 H5

KEY FEATURES :

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

WELDING POSITION : AC (70 OCV)/ DCEP

TYPICAL APPLICATIONS :

- Welding of high tensile steels and fine grained steels like HY 80, HY 90, HY 100
- Joining high strength, low alloy or micro-alloyed steels to themselves or to lower strength steels, including carbon steels

REDRYING CONDITION : 250-300°C for minimum 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Mo
Specification	0.10 max	1.30-2.25	0.60 max	1.25 - 2.50	0.25 - 0.50
	Cr	**V**	**S**	**P**	
Specification	0.30-1.50	0.05 max	0.030 max	0.030 max	

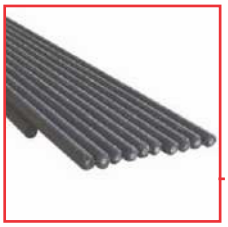
MECHANICAL PROPERTIES OF ALL WELD METAL :

Condition		UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact At -50°C, J
Specification	As Welded	830 min	745-830	18 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	215	4	23
3.15 x 450	100-140	113	4	44
4.0 x 450	140-180	78	4	63
5.0 x 450	190-250	51	4	96



TENALLOY 120G

LOW ALLOY STEEL (High Strength)

Welding Electrode for Joining High Strength Steel

CLASSIFICATION : EN ISO 18275-A

E 69 4 Z B 32 H5

KEY FEATURES :

- Basic type coating
- Ni-Mn-Mo-Cr alloyed electrode
- Excellent crack resistance
- High strength and toughness at -50°C
- Radiographic weld quality

WELDING POSITION :

AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of high tensile steels and fine grained steels like HY 80, HY 90, HY 100
- Joining high strength, low alloy or micro-alloyed steels to themselves or to lower strength steels, including carbon steels

REDRYING CONDITION : 250-300°C for minimum 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Mo
Typical	0.05	1.80	0.4	2.2	0.4

	Cr	V	S	P	
Typical	0.4	0.01	0.015	0.015	

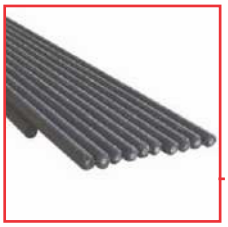
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -50°C, J
Typical	As Welded	870	780	20	50

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	113	4	44
4.0 x 450	140-180	78	4	63
5.0 x 450	190-250	51	4	96



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 :

DCEP

TYPICAL APPLICATIONS :

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

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

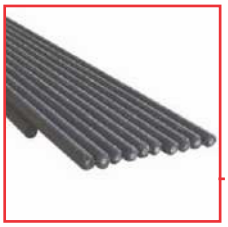
	C	Mn	Si	Ni
Range	0.12-0.25	1.0-1.80	0.25-0.75	1.0-1.80
	Cr	**Mo**	**S**	**P**
Range	0.5-1.0	0.20-0.50	0.020 max	0.025 max

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 : EN ISO 3580-A

EN ISO 3580-A	EN ISO 3580-A
E 1CrMoV B 22 H5	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 : 250-300°C for minimum 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	

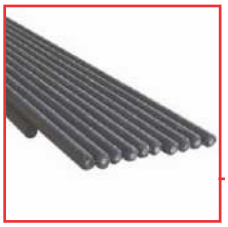
MECHANICAL PROPERTIES OF ALL WELD METAL :

	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 1 hr 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 I

LOW ALLOY STEEL (Weathering Steel)

Low Alloy Steel Electrode for Welding Weathering Steels

CLASSIFICATION : AWS A/SFA 5.5

E 7018-W1

APPROVALS :

-

KEY FEATURES :

- Basic type iron powder electrode
- Cr-Ni-Cu type low alloy steel welds
- Exhibits excellent atmospheric corrosion resistance
- High crack resistance under restraint
- Radiographic quality weld deposit
- 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 A242 and A588

REDRYING CONDITION : 250-300°C for minimum 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni
Specification	0.12 max	0.40-0.70	0.40-0.70	0.15-0.30	0.20-0.40
	Cu	**V**	**S**	**P**	
Specification	0.30-0.60	0.08 max	0.025 max	0.025 max	

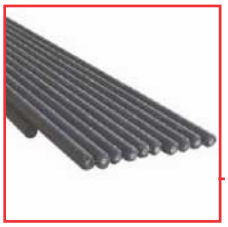
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -20°C, J
Specification	As Welded	490 min	415 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.
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



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 : 250-300°C for minimum 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	0.12 max	0.50 - 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.	0.03 max

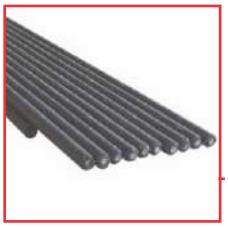
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -20°C, J
Typical	As Welded	605	520	22	66
Specification		550 min	460 min	19 min	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



NIMOTEN

LOW ALLOY STEEL (Nimoten Series)

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

CLASSIFICATION :	EN ISO 18275-A	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 : 250-300°C for minimum 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	0.10 max	0.60 - 1.25	0.8 max	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	

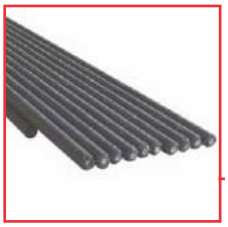
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -51°C, J
Typical	As Welded	650	590	26	54
Specification		620 min	540 - 620	24 min	35-75

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	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 : 250-300°C for minimum 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr
Typical	0.06	0.7	0.3	0.8
Specification	0.10 max	0.60-1.10	0.20-0.50	0.70-1.20
	Ni	**Mo**	**S**	**P**
Typical	2.3	0.7	0.015	0.02
Specification	2.20-2.80	0.60-0.90	0.03 max	0.03 max

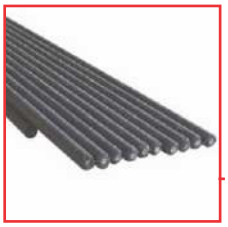
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	PWHT: 620°C for 1 hr.	735	625	19
Specification		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 : 250-300°C for minimum 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 :

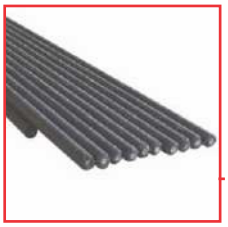
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Typical	As Welded	735	625	19
Range		690-780	600-650	16-24

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)

Hardfacing Electrode for Application in Steel Mills and Forging Industries

ALLOY BASIS :

Ni, Cr, Mo

KEY FEATURES :

- Basic coated electrode
- Low alloy type weld metal
- Machinable with carbide tools
- High weld metal recovery
- Special application for joining and overlay work in steel mills and forging industry
- Radiographic weld deposit
- Three layer hardness over 320 BHN

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 : 250-300°C for minimum 1 hr

PHYSICAL PROPERTIES :

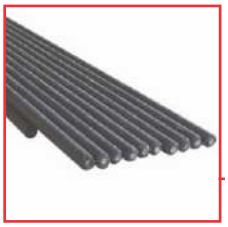
Condition	Hardness, 3 Layer HRc
As Welded	32-39

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	190-230	5	4	20
6.3 x 450	260-320	5	4	20

Physical Properties: With increase in number of squares, property improves



SUPERINOX 1A

STAINLESS STEEL (Austenitic Steel)

Stainless steel electrode for joining 18/8 type stainless steels

CLASSIFICATION : ISO 3581-A	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
- Suitable for material no. 1.4300, 1.4301, 1.4310, 1.4312, 1.4550, 1.4001, 1.4016, 1.4057
- Build up application on SS surfaces of centrifugal pump impellers and shafts valve faces, seats etc.
- SS piping in refineries, oil & gas industries, chemical plants

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

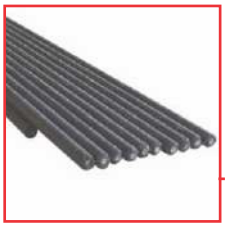
	C	Cr	Ni	Mo	Mn
Typical	0.05	19.0	10.2	-	1.2
Specification	0.08 max	18.0-21.0	9.0-11.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
Typical	0.6	0.02	0.02	-	
Specification	1 max	0.04 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	600	40	5
Specification		550	30 min	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 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 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 : ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Cr	Ni	Mo	Mn
Typical	0.07	19.5	10.2	-	1.5
Specification	0.04-0.08	18.0-21.0	9.0-11.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
Typical	0.6	0.02	0.02	-	
Specification	1 max	0.04 max	0.03 max	0.75 max	

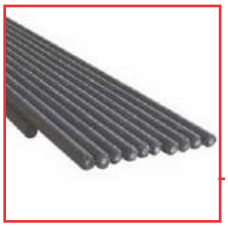
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	605	37	4
Specification		550 min.	30 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 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 308H PLUS

308H TYPE STAINLESS STEEL ELECTRODE

CLASSIFICATION :	ISO 3581-A	AWS A/SFA 5.4	EN ISO 3581-A
	E 19 9 R 13	E 308H-17	E 19 9 H

KEY FEATURES :

- Acid-Rutile based coating
- 19/10 type austenitic weld deposit
- Weld metal carbon content restricted to eliminate lowest carbon levels
- Easy slag removal
- Higher tensile and creep strengths at elevated temperatures
- Excellent corrosion and scaling resistance upto 800°C
- Radiographic weld quality

WELDING POSITION : 

AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding AISI 304H type base metals
- For high temperature applications which requires higher mechanical properties
- SS piping in refineries, oil and gas industries, chemical plants for welding of tubes, cyclones and boilers

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Cr	Ni	Mo	Mn
Specification	0.04-0.08	18.0-21.0	9.0-11.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
Specification	1 max	0.04 max	0.03 max	0.75 max	

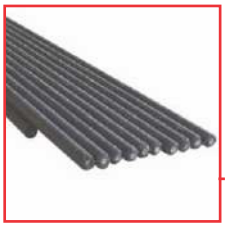
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Specification	As Welded	550 min	30 min	3-8

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	100-140	2	5	10
4.0 x 350	150-180	2	5	10

EQUIVALENT : GTAW : Tiginox 308H



SUPERINOX 1A-15

STAINLESS STEEL (Austenitic Steel)

Basic type Electrode for 18/8 type stainless steels

CLASSIFICATION :	ISO 3581-A	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 :  **DCEP**

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

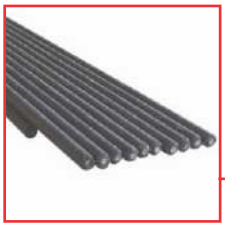
	C	Cr	Ni	Mo	Mn
Specification	0.08 max	18.0-21.0	9.0-11.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
Specification	1 max	0.04 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	610	37	6
Specification		550 min	30 min	3-7

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-70	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 x 350	150-180	2	5	10



BETANOX 308 PLUS

STAINLESS STEEL (Austenitic Steel)

Stainless steel Electrode for joining 304 type steels

CLASSIFICATION :	ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

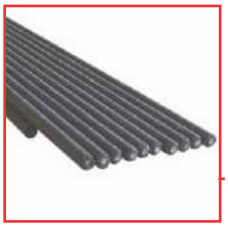
	C	Cr	Ni	Mo	Mn
Specification	0.08 max	18.0-21.0	9.0-11.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
Specification	1 max	0.04 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	605	38	4
Specification		550 min	30 min	3-7

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	60-100	2	5	10
3.15 x 350	100-140	2	5	10
4.0 x 350	150-180	2	5	10



SUPERINOX 1C

STAINLESS STEEL (Austenitic Steel)

19/10 type extra low carbon stainless steel Electrode

CLASSIFICATION : ISO 3581-A	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 :

- Extra low carbon 19/10 type austenitic weld
- Excellent corrosion and scaling resistance upto 800°C
- Controlled ferrite content for maximum cracking resistance
- Rutile based coating
- 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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Cr	Ni	Mo	Mn
Specification	0.04 max	18.0-21.0	9.0-11.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
Specification	1 max	0.04 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	590	37	5
Specification		520	30 min	3-7

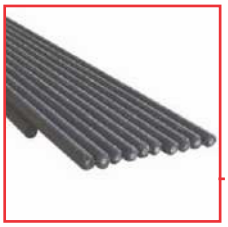
Hardness, 3 Layer: 150-200 BHN

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 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 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 : ISO 3581-A	AWS A/SFA 5.4	IS 5206	APPROVALS:
E 19 9 R 12	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 : DCEP

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

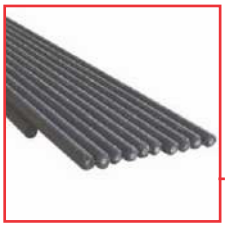
	C	Cr	Ni	Mo	Mn
Specification	0.04 max	18.0-21.0	9.0-11.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
Specification	1 max	0.04 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	625	38	5
Specification		520 min	30 min	3-7

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	50-70	2	5	10
3.15 x 350	80-100	2	5	10
4.0 x 350	110-140	2	5	10



SUPERINOX 1C-15 LT

STAINLESS STEEL (Austenitic Steel)

19/10 type stainless steel Electrode for cryogenic application

CLASSIFICATION : ISO 3581-A	AWS A/SFA 5.4	IS 5206
E 19 9L 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 subzero 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 : 

DCEP

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Cr	Ni	Mo	Mn
Specification	0.04 max	18.0-21.0	9.0-11.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
Specification	1 max	0.04 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

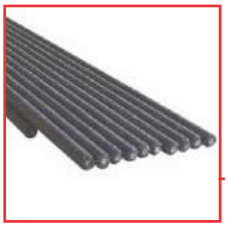
	Condition	UTS, MPa	EL%	CVN Impact at -196°C, J	Ferrite No.
Typical	As Welded	580	37	52	3
Specification		520	30 min	30 min	7

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 350	50-75	2	5	10
3.15 x 350	80-100	2	5	10
4.0 x 350	110-140	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

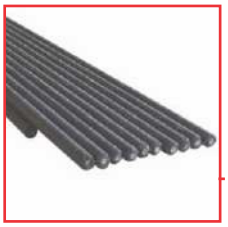
C	Mn	Si	Cr	Ni	S	P
0.04 max	0.5-0.25	1.0 max	18.0-21.0	9.0-11.0	0.03 max	0.03 max

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 308L PLUS

STAINLESS STEEL (Austenitic Steel)

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

CLASSIFICATION : ISO 3581-A	AWS A/SFA 5.4	IS 5206
E 19 9L R 13	E 308L-17	E 19.9 LR36

KEY FEATURES :

- Acid-Rutile based coating
- Extra low carbon 19/10 type austenitic weld deposit
- Excellent corrosion and scaling resistance upto 800°C
- Resistant to cracking
- 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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Cr	Ni	Mo	Mn
	0.02	19.7	10.3	-	1.5
Specification	0.04 max	18.0-21.0	9.0-11.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
	0.5	0.02	0.02	0.2	
Specification	1 max	0.04 max	0.03 max	0.75 max	

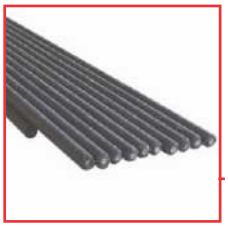
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	580	37	6
Specification		520	30 min	3-7

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	100-140	2	5	10
4.0 x 350	150-180	2	5	10

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



SUPERINOX 2A

STAINLESS STEEL (Austenitic Steel)

Stainless steel Electrode for chemical-pitting resistance

CLASSIFICATION : ISO 3581-A	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 & similar grades
- Welding of equipments in Chemical, Paper and pulp, Paint and dye industries

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

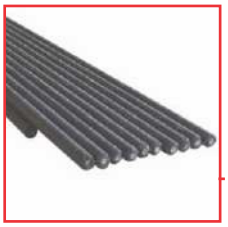
	C	Cr	Ni	Mo	Mn
	0.04	19.0	12.0	2.4	1.5
Specification	0.04 max	18.0-21.0	9.0-11.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
	0.02	0.02	0.02	-	
Specification	1 max	0.04 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	595	36	6
Specification		520	30 min	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 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 316 PLUS

STAINLESS STEEL (Austenitic Steel)

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

CLASSIFICATION : ISO 3581-A	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
- Offers improved corrosion and pitting resistance in marine and industrial environment
- Resistant to variety of acids e.g. Sulphuric, Hydrochloric, Acetic, Phosphoric, Citric, Tartaric etc.
- Controlled ferrite content of 4-8 for maximum cracking resistance
- 19/10/2 Mo type SS electrode
- Radiographic quality weld deposit
- Excellent slag removal

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

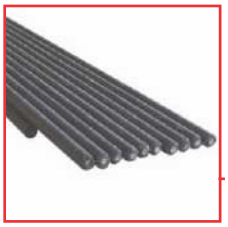
	C	Cr	Ni	Mo	Mn
	0.04	18.7	12.3	2.4	1.2
Specification	0.04 max	18.0-21.0	9.0-11.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
	0.5	0.02	0.02	-	
Specification	1 max	0.04 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	590	36	5
Specification		520	30 min	4-8

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 x 350	150-180	2	5	10



SUPERINOX 2C

STAINLESS STEEL (Austenitic Steel)

Stainless steel Electrode for high pitting resistance

CLASSIFICATION : ISO 3581-A	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 & 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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P	Cu
Typical	0.04	1.2	0.5	18.7	12.8	2.5	0.02	0.02	-
Specification	0.04 max.	0.5-2.5	1 max	18.0-21.0	9.0-11.0	0.75 max	0.03 max	0.04 max	0.75 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

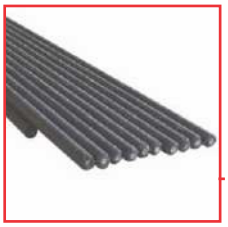
	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	565	35	6
Specification		490	30 min	3-8

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 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 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 : ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

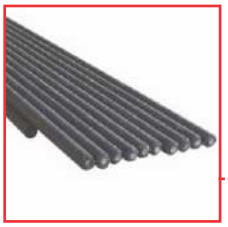
	C	Mn	Si	Cr	Ni	Mo	S	P	Cu
Typical	0.03	2.1	0.3	18.7	13.1	2.4	0.01	0.01	-
Specification	0.04 max.	0.5-2.5	1 max	18.0-21.0	9.0-11.0	0.75 max	0.03 max	0.04 max	0.75 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	605	37	0.2
Specification		490	30 min	0.5 max

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 x 350	150-180	2	5	10



BETANOX K

STAINLESS STEEL (Austenitic Steel)

Basic type stainless steel electrode for urea reactors and chemical industries

CLASSIFICATION :	ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

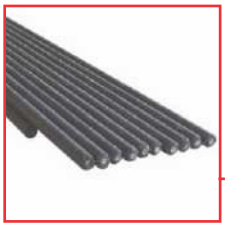
	C	Mn	Si	Cr	Ni	Mo	S	P	Cu
Typical	0.03	2.0	0.3	17.9	13.4	2.5	0.01	0.01	-
Specification	0.04 max.	0.5-2.5	1 max	18.0-21.0	9.0-11.0	0.75 max	0.03 max	0.04 max	0.75 max

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		490	30 min	27 min.	2 max

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 x 350	150-180	2	5	10



BETANOX 316L PLUS

STAINLESS STEEL (Austenitic Steel)

Low carbon stainless steel Electrode for high pitting resistance

CLASSIFICATION : ISO 3581-A	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
- Easy slag removal
- Resist Stress Corrosion Cracking, Hot cracking, Chemical corrosion at high temperature
- Smooth arc characteristics
- 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 : 250-300OC for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P	Cu
Typical	0.02	1.3	0.7	18.2	12.5	2.5	0.02	0.02	-
Specification	0.04 max.	0.5-2.5	1 max	18.0-21.0	9.0-11.0	0.75 max	0.03 max	0.04 max	0.75 max

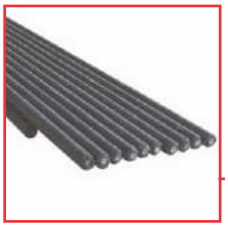
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	580	36	6
Specification		490	30 min	3-8

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 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 :	ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

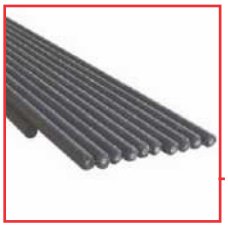
	C	Mn	Si	Cr	Ni	Mo	S	P	Cu
Typical	0.03	1.5	0.5	19.0	12.7	3.4	0.02	0.02	-
Specification	0.04 max.	0.5-2.5	1 max	18.0-21.0	12.0-14.0	3.0-4.0	0.03 max	0.04 max	0.75 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	590	36	6
Specification		520	30 min	4-9

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



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 :	ISO 3581-A	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
- Radiographic quality weld
- Shows good cracking resistance
- Smooth arc and least spatter
- Easily controlled slag
- Excellent bead appearance

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

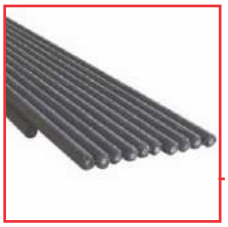
	C	Cr	Ni	Mo	Mn
	0.04	18.7	12.4	2.5	1.4
Specification	0.08 max	17.0-20.0	11.0-14.0	2.0-3.0	0.5-2.5
	Si	**P**	**S**	**Cu**	**Nb plus Ta**
	0.5	0.02	0.02	-	0.4
Specification	1 max	0.04 max	0.03 max	0.75 max	6xC, min to 1.00 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	590	35	6
Specification		550	25 min	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 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 318 PLUS

STAINLESS STEEL (Austenitic Steel)

Stabilized 18/13/2 Mo type stainless steel Electrode

CLASSIFICATION :	ISO 3581-A	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 & inter-crystalline corrosion cracking
- Radiographic quality welds
- Good corrosion resistance to Sulphuric and organic acids
- Working temperatures upto 400°C
- Easy strike and re-striking
- Easy slag removal

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

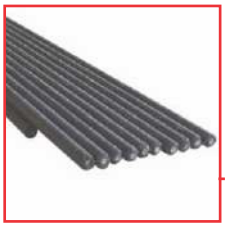
	C	Cr	Ni	Mo	Mn
	0.04	18.3	12.8	2.2	1.9
Specification	0.08 max	17.0-20.0	11.0-14.0	2.0-3.0	0.5-2.5
	Si	**P**	**S**	**Cu**	**Nb plus Ta**
	0.5	0.02	0.02	-	0.4
Specification	1 max	0.04 max	0.03 max	0.75 max	6xC, min to 1.00 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	615	36	5
Specification		550	30 min	4-8

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 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 : ISO 3581-A	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 :

- Fabrication of equipments in refineries, power plants, centrifugal pump impellers and shafts, valve faces, seats
- 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
- Fabrication of boiler and gas turbine
- Welding of stainless steel tanks, valves, pipes in food, chemical and petrochemical industries
- Welding stabilized Cr-Ni steels such as AISI 321, 321H, 347, 347H

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Cr	Ni	Mo	Mn
	0.04	19.5	10.0	0.2	1.4
Specification	0.08 max	18.0-21.0	9.0-11.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	**Nb plus Ta**
	0.5	0.02	0.01	-	0.5
Specification	1 max	0.04 max	0.03 max	0.75 max	8xC, min to 1.00 max

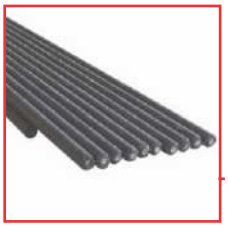
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	600	35	8
Specification		520	30 min	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 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 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 : ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Cr	Ni	Mo	Mn
	0.05	19.3	9.8	0.2	1.6
Specification	0.08 max	18.0-21.0	9.0-11.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	**Nb plus Ta**
	0.4	0.02	0.02	-	0.5
Specification	1 max	0.04 max	0.03 max	0.75 max	8xC, min to 1.00 max

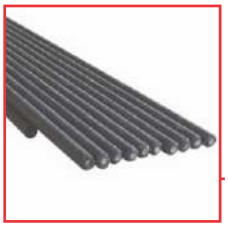
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	615	34	8
Specification		520	30 min	6-9

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 x 350	150-180	2	5	10

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



BETANOX D

STAINLESS STEEL (Dissimilar Steel Welding)

A Stainless steel Electrode for dissimilar steel joining

CLASSIFICATION : ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

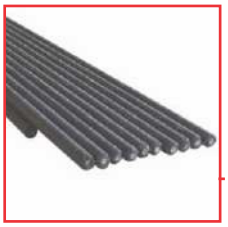
	C	Cr	Ni	Mo	Mn
	0.05	23.6	12.9	0.2	1.6
Specification	0.15 max	22.0-25.0	12.0-14.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
	0.5	0.02	0.02	-	
Specification	1 max	0.04 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	610	38	13
Specification		550	30 min.	12-15

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 x 350	150-180	2	5	10



BETANOX 309 PLUS

STAINLESS STEEL (Dissimilar Steel Welding)

A Stainless steel Electrode for dissimilar steel joining

CLASSIFICATION :	ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

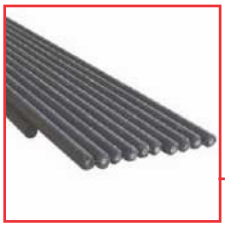
	C	Cr	Ni	Mo	Mn
	0.05	24.2	12.8	0.2	1.5
Specification	0.15 max	22.0-25.0	12.0-14.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
	0.6	0.02	0.02	-	
Specification	1 max	0.04 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	640	37
Specification		550	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



BETANOX DL

STAINLESS STEEL (Dissimilar Steel Welding)

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

CLASSIFICATION : ISO 3581-A	AWS A/SFA 5.4	IS 5206	APPROVALS:
E 23 12L 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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Cr	Ni	Mo	Mn
	0.03	23.9	13.2	0.2	1.7
Specification	0.04 max	22.0-25.0	12.0-14.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
	0.5	0.02	0.02	-	
Specification	1 max	0.04 max	0.03 max	0.75 max	

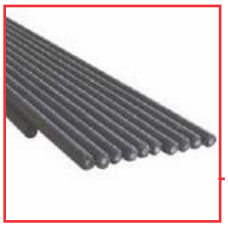
MECHANICAL PROPERTIES OF ALL WELD METAL :

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

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 x 350	150-180	2	5	10

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



BETANOX DCb

STAINLESS STEEL (Dissimilar Steel Welding)

A Stainless steel Electrode depositing 23/12/Nb alloy

CLASSIFICATION : ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

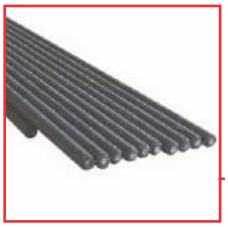
	C	Cr	Ni	Mo	Mn
	0.05	23.3	13.0	0.2	1.4
Specification	0.12 max	22.0-25.0	12.0-14.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	**Nb plus Ta**
	0.5	0.02	0.02	0.2	0.8
Specification	1 max	0.04 max	0.03 max	0.75 max	0.70-1.00

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	600	36
Specification		550	30 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 x 350	150-180	2	5	10



BETANOX 309Cb PLUS

STAINLESS STEEL (Dissimilar Steel Welding)

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

CLASSIFICATION : ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

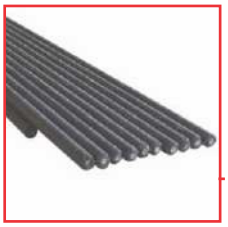
	C	Cr	Ni	Mo	Mn
	0.04	23.4	12.7	0.2	1.0
Specification	0.12 max	22.0-25.0	12.0-14.0	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	**Nb plus Ta**
	0.5	0.02	0.02	0.2	0.8
Specification	1 max	0.04 max	0.03 max	0.75 max	0.70-1.00

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	620	35
Specification		550	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



BETANOX DMo

STAINLESS STEEL (Dissimilar Steel Welding)

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

CLASSIFICATION : ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Cr	Ni	Mo	Mn
	0.06	23.5	12.8	2.4	1.0
Specification	0.12 max	22.0-25.0	12.0-14.0	2.0-3.0	0.5-2.5
	Si	**P**	**S**	**Cu**	
	0.6	0.02	0.02	0.2	
Specification	1 max	0.04 max	0.03 max	0.75 max	

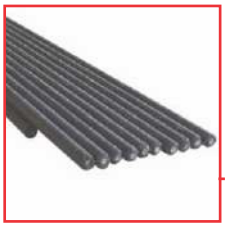
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	650	36	14
Specification		550	30 min	12-15

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 x 350	150-180	2	5	10

EQUIVALENT : GMAW wire: Miginox 309Mo **GTAW filler: Tiginox 309Mo**



BETANOX 309Mo PLUS

STAINLESS STEEL (Dissimilar Steel Welding)

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

CLASSIFICATION :	ISO 3581-A	AWS A/SFA 5.4	IS 5206
	ES 309Mo-17	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Cr	Ni	Mo	Mn
	0.06	23.5	12.8	2.4	1.7
Specification	0.12 max	22.0-25.0	12.0-14.0	2.0-3.0	0.5-2.5
	Si	**P**	**S**	**Cu**	
	0.6	0.02	0.02	0.2	
Specification	1 max	0.04 max	0.03 max	0.75 max	

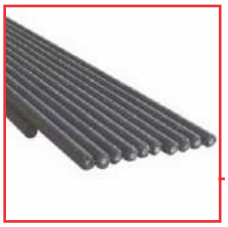
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	630	37	14
Specification		520	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 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 DMoL

STAINLESS STEEL (Dissimilar Steel Welding)

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

CLASSIFICATION :	ISO 3581-A	AWS A/SFA 5.4	IS 5206
	E (23 12 2L) 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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

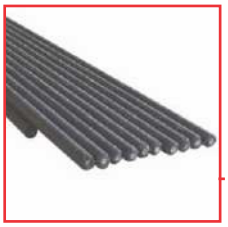
	C	Cr	Ni	Mo	Mn
	0.03	23.2	12.7	2.5	1.6
Specification	0.04 max	22.0-25.0	12.0-14.0	2.0-3.0	0.5-2.5
	Si	**P**	**S**	**Cu**	
	0.6	0.02	0.02	0.2	
Specification	1 max	0.04 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

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

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 x 350	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 : ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

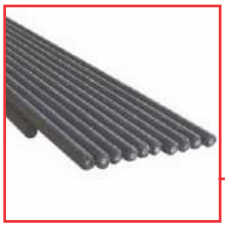
	C	Cr	Ni	Mo	Mn
	0.06	29.4	9.8	2.5	1.5
Specification	0.15 max	28.0-32.0	8.0-10.5	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
	0.5	0.02	0.02	-	
Specification	1 max	0.04 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	760	29
Specification		660	22 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-80	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 x 350	150-180	2	5	10



BETANOX 312 PLUS

STAINLESS STEEL (Dissimilar Steel Welding)

A super high strength stainless Steel Electrode

CLASSIFICATION : ISO 3581-A	EN ISO 3581-A
E 29 9 R 13	E 29 9

KEY FEATURES :

- Acid-Rutile based coating
- 30/10 type SS deposit
- Quiet and stable arc
- Low spatter, Smooth weld bead
- Easy slag detachability
- High ferrite two phase structure
- High strength weld
- Excellent resistance to cracking, fissuring
- Application should be limited to service temperature below 420°C
- 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
- Dissimilar joints between stainless and high carbon steels and unknown steels
- Repair of worn out parts and underlay before hardfacing
- Suitable for problematic steels with higher strength such as pressing dies, trimming tools, armor plates
- High temperature steels, cast steels

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

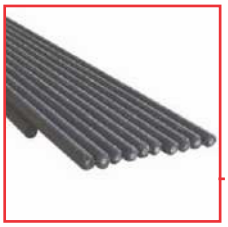
	C	Cr	Ni	Mo	Mn
Specification	0.15 max	28.0-32.0	8.0-10.5	0.75 max	0.5-2.5
	Si	**P**	**S**	**Cu**	
Specification	1 max	0.04 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	660 min	22 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	100-140	2	5	10
4.0 x 350	150-180	2	5	10



BETANOX C

STAINLESS STEEL (Heat Resisting)

Stainless steel Electrode for high temperature oxidation resistance

CLASSIFICATION :	ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

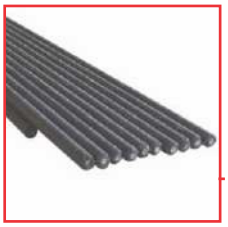
	C	Cr	Ni	Mo	Mn
	0.1	27.0	21.0	2.5	1.5
Specification	0.08-0.20	25.0-28.0	20.0-22.5	0.75 max	1.0-2.5
	Si	**P**	**S**	**Cu**	
	0.5	0.02	0.02	-	
Specification	0.75 max	0.03 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	600	37
Specification		550 min	30 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 x 350	150-180	2	5	10



BETANOX 310 PLUS

STAINLESS STEEL (Heat Resisting)

Stainless steel Electrode resistant to high temperature oxidation

CLASSIFICATION : ISO 3581-A	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 & 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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

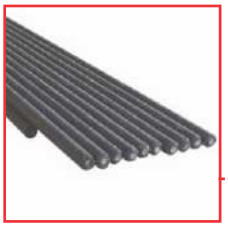
	C	Cr	Ni	Mo	Mn
	0.1	26.7	21.4	2.5	1.7
Specification	0.08-0.20	25.0-28.0	20.0-22.5	0.75 max	1.0-2.5
	Si	**P**	**S**	**Cu**	
	0.6	0.02	0.02	-	
Specification	0.75 max	0.03 max	0.03 max	0.75 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	610	37
Specification		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 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 20/30

STAINLESS STEEL (Heat Resisting)

High alloyed stainless steel Electrode for elevated temperature application

CLASSIFICATION : ISO 3581-B

ES320-15

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

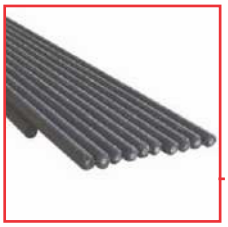
	C	Mn	Si	Cr	Ni
Typical	0.05	1.7	0.5	20.2	33.7
Specification	0.07 max	0.5-2.5	0.6 max	19.0-21.0	32.0-36.0
	Mo	**Cu**	**Nb plus Ta**	**S**	**P**
Typical	2.4	3.4	0.6	0.02	0.02
Specification	2.0-3.0	0.75 max	8xC min, to 1.0 max	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	620	36
Specification		550 min	30 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-75	2	5	10
2.5 x 350	80-100	2	5	10
3.15 x 350	110-140	2	5	10
4.0 x 350	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 : ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

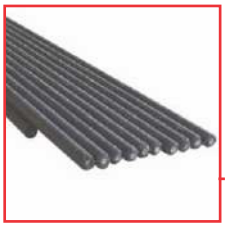
	C	Mn	Si	Cr	Ni
Typical	0.02	1.5	0.4	20.4	25.2
Specification	0.03 max	1.0-2.5	0.9 max	19.5-21.5	24.0-26.0
	Mo	**Cu**	**S**	**P**	
Typical	4.7	1.6	0.01	0.01	
Specification	4.2-5.2	1.2-2.0	0.02 max	0.03 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	575	37
Specification		520 min	30 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300				
2.5 x 350	50-70	2	5	10
3.15 x 350	70-100	2	5	10
4.0 x 350	90-130	2	5	10
	140-180			



ARMINOX

STAINLESS STEEL (Heat Resisting)

Stainless Steel Welding Electrode for armour Steel Welding

KEY FEATURES :

- A medium-Heavy coated electrode
- Austenitic stainless steel weld deposit
- Smooth and stable arc
- All position welding
- Radiographic quality weld

WELDING POSITION : 

AC (70 OCV) / DCEP

TYPICAL APPLICATIONS :

- Welding different grades of armour steels, stainless steels with carbon steel
- For depositing austenitic weld metal on high carbon steels

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

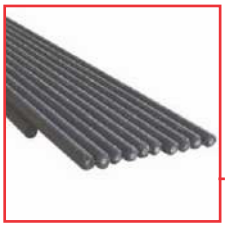
	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.10 max	0.80-2.0	0.40-0.90	18.0-21.0	8.50-10.0	2.30-2.90	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	690-880	25-35

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-80	2	5	10
2.5 x 350	80-110	2	5	10
3.15 x 350	110-160	2	5	10
4.0 x 350	160-200	2	5	10



BETACHROME ND

STAINLESS STEEL (Plain Chrome Series)

Basic type stainless steel Electrode for joining & surfacing of austenitic Mn steel

CLASSIFICATION : ISO 3581-A **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 :   **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, Crusher cones, Crusher hammers, Rail crossings, Shovel bucket teeth

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

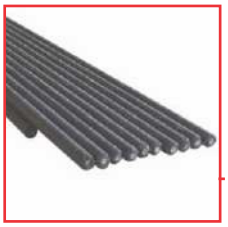
	C	Mn	Si	Cr	Ni	S	P
Typical	0.08	5.7	0.7	19.5	9.4	0.01	0.01
Specification	0.12 max	5.0-7.0	0.30-0.80	18.0-21.0	8.5-11.0	0.03 max	0.04 max

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
2.0 x 300	50-75	2	5	10
2.5 x 350	80-110	2	5	10
3.15 x 350	110-150	2	5	10
4.0 x 350	150-200	2	5	10



CROMOTEN 92

LOW ALLOY STEEL (High Temperature)

Basic coated electrode for welding P92 type creep resistant steel

CLASSIFICATION : AWS A/SFA 5.5

E 9015-B92

KEY FEATURES :

- Basic coated low hydrogen electrode
- 9Cr-1.5W-Mo weld deposit
- Smooth and stable arc
- Less spatter, uniform weld bead
- All positional capability
- Improved creep strength, toughness, fatigue life and oxidation and corrosion resistance at elevated temperature
- Radiographic weld quality

WELDING POSITION : DCEP

TYPICAL APPLICATIONS :

- Suitable for welding similar composition creep resistant steels
- ASTM A355 Gr. P92, A213 Gr. T92
- Application in Boilers, Power plants, Oil refineries, Chemical plants

REDRYING CONDITION :

250-300°C for minimum 1 hr (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

Specification	C	Mn	Si	Cr	Mo	Ni	W	V
	0.08-0.15	1.20 max	0.60 max	8.0-10.0	0.30-0.70	1.0 max	1.5-2.0	0.15-0.30

	Nb	B	Al	Cu	N	S	P
Specification	0.02-0.08	0.006 max	0.04 max	0.25 max	0.03-0.08	0.015 max	0.020 max

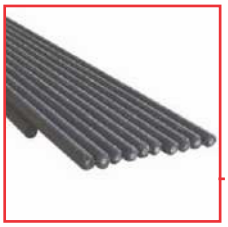
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%
Specification	PWHT: 760°C for 2 hr.	620 min	530 min	17 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	50-80	5	4	20
3.15 x 450	90-120	5	4	20
4.0 x 450	110-160	5	4	20
5.0 x 450	140-190	5	4	20



CROMOTEN CV

LOW ALLOY STEEL (High Temperature)

Basic coated electrode for welding 2.5Cr1Mo0.25v type creep resistant steel

CLASSIFICATION : EN ISO 2580-A	AWS A/SFA 5.5
E Z CrMoV2 B 4 2 H5	E 9015-G

KEY FEATURES :

- Basic coated
- Low alloy steel Cr-Mo-V deposit
- Extra low content of trace elements
- Ductile and crack resistant and heat treatable weld
- Radiography quality weld metal

WELDING POSITION : 

AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of 2.5Cr-0.5Mo-0.25V creep resistant steels
- Cr-Mo and Cr-Mo-V bearing steels for high temperature applications
- Welding of thick walled pressure vessels for petrochemical industry
- Suitable for 1.7703 – 13CrMoV9-10 steels
- ASTM SA 542 type D Cl. 4a; SA 832 Gr. 22V; SA 336 Gr. F22V; SA 541 Gr. 22V; SA 182 Gr. 22V

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Mo	V
Typical	0.07	0.65	0.3	2.5	1.0	0.25

MECHANICAL PROPERTIES OF ALL WELD METAL :

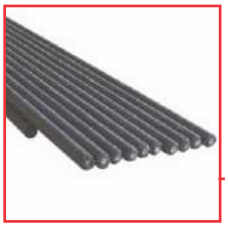
	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Typical	PWHT: 705°C for 10 hr.	670	540	18	70

Hardness, 3 Layer: 180-200 BHN

Diffusible H2 Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt. of the Carton	Carton/Box	Approx. wt. of 1000 pcs, Kg.
2.5 x 350	60-90	5	4	20
3.15 x 450	100-140	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	190-250	5	4	20



TENALLOY 70D

LOW ALLOY STEEL (High Strength)

Basic coated low alloy welding electrode of typical 1.5% nickel

CLASSIFICATION : AWS A/SFA 5.5

E 8018-C4

KEY FEATURES :

- Basic coated electrode
- Smooth, stable arc, low spatter
- Easy slag removal
- Excellent fracture toughness at -50°C
- Tough and crack resistant weld
- Radiographic quality welds
- All position capability

WELDING POSITION :

AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of high tensile steel having 1 to 2% Ni and equivalent steels
- Application in refineries, power plants
- Off shore platforms, bridges
- Storage tanks, Pipes
- Pressure vessels, Boilers

REDRYING CONDITION : 250-300°C for minimum 1 hr (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	S	P
Specification	0.10 max	1.25 max	0.80 max	1.10-2.00	0.03 max	0.03 max

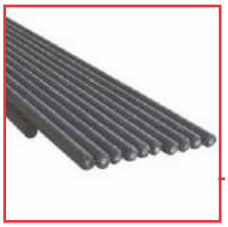
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -50°C, J
Specification	As Welded	550 min	460 min	19 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	227	4	22
3.15 x 450	100-140	113	4	45
4.0 x 450	140-180	76	4	65
5.0 x 450	190-250	49	4	100



TENALLOY 90P2

LOW ALLOY STEEL (High Strength)

Basic coated low Alloy welding electrode of typical 1.5% Nickel

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

E 50 3 1Ni B 4 5 — E 9045-P2 H4R

KEY FEATURES :

- Basic coated electrode
- Easy to use with controllable slag system
- Deposit is extremely crack resistant
- Deposition rate is higher than for vertical up welding
- High toughness and a very low hydrogen content
- Exceptional striking characteristics
- Suitable for filler and cover pass welding in pipeline construction

WELDING POSITION : 

AC (90 OCV)/DCEP

TYPICAL APPLICATIONS :

- Vertical-down welds of large diameter pipelines and for structural work
- It can be used in sour gas application
- Fill and cap application
- Circumferential joints in pipelines API 5L X70, X80

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	S	P
Typical	0.09	1.5	0.6	0.9	0.01	0.02
Specification	0.12 max	0.90 – 1.70	0.8 max	1.0 max	0.03 max	0.03 max

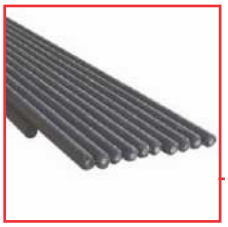
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -30°C, J
Typical	As Welded	690	590	23	60
Specification		620 min	530 min	17 min	27 min

Diffusible H2 Content: <4 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	5	4	20
3.15 x 450	100-140	5	4	20
4.0 x 450	140-180	5	4	20
5.0 x 450	190-250	5	4	20



TENALLOY 140

LOW ALLOY STEEL (High Strength)

Welding electrode for joining high strength steel

CLASSIFICATION : AWS A/SFA 5.5

˜E14018G

KEY FEATURES :

- Basic coated electrode
- Ni-Mn-Mo-Cr alloyed electrode
- Excellent Strength & ductility
- Very low diffusible Hydrogen
- Excellent toughness at subzero temperature
- Radiographic quality weld metal

WELDING POSITION : AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of high tensile steels and fine grained steels
- Joining high strength, low alloy or micro-alloyed steels to themselves or to lower strength steels, including carbon steels

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

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Mo
Typical	0.09	1.40	0.40	3.50	1.20
	Cr	**V**	**S**	**P**	
Specification	0.70	0.05 max	0.007	0.015	

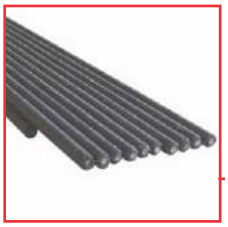
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at -40°C, J
Specification	As Welded	980 min	890 min	15 min	27 min

Diffusible H2 Content: <5 ml/100 gm

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Approx. Pcs/Carton	Carton/Box
2.5 x 350	60-90	5	4
3.15 x 450	100-140	5	4
4.0 x 450	140-180	5	4
5.0 x 450	190-250	5	4



AUSTOMANG 209

STAINLESS STEEL (Austenitic Manganese Steel)

209 Type Stainless Steel Electrode for Welding and Overlay Application

CLASSIFICATION : ISO 3581-B	AWS A/SFA 5.4
ES 209-16	E 209-16

KEY FEATURES :

- Rutile type electrode
- High strength, toughness and cracking resistance
- Smooth arc characteristics
- Easy slag removal
- Nitrogen strengthened austenitic stainless steel alloy
- All position welding capability
- Radiographic quality weld

WELDING POSITION : 

AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- Used in welding dissimilar alloys like mild steel and the stainless steels
- Direct overlay on mild steel for corrosion applications
- Used for the joining of aqueous chloride-containing media
- Equipments used at high temperature application

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

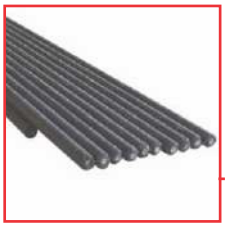
	C	Mn	Si	Cr	Ni	Cu
Specification	0.06 max	4.0-7.0	1 max	20.5-24.0	9.5-12.0	0.75 max
	S	**P**	**N**	**V**	**Mo**	
Specification	0.03 max	0.04 max	0.10-0.30	0.10-0.030	1.5-3.0	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	690 min	15 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	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



AUSTOMANG 219

STAINLESS STEEL (Austenitic Manganese Steel)

219 Type Stainless Steel Electrode for Welding and Overlay Application

CLASSIFICATION : ISO 3581-B	AWS A/SFA 5.4
ES219-16	E 219-16

KEY FEATURES :

- Rutile type electrode
- High strength, toughness and cracking resistance
- Smooth arc characteristics
- Easy slag removal
- Nitrogen strengthened austenitic stainless steel alloy
- All position welding capability
- Radiographic quality weld

WELDING POSITION : 

AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- Welding of AISI Type 219 (UNS S21900) base metals
- Joining dissimilar alloys like mild steel and the stainless steels
- Direct overlay on mild steel for corrosion applications
- Equipments used at high temperature applications

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

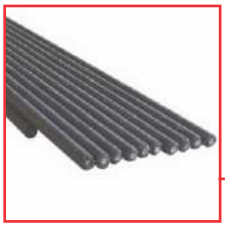
	C	Mn	Si	Cr	Ni
Specification	0.06 max	8.0 – 10.0	1.0 max	19.0 – 21.5	5.5 – 7.0
	S	**P**	**N**	**Mo**	**Cu**
Specification	0.03 max	0.04 max	0.10-0.30	0.75 max	0.75 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	620 min	15 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	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



AUSTOMANG 240

STAINLESS STEEL (Austenitic Manganese Steel)

240 Type Stainless Steel Electrode for Welding and Overlay Application

CLASSIFICATION : ISO 3581-B	AWS A/SFA 5.4
ES240-16	E 240-16

KEY FEATURES :

- Rutile type electrode
- High strength, toughness and cracking resistance
- Resistance to wear in particle-to-metal and metal-to-metal (galling) applications
- Nitrogen-strengthened austenitic stainless steel alloy
- Smooth arc characteristics
- Easy slag removal
- All position welding capability
- Radiographic quality weld

WELDING POSITION : 

AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- Welding of AISI Type 240 and 241 base metals
- Joining dissimilar alloys like mild steel and the stainless steels
- Direct overlay on mild steel for corrosion applications
- Equipments used at high temperature applications

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

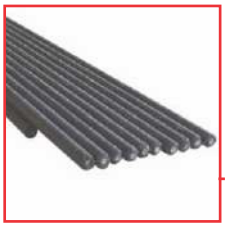
	C	Mn	Si	Cr	Ni
Specification	0.06 max	10.5 – 13.5	1.0 max	17.0 – 19.0	4.0 – 6.0
	S	**P**	**N**	**Mo**	**Cu**
Specification	0.03 max	0.04 max	0.10 – 0.30	0.75 max	0.75 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	690 min	15 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	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



AUSTOMANG 307

STAINLESS STEEL (Austenitic Manganese Steel)

307 Type SS Electrode used as Buffer Layer and for Dissimilar Steel Joining

CLASSIFICATION : ISO 3581-B	AWS A/SFA 5.4
ES307-16	E 307-16

KEY FEATURES :

- 307 is a lime-titania stainless steel electrode
- Deposited metal of 19%-9%Ni-4%Mn stainless steel with the perfect structure of austenite
- The deposited metal has excellent crack resistibility
- Easy work hardening characteristic
- Often used as a buffer layer in hardfacing applications
- Excellent slag detachability
- Easy arc striking-Restriking during welding

WELDING POSITION : 

AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- Welding of 14% Mn steel, steel armour, hardenable steel
- Welding of difficult to weld steel
- Joining of wear plates to each other and to their supports
- Joining of stainless steels to carbon steels
- Extensively used in steelmaking public works, mining carrying and dredging.
- Building up of rails and buttering layers before hardfacing on 14%Mn steel or on steels of unknown composition or on carbon steels

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

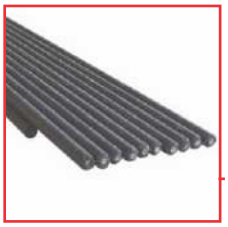
	C	Mn	Si	Cr	Ni
Specification	0.04-0.14	3.30-4.75	1.0 max	18.0-21.5	9.0-10.7
	S	**P**	**N**	**Mo**	**Cu**
Specification	0.03 max	0.04 max	-	0.5-1.5	0.75 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	590 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	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



AUSTOMANG 307 - 15

STAINLESS STEEL (Austenitic Manganese Steel)

307 Type SS Electrode used as Buffer Layer and for Dissimilar Steel Joining

CLASSIFICATION : ISO 3581-B	AWS A/SFA 5.4
ES307-15	E 307-15

KEY FEATURES :

- 307 is a lime-titania stainless steel electrode
- Deposited metal of 19%-9%Ni-4%Mn stainless steel with the perfect structure of austenite
- The deposited metal has excellent crack resistibility
- Easy work hardening characteristic
- Often used as a buffer layer in hardfacing applications
- Excellent slag detachability
- Easy arc striking-Restriking during welding

WELDING POSITION : 

AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- Welding of 14% Mn steel, steel armour, hardenable steel
- Welding of difficult to weld steel
- Joining of wear plates to each other and to their supports
- Extensively used in steelmaking public works, mining carrying and dredging.
- Joining of stainless steels to carbon steels
- Building up of rails and buttering layers before hardfacing on 14%Mn steel or on steels of unknown composition or on carbon steels

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

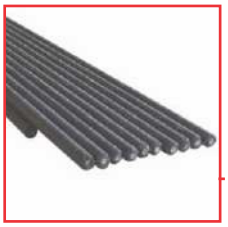
	C	Mn	Si	Cr	Ni
Specification	0.04-0.14	3.30-4.75	1.0 max	18.0-21.5	9.0-10.7
	S	**P**	**N**	**Mo**	**Cu**
Specification	0.03 max	0.04 max	-	0.5-1.5	0.75 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	590 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	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



AUSTOMANG 16/13

STAINLESS STEEL (Austenitic Manganese Steel)

Austenitic Creep Resistant Welding Electrode

CLASSIFICATION : ISO 3581-A

E Z16 13 Nb B 42

KEY FEATURES :

- Basic type electrode
- Fully austenitic weld deposit
- High strength, toughness and cracking resistance
- Insusceptible to embrittlement
- Smooth arc characteristics
- Easy slag removal
- All position welding capability
- Radiographic quality weld

WELDING POSITION :

AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- high quality weld joints in high efficiency boilers and turbine components
- Welding of 1.4961 X8CrNiNb16-13, 1.4910 X3CrNiMoN17-13, 1.4981 X8CrNiMoNb16-16
- Joining of, 1.4988 X8CrNiMoVNb16-13, 1.4878 X12CrNiTi18-9
- Equipments used at high temperature applications upto 800°C

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

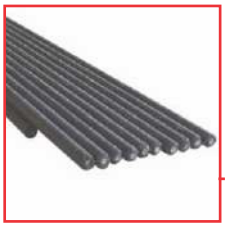
	C	Mn	Si	Cr	Ni	Nb
Specification	0.14	3.8	0.5	16.0	13.0	1.5

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS, MPa	EL%	CVN Impact at +20°C, J
Specification	As Welded	550 min	30 min	30 min	32 min
Typical		655	460	32	60

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 300	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



SUPERINOX 2C Mo

STAINLESS STEEL (Dissimilar Steel Welding)

Stainless steel electrode for high pitting resistance

CLASSIFICATION : ISO 3581-A	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 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 : 250-300°C for minimum 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

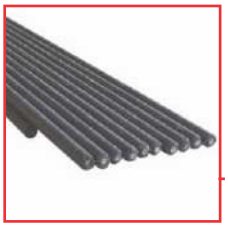
	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.03	1.1	0.5	18.7	12.8	2.7	0.02	0.02
Specification	0.04 max	0.7-2.0	1.0 max	17.0-20.0	11.0-14.0	2.5-3.0	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Typical	As Welded	570	35	6
Specification		510 min	30 min	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 350	50-75	2	5	10
3.15 x 350	80-100	2	5	10
4.0 x 350	110-140	2	5	10



SUPERINOX 2CMn-15

STAINLESS STEEL (Dissimilar Steel Welding)

19Cr/10Ni/3Mo/6Mn N Stainless Steel Electrode for Cryogenic Steels

CLASSIFICATION : AWS A/SFA 5.4

E 316LMn-15

KEY FEATURES :

- Basic type coating
- 19/10/Mo-Mn-N SS electrode
- Fully austenitic alloy with very low ferrite
- High Mn content helps to stabilize austenite and aids in hot cracking resistance.
- Exhibit good corrosion resistance in acids and seawater
- All position capability
- Radiographic quality weld

WELDING POSITION :

DCEP

TYPICAL APPLICATIONS :

- Welding similar and dissimilar cryogenic steels for applications down to -269˚C.
- In urea synthesis plants.

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

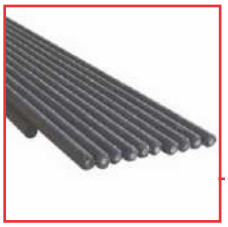
	C	Mn	Si	Cr	Ni	Mo	N	S	P
Specification	0.04 max	5.0-8.0	0.90 max	18.0-21.0	15.0-18.0	2.5-3.5	0.10-0.25	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	CVN Impact at -196°C, J	Ferrite No.
Specification	As Welded	570 min	20 min	30 min	0.5 max

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	50-75	2	5	10
3.15 x 350	80-100	2	5	10
4.0 x 350	110-140	2	5	10



SUPERINOX 16/8/2

STAINLESS STEEL (Dissimilar Steel Welding)

E16-8-2 grade stainless steel electrode

CLASSIFICATION : AWS A/SFA 5.4	ISO 3581-A
E16-8-2-16	E 16 8 2 R 12

KEY FEATURES :

- Rutile type coating
- A low carbon 16/8/2 grade SS weld
- High resistance to cracking, corrosion and high temperature upto 800°C
- Excellent creep strength
- Suitable for all position
- Radiographic quality weld

WELDING POSITION : 

AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of Type 16-8-2, 316, 347 stainless steels
- For high pressure, high temperature piping systems

REDRYING CONDITION : 250-300°C for minimum 1 hr. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

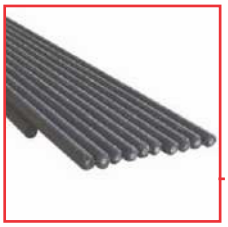
	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.10 max	0.5-2.5	0.60 max	14.5-16.5	7.5-9.5	1.0-2.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Specification	As Welded	550 min	35 min	5 max

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



SUPERINOX 630

STAINLESS STEEL (Dissimilar Steel Welding)

Special electrode for precipitation hardenable stainless steel

CLASSIFICATION : AWS A/SFA 5.4	ISO 3581-B
E 630-16	ES630-16

KEY FEATURES :

- Rutile type coating
- Typical 16/5/4Cu type weld deposit
- Offers combined characteristics of a strong, corrosion resistant, easily machinable weld metal
- This alloy prevent the formation of ferrite networks in the martensitic microstructure that would inhibit the mechanical properties
- Depending on application and weld size, may be used in the as welded, welded and precipitation hardened, or welded and solution treated and precipitation hardened condition
- Excellent welding characteristics
- Suitable for all position
- Radiographic quality weld

WELDING POSITION : 

DCEP

TYPICAL APPLICATIONS :

- Welding of ASTM A-564, Type 630 and some other precipitation hardenable steels
- For welding of 17-4 PH and 17-7 PH steel

REDRYING CONDITION : 300°C for 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

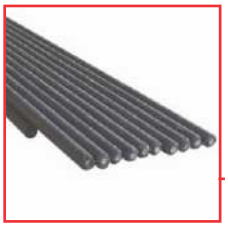
	C	Mn	Si	Cr	Ni
Specification	0.05 max	0.25-0.75	0.75 max	16.0-16.75	4.5-5.0
	Cu	**Mo**	**Nb+Ta**	**S**	**P**
Specification	3.25-4.0	0.75	0.15-0.30	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	PWHT:1025-1050°C for 1 hr Followed by precipitation hardening: 610-630°C for 4 hrs+15 min. Air cooled to ambient temp	930 min.	7 min.

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0X350	35-45	2	5	10
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



BETACHROME ND SPL

STAINLESS STEEL (Plain Chrome Series)

18/8/5Mn type Electrode for joining high tensile Armour steel & hardox steel

CLASSIFICATION :	ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

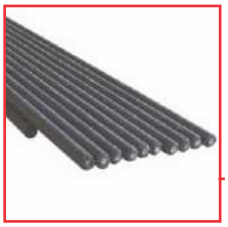
	C	Mn	Si	Cr	Ni	Mo	Cu	S	P
Typical	0.06	6.5	0.6	20.2	10.2	0.7	0.4	0.01	0.02
Specification	0.12 max	5.0-7.0	0.30-0.80	18.0-22.0	8.5-11.2	0.50-0.80	0.75 max	0.025 max	0.04 max

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
2.0 x 300	50-75	2	5	10
2.5 x 350	80-110	2	5	10
3.15 x 350	110-150	2	5	10
4.0 x 350	150-200	2	5	10



BETACHROME 409Nb

STAINLESS STEEL (Plain Chrome Series)

409Nb Type Stainless Steel Electrode

CLASSIFICATION : AWS A/SFA 5.4

E409Nb-16

KEY FEATURES :

- Rutile based coating
- Typical 12Cr-1Nb weld deposit
- Excellent arc stability
- Easy slag removal
- Fine uniform ripples
- Fine grained ferritic microstructure
- Resist corrosion, wear and scaling up to 900°C
- Radiographic quality weld

WELDING POSITION : AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Welding of ferritic stainless steels of type 405, 409, 409Ti, 410, 420 and 409M
- Overlay of carbon, low alloy steels
- Used in catalytic convertors, exhaust silencers, mufflers, manifolds, manifold elbows
- Manufacture of coach and BOXNCR wagon buildings for transporting iron ore in Indian railways
- Repair welding in sugar factory and mining field equipments
- Surfacing of sealing faces of gas, water and steam turbines with service temperatures of up to 450°C

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

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

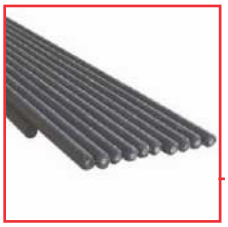
	C	Mn	Si	Cr	Ni	Mo	Nb+Ta	S	P
Specification	0.12 max	1.0 max	1.0 max	11.0-14.0	0.6 max	0.75 max	0.50-1.50	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	PWHT: 770°C for 2 hrs	450 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	50-75	2	5	10
3.15 x 350	80-100	2	5	10
4.0 x 350	110-140	2	5	10



BETACHROME 13Cr

STAINLESS STEEL (Plain Chrome Series)

Martensitic stainless steel Electrode for general corrosion & heat resistance application

CLASSIFICATION :	ISO 3581-A	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 :  **DCEP**

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

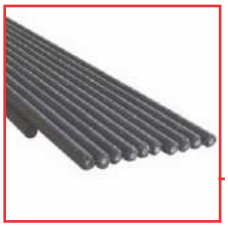
	C	Mn	Si	Cr	Ni	Mo	Cu	S	P
Typical	0.07	0.6	0.4	12.8	0.3	0.1	0.1	0.02	0.02
Specification	0.12 max	1.0 max	0.90 max	11.0-13.5	0.7 max	0.75 max	0.75 max	0.03 max	0.04 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	PWHT: 745°C for 1 hr	570	27
Specification		520 min	20 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	50-70	2	5	10
2.5 x 350	80-120	2	5	10
3.15 x 350	130-160	2	5	10
4.0 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

CLASSIFICATION : ISO 3581-A

E 13 4 B 22

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 : DCEP

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

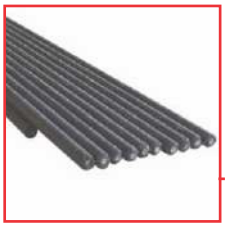
	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.05	0.6	0.4	13.3	3.9	0.5	0.02	0.02
Specification	0.07 max	0.3-0.9	0.15-0.60	12.0-14.0	3.5-4.5	0.40-0.65	0.03 max	0.04 max

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
2.0 x 300	60-80	2	5	10
2.5 x 350	80-120	2	5	10
3.15 x 350	110-160	2	5	10
4.0 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 : ISO 3581-A	AWS A/SFA 5.4
E 13 B 22	E 410NiMo-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 :  **DCEP**

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	S	P	Cu
Typical	0.04	0.8	0.5	11.7	4.8	0.5	0.01	0.02	-
Specification	0.06 max	1 max	0.90 max	11.0-12.5	4.0-5.0	0.40-0.70	0.03 max	0.04 max	0.75 max

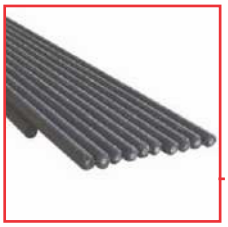
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	YS at 0.2% offset, MPa	EL%	CVN Impact at 0°C, J
Typical	PWHT: 607°C for 1 hr	880	725	18	55
Specification		760 min	600 min	15 min	40 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	60-80	2	5	10
2.5 x 350	80-120	2	5	10
3.15 x 350	110-160	2	5	10
4.0 x 350	150-200	2	5	10

EQUIVALENT : GMAW wire: Miginox 410NiMo **GTAW filler: Tiginox 410NiMo**



BETACHROME 13/4 LB-R

STAINLESS STEEL (Plain Chrome Series)

410NiMo Type Stainless Steel Electrode

CLASSIFICATION : ISO 3581-A	AWS A/SFA 5.4
E 13 4 R 12	E 410 NiMo-16

KEY FEATURES :

- Rutile type electrode
- High strength, toughness and cracking resistance
- Smooth ARC characteristics
- Easy slag removal
- Martensitic type alloy resistant to corrosion, erosion, pitting and impact
- Preheat and PWHT recommended
- All position welding capability
- Radiographic quality weld

WELDING POSITION : 

AC (70 OCV)/DCEP

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 GX5CrNi13.4 and G-5CrNi13.6, VIRGO 104 casting/forging

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

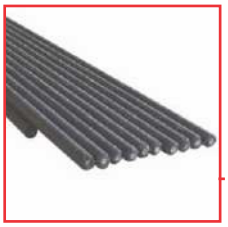
	C	Mn	Si	Cr	Ni	Mo	S	P	Cu
Specification	0.06 max	1.0 max	0.90 max	11.0-12.5	4.0-5.0	0.40-0.70	0.03 max	0.04 max	0.75 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	PWHT: 607°C for 1 hr	760 min	15 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	60-80	2	5	10
2.5 x 350	80-120	2	5	10
3.15 x 350	110-160	2	5	10
4.0 x 350	150-200	2	5	10



BETACHROME 13Cr-16

STAINLESS STEEL (Plain Chrome Series)

Martensitic stainless steel electrode for general corrosion and heat resistance application

CLASSIFICATION : AWS A/SFA 5.4	EN ISO 3581-A
E 410-16	E 13 R 12

KEY FEATURES :

- Rutile 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 : 

AC (70 OCV)/DCEP

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 : 250-300°C for minimum 1 hr (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

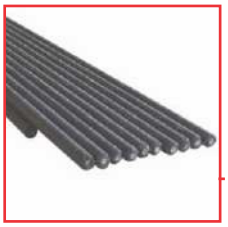
	C	Mn	Si	Cr	Ni
Specification	0.12 max	1.0 max	0.90 max	11.0-13.5	0.7 max
	Mo	**Cu**	**S**	**P**	
Specification	0.75 max	0.5 max	0.03 max	0.04 max	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	PWHT: 740°C for 1 hrs	520 min	20 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	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 17Cr

STAINLESS STEEL (Plain Chrome Series)

Ferritic stainless steel Electrode for joining and surfacing application

CLASSIFICATION : EN ISO 3581-A	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 :  **DCEP**

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

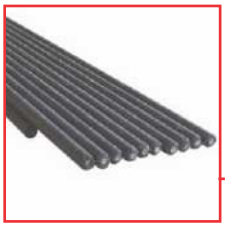
	C	Mn	Si	Cr	Ni	Mo	S	P	Cu
Typical	0.06	0.6	0.4	17.3	0.2	0.2	0.02	0.02	-
Specification	0.10 max	1.0 max	0.90 max	15.0-18.0	0.6 max	0.75 max	0.03 max	0.04 max	0.75 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	PWHT: 775°C for 2 hrs	560	27
Specification		450 min	20 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.0 x 300	60-100	2	5	10
2.5 x 350	80-120	2	5	10
3.15 x 350	130-160	2	5	10
4.0 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

CLASSIFICATION : EN ISO 3581-A

E 17 4 R 12

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

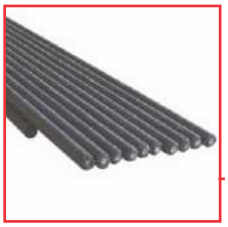
REDRYING CONDITION : 250-300°C for minimum 1 hr.

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.
2.0 x 300	50-70	2	5	10
2.5 x 350	80-120	2	5	10
3.15 x 350	130-180	2	5	10
4.0 x 350	170-220	2	5	10



BETANOX 4462

STAINLESS STEEL (Duplex SS)

Duplex stainless steel Electrode for high strength and pitting resistance

CLASSIFICATION : ISO 3581-A	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni	Mo	N	S	P	Cu
Typical	0.03	1.3	0.5	22.0	9.2	2.9	0.15	0.02	0.02	-
Specification	0.04 max	0.5-2.0	1.00 max	21.5-23.5	8.5-10.5	2.5-3.5	0.08-0.20	0.03 max	0.04 max	0.75 max

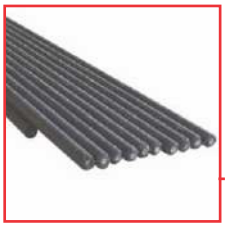
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	CVN Impact, at -40°C, J	Ferrite No.	PREN
Typical	As Welded	735	25	50	32	42
Specification		690 min	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
2.0 x 300	50-70	2	5	10
2.5 x 350	70-90	2	5	10
3.15 x 350	90-140	2	5	10
4.0 x 350	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 : ISO 3581-B	AWS A/SFA 5.4
E 25 9 3Cu N L R 12	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

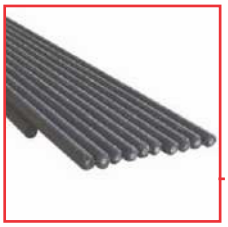
	C	Mn	Si	Cr	Ni	Mo	Cu	N	S	P
Typical	0.04	1.1	0.5	25.7	7.7	3.5	1.9	0.15	0.02	0.02
Specification	0.06 max	0.5-1.5	1.0 max	24-27	6.5-8.5	2.9-3.9	1.5-2.5	0.10-0.25	0.03 max	0.04 max

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
2.0 x 300	50-70	2	5	10
2.5 x 350	70-90	2	5	10
3.15 x 350	90-140	2	5	10
4.0 x 350	140-180	2	5	10



BETANOX 2594

STAINLESS STEEL (Duplex SS)

Basic coated 25/9/4 type super duplex stainless steel Electrode

CLASSIFICATION : ISO 3581-A **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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

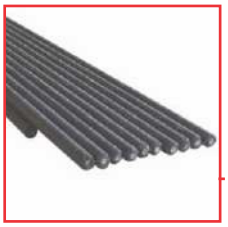
	C	Mn	Si	Cr	Ni	Mo	Cu	N	S	P
Typical	0.03	1.2	0.6	25.9	9.2	4.0	0.3	0.23	0.02	0.02
Specification	0.04 max	0.5-2.0	1.0 max	24-27	8.0-10.5	3.5-4.5	0.75 max	0.2-0.3	0.03 max	0.04 max

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
2.0 x 300	50-80	2	5	10
2.5 x 350	70-110	2	5	10
3.15 x 350	90-140	2	5	10
4.0 x 350	130-180	2	5	10



BETANOX 2594 - 16

STAINLESS STEEL (Duplex SS)

Basic coated 25/9/4 type super duplex stainless steel Electrode

CLASSIFICATION : ISO 3581-A **AWS A/SFA 5.4**

E 25 9 4 N L R 12 E 2594-16

KEY FEATURES :

- Rutile coated non-synthetic electrode
- Austenitic-ferritic duplex microstructure
- 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 : 

AC (70 OCV)/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 % :

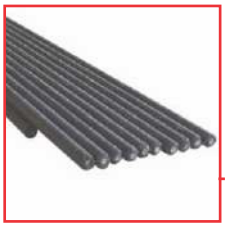
	C	Mn	Si	Cr	Ni	Mo	Cu	N	S	P
Typical	0.03	1.2	0.6	25.9	9.2	4.0	0.3	0.23	0.02	0.02
Specification	0.04 max	0.5-2.0	1.0 max	24-27	8.0-10.5	3.5-4.5	0.75 max	0.2-0.3	0.03 max	0.04 max

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 350	50-80	2	5	10
3.15 x 350	70-110	2	5	10
4.0 x 350	90-140	2	5	10
5.0 x 350	130-180	2	5	10



BETANOX 2595-16

STAINLESS STEEL (Duplex SS)

Rutile type Electrode for Welding super duplex stainless steels

CLASSIFICATION :	ISO 3581-A	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 : 250-300°C for minimum 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**	**W**
Typical	0.7	1.0	0.23	0.02	0.02	-
Specification	0.40-1.0	0.4-1.5	0.20-0.30	0.025 max	0.03 max	0.4-1.0

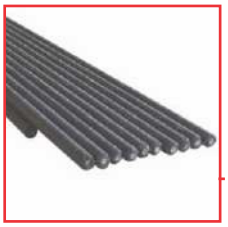
MECHANICAL PROPERTIES OF ALL WELD METAL :

	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
2.0 x 300	50-80	2	5	10
2.5 x 350	70-110	2	5	10
3.15 x 350	90-140	2	5	10
4.0 x 350	130-180	2	5	10



BETANOX 2595-15

STAINLESS STEEL (Duplex SS)

Basic type Electrode for Welding super duplex stainless steels

CLASSIFICATION : ISO 3581-A E 25 9 4 N L B 22 **AWS A/SFA 5.4** 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 : 250-300°C for minimum 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**	**W**
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	0.4-1.0

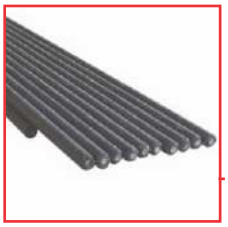
MECHANICAL PROPERTIES OF ALL WELD METAL :

	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
2.0 x 300	50-80	2	5	10
2.5 x 350	70-110	2	5	10
3.15 x 350	90-140	2	5	10
4.0 x 350	130-180	2	5	10



BETANOX 20/30Mn

STAINLESS STEEL (Duplex SS)

Heat resistant stainless steel electrode for elevated temperature application

CLASSIFICATION : EN ISO 3581-A

EZ 21 33 B 4 2

KEY FEATURES :

- Basic coated electrode
- Fully austenitic deposit
- Deposits CrNiMn alloy
- Scale resistant upto 1050°C
- Resistant to carburizing atmosphere

WELDING POSITION :

DCEP

TYPICAL APPLICATIONS :

- Suitable for joining and surfacing of heat-resistant steels and cast steels
- Used in Petroleum Plants
- Welding of Centrifugal cast pipes
- Joining and surfacing of 1.4876 X10 NiCrAlTi 32 20 UNS N 08800, 1.4859 G-X10 NiCrNb 32 20, 1.4958 X 5 NiCrAlTi 31 20 UNS N 08810, 1.4959 X 8 NiCrAlTi 31 21 UNS N 08811

REDRYING CONDITION : 250 - 300°C for 1 hr min (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

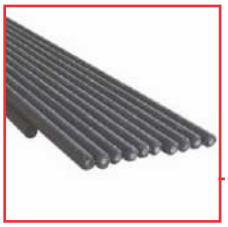
	C	Si	Mn	Cr	Ni	Nb	Fe
Typical	0.12	0.55	4.5	21	33	1.3	Bal

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	YS, MPa	UTS, MPa	EL%
Typical	As Welded	415 min	600	25 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
5.0 x 350	150-180	2	5	10



BETANOX 4462 NS

STAINLESS STEEL (Duplex SS)

Duplex stainless steel electrode for high strength and pitting resistance

CLASSIFICATION :	ISO 3581-A	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 coated non-synthetic electrode
- 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
- Uniform and fine ripples
- Suitable for all position
- 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 % :

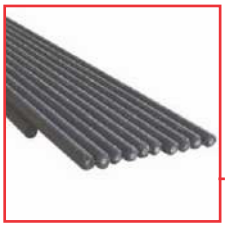
	C	Mn	Si	Cr	Ni	Mo	N	S	P
Typical	0.03	1.3	0.5	22.0	9.2	2.9	0.15	0.02	0.02
Specification	0.04 max	1.0-2.0	0.90 max	21.5-23.5	8.5-10.5	2.5-3.5	0.1-0.2	0.03 max	0.03 max

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



BETANOX CH

STAINLESS STEEL (Duplex SS)

Stainless steel electrode for high temperature oxidation resistance

CLASSIFICATION :	ISO 3581-A	AWS A/SFA 5.4	IS 5206
	E 25 20 R 12	E 310H-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, 310H 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 % :

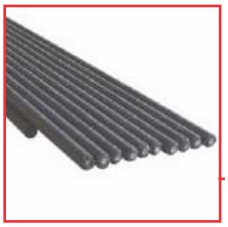
	C	Mn	Si	Cr	Ni	S	P
Typical	0.4	1.5	0.5	27.0	21.0	0.02	0.02
Specification	0.35-0.45	1.0-2.5	0.75 max	25.0-28.0	20.0-22.5	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	640	14
Specification		620 min	10 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 Cmo

STAINLESS STEEL (Duplex SS)

Highly alloed and high temperature resistant stainless steel electrode

CLASSIFICATION : AWS A/SFA 5.4 E 310Mo-16 **ISO 3581-B** ES310Mo-16

KEY FEATURES :

- Rutile coated electrode
- High C content
- Cr-Ni-Mo type SS deposit
- Corrosion test shows extremely low corrosion rates
- Oxidation resistance upto 1150°C
- Superior resistance to boiling concentrated nitric acid
- Excellent arc stability

WELDING POSITION :

DCEP

TYPICAL APPLICATIONS :

- Dissimilar metals such as Molybdenum bearing stainless steel to carbon steel
- Joining of Steels of AISI types 310, German steels, 4762, 4828, 4841, 4846 and 4848
- Cladding side of stainless clad steels, straight chrome steels and different steels
- Hydrogenation and polymerization plants
- Gas turbine combustion chamber parts and high temp furnace parts
- Joining dissimilar steels and hardenable steels such as automobile springs, broken dies and tools. Annealing boxes, carburizing pots, cast armour steels and rolled armour

REDRYING CONDITION : 250-300°C for 1 hr min

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

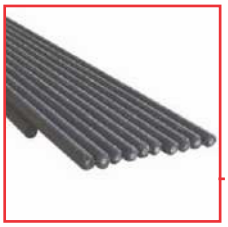
	C	Mn	Si	Cr	Ni	Mo	Cu
Typical	0.09	1.3	0.6	26.5	21.0	2.3	0.1
Specification	0.12 max	1.0-25 max	0.75 max	25.0-28.0	20-22	2.0-3.0	0.75 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	615	35
Specification		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	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 D-15

STAINLESS STEEL (Duplex SS)

A stainless steel electrode for dissimilar steel joining

CLASSIFICATION :	AWS A/SFA 5.4	IS 5206	ISO 3581-A
	E 309-15	E 23.12 B20	E 23 12 B 22

KEY FEATURES :

- Basic coated electrode
- 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 :

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 % :

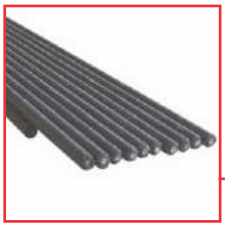
	C	Mn	Si	Cr	Ni	S	P
Typical	0.15 max	0.5-2.5	1.0 max	22.0-25.0	12.0-14.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Ferrite No.
Specification	As Welded	550 min	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 DMo-15

STAINLESS STEEL (Duplex SS)

A stainless steel electrode for dissimilar steel joining

CLASSIFICATION : AWS A/SFA 5.4 E 309Mo-15 **ISO 3581-A** E 23 12 2 B 22

KEY FEATURES :

- Basic coated electrode
- Low carbon 23/12/2.5Mo type weld deposit
- High resistance to corrosion and cracking
- Mo improves resistance to pitting corrosion and provides high strength
- Excellent corrosion and oxidation resistance at elevated temperatures
- All position capability
- Radiographic quality weld

WELDING POSITION :  **DCEP**

TYPICAL APPLICATIONS :

- Welding of AISI 316 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 % :

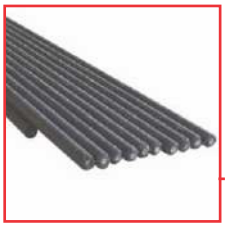
	C	Mn	Si	Cr	Ni	Mo	S	P
Specification	0.12 max	0.5-2.5	1.0 max	22.0-25.0	12.0-14.0	2.0-3.0	0.03 max	0.03 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
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 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



CASTEN

CAST IRON

Non Machinable Electrode for General Reclamation and Repair of Cast Iron

CLASSIFICATION : AWS A/SFA 5.15	ISO 1071
E St	E C St 1

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.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

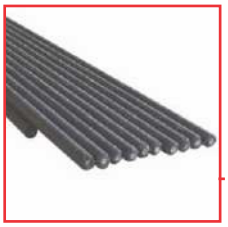
	C	Mn	Si	S	P	Fe
Typical	0.1	0.5	0.1	0.03	0.03	Rem.
Specification	0.15 max.	0.6 max	0.15 max	0.04 max	0.04 max	Rem.

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



CASTMONEL

CAST IRON

Monel Alloy Electrode for Cast Iron Repair and Welding

CLASSIFICATION : AWS A/SFA 5.15	ISO 1071
E NiCu-B	E C NiCu-B 1

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.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

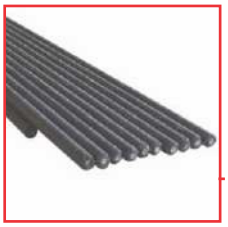
	C	Ni	Fe	Mn	Si	S	Cu
Typical	0.4	65.0	4.2	1.6	0.4	0.01	-
Specification	0.35-0.55	60.0-70.0	3.0-6.0	2.30 max	0.75 max	0.025 max	25-35

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



CASTNICKEL

CAST IRON

High Nickel Electrode for Repair and Welding of Cast Iron The Cold Way

CLASSIFICATION : ISO 1071	AWS A/SFA 5.15
NiCI 1	E Ni-Cl

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.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

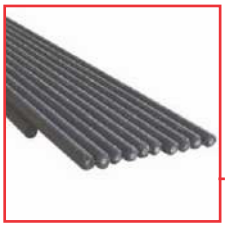
	C	Ni	Fe	Mn	Si	S	Cu	Al
Typical	1.2	91.5	3.0	1.0	2.0	0.02	0.7	0.5
Specification	2.0 max	85.0 min	8.0 max	2.5 max	4.0 max	0.03 max	2.5 max	1.0 max

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



FERRICAST

CAST IRON

Ni-Fe Type Electrode for Repair and Welding of Cast Iron

CLASSIFICATION : ISO 1071	IS 5511	AWS A/SFA 5.15
NiFe 1	E Ni Fe G16	E NiFe-Cl

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.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

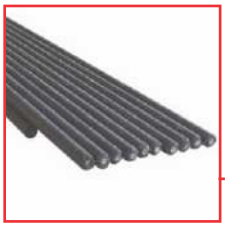
	C	Ni	Fe	Mn	Si	S	Cu	Al
Typical	1.1	52.0	Rem.	1.2	1.5	0.02	0.5	0.3
Specification	2.0 max	45.0-60.0	Rem.	2.5 max	4.0 max	0.03 max	2.5 max	1.0 max

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



CASTFERRINICKEL

CAST IRON

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

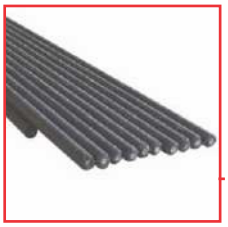
REDRYING CONDITION : 150°C for 1 hr.

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 :

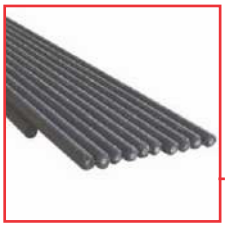
Condition	Hardness, 3 Layer HRc (BHN)
As Welded	23-27 (240-260)

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 :

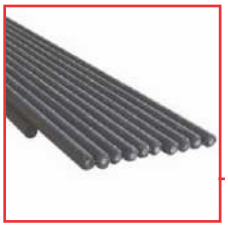
Condition	Hardness, 3 Layer HRc (BHN)
As Welded	35-40 (330-380)

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 :

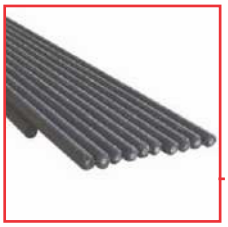
Condition	Hardness, 3 Layer HRc (BHN)
As Welded	36-39 (340-360)

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



ZEDALLOY 500

HARD FACING (Moderate - Abrasion Impact)

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 :

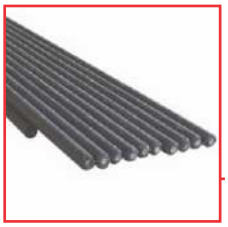
Condition	Hardness, 3 layer HRc (BHN)
As Welded	47-55 (450-550)

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 :

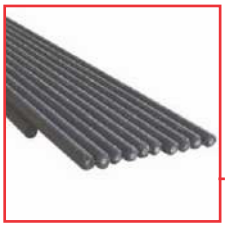
Condition	Hardness, 3 layer HRc (BHN)
As Welded	54-56 (540-580)

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 & 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 : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES :

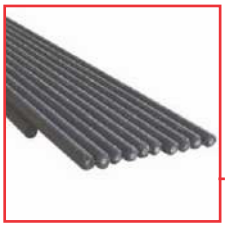
Condition	Hardness, 3 layer HRc (BHN)
As Welded	54-57 (540-590)

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



ZEDALLOY 600

HARD FACING (Moderate - Abrasion Impact)

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 : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES :

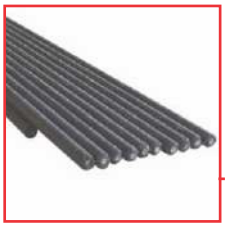
Condition	Hardness, 1 layer HRc (BHN)
As Welded	58 (600)

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 600B

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 : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES :

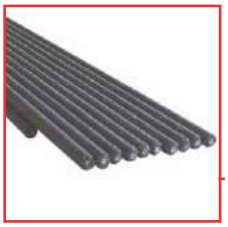
Condition	Hardness, 1 layer HRc (BHN)
As Welded	55-58 (560-600)

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



BETACHROME N

HARD FACING (High Impact - Work Hardenable)

Stainless Steel Electrode for repair and maintenance Welding of Austenitic Manganese Steels

ALLOY BASIS :

C, Cr, Ni, Mn

KEY FEATURES :

- Basic coated synthetic electrode
- C-Cr-Ni-Mn type austenitic weld deposit
- Smooth arc characteristics
- High plasticity weld deposit
- Excellent heat resistance upto 900°C
- Work hardenable alloy with excellent crack resistance
- Suitable for all position

WELDING POSITION : AC (70 OCV) /DCEP

TYPICAL APPLICATIONS :

- For joining austenitic 12% Mn steels to mild steels
- Surfacing Mn steel, Crane wheels
- Welding of unalloyed or low alloyed steels to high alloyed steels or cast steels
- Buffer layer on difficult steels before hardfacing
- Suitable for steels of difficult weldability
- Armour plates, steel castings, crusher cones, crusher hammers

REDRYING CONDITION : 250-300°C for minimum 1 hr

MECHANICAL PROPERTIES OF ALL WELD METAL :

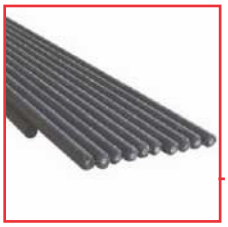
Condition	UTS, MPa	EL%
As Welded	600	35

Machinability	Abrasion Resistance	Impact Resistance	Corrosion Resistance

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	80-100	5	4	20
3.15 x 350	100-140	5	4	20
4.0 x 350	140-180	5	4	20
5.0 x 350	180-230	5	4	20

Physical Properties: With increase in number of squares, property improves



ZEDALLOY 12Mn

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 : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES :

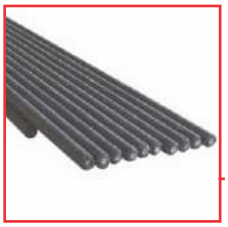
Condition	Hardness, 3 Layer HRc (BHN)
As Welded	16 (200)
Work Hardened	52 (500)

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 16Mn

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
- Austenittic 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 : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES :

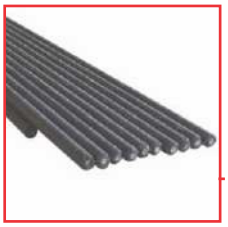
Condition	Hardness, 3 Layer HRc (BHN)
As Welded	16 (200)
Work Hardened	52 (500)

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 16Cr

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 : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES :

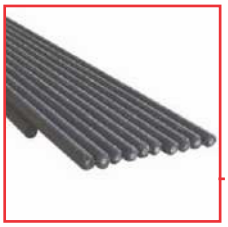
Condition	Hardness, 3 Layer HRc (BHN)
As Welded	16 (200)
Work Hardened	52 (500)

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 20Cr

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 : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES:

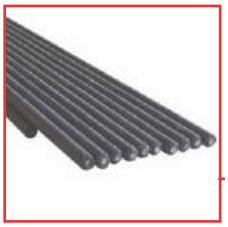
Condition	Hardness, 3 Layer HRc (BHN)
As Welded	25 (250)
Work Hardened	55 (550)

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



ZEDALLOY CrMn

HARD FACING (Moderate - Abrasion Impact)

Work Hardenable Alloy for Impact – Abrasion – Corrosion Resistance

ALLOY BASIS :

Medium Carbon High Chromium with Manganese

KEY FEATURES :

- Welding electrode for Austenitic Manganese steels
- Machinable and crack free deposit
- Work hardening characteristics Typical 13% Cr deposit
- Specially formulated for resistance against impact, abrasion and corrosion

WELDING POSITION :

AC (100 V) / DCEP

TYPICAL APPLICATIONS :

- Dipper teeth and lips
- Coal mining cutters, Rock crusher
- Pulveriser plows, Pump housing
- Conveyor rolls
- Manganese steel components
- 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.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Cr	Ni
Typical	0.30	15.5	0.7	13	1.0
Specification	0.4 max	14 – 16.5	0.9 max	12 - 14	0.7 – 1.2

PHYSICAL PROPERTIES : Hardness, 3 Layer

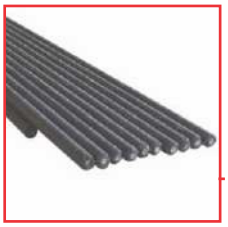
Condition	On Carbon Steel HRc (BHN)	On Manganese Steel HRc (BHN)
As Welded	16 (200)	20 (220)
Work Hardened	52 (500)	55 (550)

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	90-120	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 K

HARD FACING (Abrasion - Corrosion)

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 : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES :

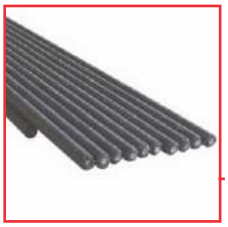
Condition	Hardness, 3 layer HRc (BHN)
As Welded	58 (600)

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 : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES :

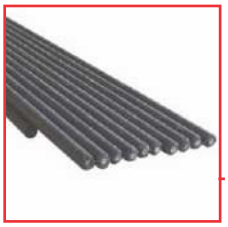
Condition	Hardness, 3 layer HRc (BHN)	
As Welded	At Room Temp	52-55 (500-550)
	At 500°C	>55 (>550)

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 17Cr NS PLUS

HARD FACING (Abrasion - Corrosion)

Hardfacing Electrode for Abrasion – Corrosion Resistance Application

ALLOY BASIS :

C, Cr, Mo

KEY FEATURES :

- Basic coated non synthetic electrode
- Ferritic martensitic machinable deposit
- Air hardenable weld deposit
- Hardness retention upto 500°C
- Best results in 2 layer overlay
- Resistance against abrasion and corrosion

WELDING POSITION :

DCEP

TYPICAL APPLICATIONS :

- Surfacing on sealing faces of steam/water/gas valve
- Surfacing of unalloyed and low alloyed steels

REDRYING CONDITION : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES :

Condition	2 Layer Hardness, HRc
As Welded	40-45

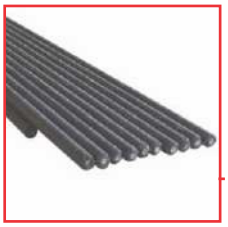
Machinability	Abrasion Resistance	Impact Resistance	Corrosion Resistance
■ ■ ■	■ ■ ■	■	■ ■ ■

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Carton/Box	Net wt./Box, Kg.
4.0 x 350	130-160	5	4	20

Other sizes will be made available on request.

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 : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES :

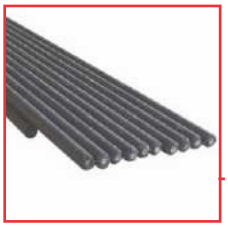
Condition	Hardness, 3 layer HRc (BHN)
As Welded	58 (600)

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



SUPER ZEDALLOY

HARD FACING (High Abrasion)

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 scrappers
- Conveyors, Grinding rings
- Cement clinker crushing rollers
- In Ceramic industries

REDRYING CONDITION : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES:

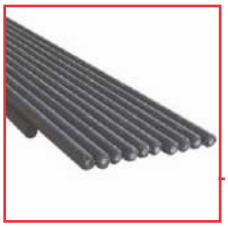
Condition	Hardness, 3 Layer HRc (BHN)
As Welded	58 (600)

Machinability	Abrasion Resistance	Impact Resistance	Corrosion Resistance
	7		3

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



SUPER ZEDALLOY Ni

HARD FACING (High Abrasion)

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 : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES :

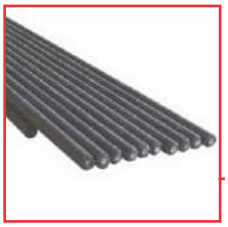
Condition	Hardness, 3 Layer HRc (BHN)	
As Welded	At Room Temp	55-57 (550-580)
	At 500°C	40 (370)

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



MAGANACANE

HARD FACING (High Abrasion)

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:

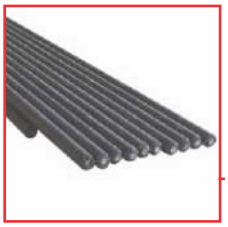
Condition	Hardness HRc (BHN)
As Welded	55-57 (550-580)

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



ZEDALLOY 16

HARD FACING (High Abrasion)

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 : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES :

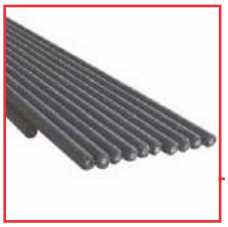
Condition	Hardness, HRc (BHN)
As Welded	58(600)

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 680

HARD FACING (High Abrasion)

Hardfacing Electrode for Extreme wear Resistance at Elevated Temperature

ALLOY BASIS :

C, Cr, Nb, V, Mo, W

KEY FEATURES :

- Excellent arc stike/re-strike
- Complex refractory carbides in eutectic matrix
- Minimal slag, smooth weld bead
- Non machinable deposit
- High volume fraction carbides offer excellent wear resistance up to 650°C
- Recommended for single pass deposit

WELDING POSITION :

AC (100 V) / DCEP

TYPICAL APPLICATIONS :

- Clinker grinders, Conveyor chains, Sinter handling equipment, Auger flights, Sinter star breakers, Slurry pumps
- Coke pusher shoes, Billet conveyor guides, Hot slag conveyors, Pug mill knives, Coal burner nozzles, Conveyor screw

REDRYING CONDITION : 105°C for 1 hr

PHYSICAL PROPERTIES :

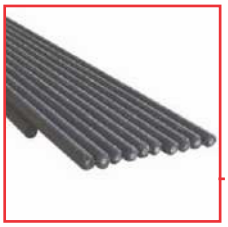
Condition	Hardness, 1 Layer HRc
As Welded	65-70

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	90-160	5	4	20
4.0 x 350	120-180	5	4	20
5.0 x 350	180-220	5	4	20

Physical Properties: With increase in number of squares, property improves



NIMOTEN PLUS 535B

HARD FACING (High Temperature Oxidation - Impact - Abrasion)

Hardfacing Electrode for application in Steel Mills and Forging Industries

ALLOY BASIS : Ni, Cr, Mo

KEY FEATURES :

- Basic coated electrode
- Low alloy type weld metal
- Machinable with carbide tools
- High weld metal recovery
- All position capability
- Special application for joining & 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 : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES :

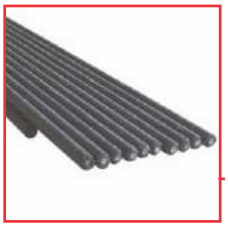
Condition	Hardness, 3 Layer HRc
As Welded	38-42

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



NIMOTEN HFD

HARD FACING (High Temperature Oxidation - Impact - Abrasion)

Welding Electrode for repair of Forging Dies

ALLOY BASIS :

C, Cr, Ni, Mo, W

KEY FEATURES :

- Heavy coated electrode
- Weld deposit with excellent toughness and hardness properties
- Superior metal to metal wear resistance at high temperatures
- Multipass crack free weld deposit maximum up to 15 mm

WELDING POSITION :

AC (90 V) / DCEP

TYPICAL APPLICATIONS :

- For repair of large hot working dies, press forging dies
- Hot piercing punches, Impactor dies, Screw press dies
- Parts of earth moving equipment
- Forming dies, Trimming dies, Blanking dies
- For H series tool steels such as H11, H12, H13

REDRYING CONDITION : 300°C for 1 hr.

PHYSICAL PROPERTIES :

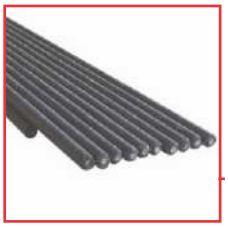
Condition	Hardness, 3 Layer HRc
As Welded	50 – 54

Machinability	Abrasion Resistance	Impact Resistance	Corrosion Resistance

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	71	4	71
5.0 x 450	190-230	45	4	111
6.3 x 450	260-320	29	4	174

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 600ºC
- 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 :

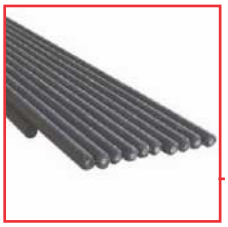
Condition	Hardness, HRc (BHN)	
As Welded	At Room Temp	35-40 (320-370)
	At 600ºC	33 (310)

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



ADOR AS

HARD FACING (Build Up)

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 hard-facing 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 : 250-300°C for minimum 1 hr.

PHYSICAL PROPERTIES :

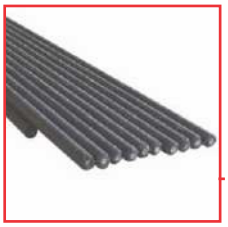
Condition	Hardness, 3 Layer HRc (BHN)
As Welded	30-35 (275-325)

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



ZEDALLOY 400B

HARD FACING (Build Up)

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 :

250-300°C for minimum 1 hr.

REBAKING CONDITION :

300-350°C for 2 hrs.

PHYSICAL PROPERTIES :

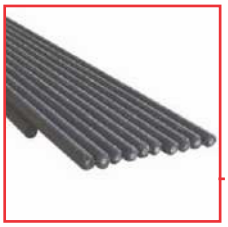
Condition	Hardness, 3 Layer HRc (BHN)
As Welded	40-45 (370-420)

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



ZEDALLOY CoCr-E

HARD FACING (Build Up)

Cobalt based Alloy resistant to high temperature oxidation and thermal shock

ALLOY BASIS :

Cobalt Base High Chromium-Moly alloy KEY FEATURES

KEY FEATURES :

- Rutile coated electrode
- Excellent high temperature strength and stability
- Anti-galling under self-mated conditions
- Cavitation erosion resistant
- 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 :

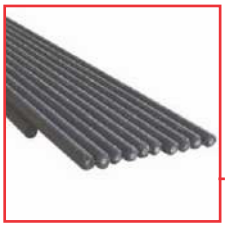
Condition	Hardness, HRc (BHN)	
As Welded	At Room Temp	40-45 (370-420)
	At 600°C	33 (310)

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	100-135	5	4	20
4.0 x 350	140-180	5	4	20
5.0 x 350	180-240	5	4	20

Physical Properties: With increase in number of squares, property improves



ZEDALLOY Nb

HARD FACING (Build Up)

Hardfacing electrode for high temperature abrasion resistance

ALLOY BASIS :

High Carbon High Chromium with Niobium

KEY FEATURES :

- Rutile-Basic type heavy coating
- Extremely abrasion resistant
- Chromium and Niobium carbides types deposits
- Hardness retained upto 500°C
- High deposition rate with less slag
- Easy arc striking

WELDING POSITION :

AC (70 V) / DCEP

TYPICAL APPLICATIONS :

- Parts subjects to strong abrasive wear, friction, heat and corrosion
- Hardfacing of tool steels
- Parts involved in coal and ore mining
- Equipments in cement industry

REDRYING CONDITION :

300°C for 1 hr.

PHYSICAL PROPERTIES :

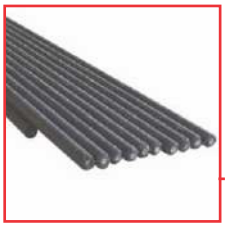
Condition	Hardness, HRc (BHN)
As Welded	60-65 (630 - 710)

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 ST20

HARD FACING (Build Up)

Cobalt based Alloy provides excellent wear and high temperature resistance

ALLOY BASIS :

High Carbon High Chromium with Niobium

KEY FEATURES :

- Abrasion resistant Cobalt base alloy
- Good corrosion resistance
- Excellent abrasive wear under corrosive medium and elevated temperatures
- Slag is easily removable
- The deposit is complex carbides in a Co-Cr alloy matrix
- Excellent resistance to metal and mineral abrasion
- Smooth running and ripple free deposit

WELDING POSITION :

AC (80 V) / DCEN

TYPICAL APPLICATIONS :

- Suitable for pump sleeves
- Rotary seal rings
- Wear pads
- Bearing sleeves
- Slurry pumps parts
- Also suitable for certain applications in steel industry involving abrasion under heat

REDRYING CONDITION :

200°C for 1 hr.

PHYSICAL PROPERTIES :

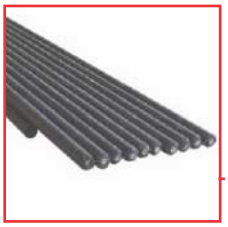
Condition	Hardness, HRc (BHN)
As Welded	52-60 (500-630)

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



SUPERMONEL

NON FERROUS (Ni Alloys)

Monel Electrode for joining and surfacing of nickel copper alloys

CLASSIFICATION : ISO 14172	AWS A/SFA 5.11
E Ni 4060 (NiCu30Mn3Ti)	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 : **DCEP**

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 & Valves manufacturing units

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Fe	Ti
Typical	0.05	2.0	0.4	65.0	1.5	0.7
Specification	0.15 max	4.0 max	1.5 max	62 to 69	2.5 max	0.30-1.0
	S	**P**	**Cu**	**Ai**	**Ti**	**Other**
Typical	0.01	0.01	Rem.	-	-	
Specification	0.015 max	0.02 max	Rem.	0.75 max	1.0 max	0.50 max

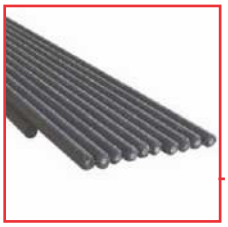
MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	535	34
Specification		480 min	30 min

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	45 - 70	1	10	10
3.15 x 350	80 - 100	1	10	10
4.0 x 350	90 - 130	1	10	10

EQUIVALENT : GMAW wire: : Automig NiCu-7 **GTAW filler: Tigfil NiCu-7**



NICALLOY 1

NON FERROUS (Ni Alloys)

Coated stick Electrode depositing almost pure nickel

CLASSIFICATION : ISO 14172	AWS A/SFA 5.11
E Ni 2061 (NiTi3)	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 :  **DCEP**

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 & halides

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Fe	Ti
Specification	0.10 max	0.75 max	1.25 max	92.0 min	0.75 max	0.30-1.0
	S	**P**	**Cu**	**Ai**	**Ti**	**Other**
Specification	0.02 max	0.03 max	0.25 max	1.0 max	1.0 to 4.0	0.50 max

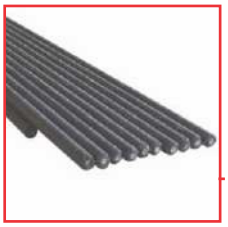
MECHANICAL PROPERTIES OF ALL WELD METAL :

	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 350	45 - 70	1	10	10
3.15 x 350	80 - 100	1	10	10
4.0 x 350	90 - 130	1	10	10

EQUIVALENT : GMAW wire: Automig Ni-1 **GTAW filler: Tigfil Ni-1**



NICALLOY Fe-2

NON FERROUS (Ni Alloys)

Nickel based Electrode for high oxidation resistance

CLASSIFICATION : ISO 14172	AWS A/SFA 5.11
E Ni 6133 (NiCr16Fe12NbMo)	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 : 

DCEP

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

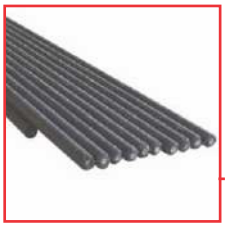
	C	Mn	Si	Ni	Fe	Mo
Specification	0.10 max	1.0 to 3.5	0.75 max	62.0 min	12.0 max	0.5 to 2.5
	S	**P**	**Cu**	**Cr**	**Nb plus Ta**	**Other**
Specification	0.02 max	0.03 max	0.50 max	13.0 to 17.0	0.5 to 3.0	0.50 max

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 350	45 - 70	1	10	10
3.15 x 350	80 - 100	1	10	10
4.0 x 350	90 - 130	1	10	10



NICALLOY Fe-3

NON FERROUS (Ni Alloys)

Basic coated Nickel based Electrode for inconel alloy Welding

CLASSIFICATION : ISO 14172	AWS A/SFA 5.11
E Ni 6182 (NiCr15Fe6Mn)	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 :  **DCEP**

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 andpower generation plants
- Application in temperature critical conditions such as furnace equipment and pipe work

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

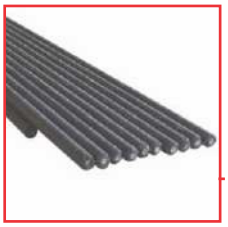
	C	Mn	Si	Ni	Fe	Ti
Specification	0.10 max	5.0 to 9.5	1.0 max	59.0 min	10.0 max	1 max
	S	**P**	**Cu**	**Cr**	**Nb plus Ta**	**Other**
Specification	0.015 max	0.03 max	0.50 max	13.0 to 17.0	1.0 to 2.5	0.50 max

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 350	45 - 70	1	10	10
3.15 x 350	80 - 100	1	10	10
4.0 x 350	90 - 130	1	10	10



NICALLOY Mo-3

NON FERROUS (Ni Alloys)

Ni-Cr-Mo alloyed Electrode for nickel alloy Welding

CLASSIFICATION : ISO 14172	AWS A/SFA 5.11
E Ni 6625 (NiCr22Mo9Nb)	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Si	Ni	Fe	Mo
Specification	0.10 max	1.0 max	0.75 max	55.0 min	7.0 max	1 max
	S	**P**	**Cu**	**Cr**	**Nb plus Ta**	**Other**
Specification	0.02 max	0.03 max	0.50 max	20.0 to 23.0	3.15 to 4.15	8.0 to 11.0

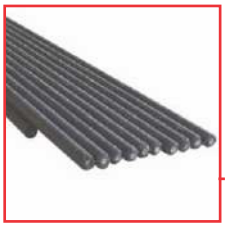
MECHANICAL PROPERTIES OF ALL WELD METAL :

	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 350	45 - 70	1	10	10
3.15 x 350	80 - 100	1	10	10
4.0 x 350	90 - 130	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 : ISO 14172	AWS A/SFA 5.11
E Ni 6276 (NiCr15Mo15Fe6W4)	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 :  **DCEP**

TYPICAL APPLICATIONS :

- Welding of alloy C-276 & similar composition steels
- Suitable for material 2.4819 (NiMo16Cr15W)
- Dissimilar joints between nickel alloys, stainless and low alloy steels
- Surfacing on low alloy steels
- Application in chemical plants with highlycorrosive conditions
- For surfacing press tools, punches, forge dies, hot-stripping tools, pump rotors, valves

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

	C	Mn	Fe	S	P	Si	Other
Specification	0.02 max	1.0 max	4.0 to 7.0 max	0.03 max	0.04 max	0.2 max	0.50 max
	Cu	**Co**	**Cr**	**Mo**	**W**	**Ni**	**V**
Specification	0.50 max	2.5 max	14.5-16.5	15.0-17.0	3.0-4.5	Rem.	0.35 max

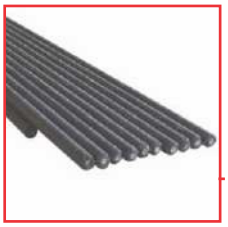
MECHANICAL PROPERTIES OF ALL WELD METAL :

	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 350	45 - 70	1	10	10
3.15 x 350	80 - 100	1	10	10
4.0 x 350	90 - 130	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 : ISO 14172	AWS A/SFA 5.11
E Ni 6275 (NiCr15Mo16Fe5W3)	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

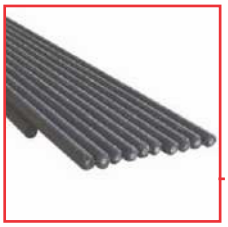
	C	Mn	Fe	S	P	Si	Other
Specification	0.10 max	1.0 max	4.0 to 7.0 max	0.03 max	0.04 max	0.1 max	0.50 max
	Cu	**Co**	**Cr**	**Mo**	**W**	**Ni**	**V**
Specification	0.50 max	2.5 max	14.5-16.5	15.0-17.0	3.0-4.5	Rem.	0.35 max

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 350	45 - 70	1	10	10
3.15 x 350	80 - 100	1	10	10
4.0 x 350	90 - 130	1	10	10



NICALLOY Mo-6

NON FERROUS (Ni Alloys)

Nickel based Electrode for LNG storage systems

CLASSIFICATION : ISO 14172	AWS A/SFA 5.11
E Ni 6620 (NiCr14Mo7Fe)	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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

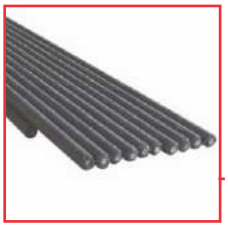
	C	Mn	Fe	S	P	Si	Other
Specification	0.10 max	2.0 to 4.0	10.0 max	0.02 max	0.04 max	1.0 max	0.50 max
	Cu	**Nb plus Ta**	**Cr**	**Mo**	**W**	**Ni**	
Specification	0.50 max	0.5 to 2.0	12.0 to 17.0	5.0 to 9.0	1.0 to 2.0	55.0 min	

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 350	45 - 70	1	10	10
3.15 x 350	80 - 100	1	10	10
4.0 x 350	90 - 130	1	10	10



NICALLOY Mo-10

NON FERROUS (Ni Alloys)

Nickel base Electrode for C-22 material joining

CLASSIFICATION : ISO 14172	AWS A/SFA 5.11
E Ni 6022 (NiCr21Mo13W3)	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 :

DCEP

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 minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

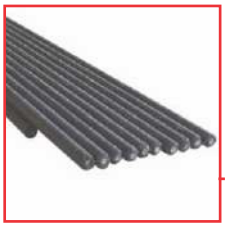
	C	Mn	Fe	S	P	Si	V
Specification	0.02 max	1.0 max	2.0 to 6.0	0.015 max	0.03 max	0.2 max	0.35 max
	Cu	**Co**	**Cr**	**Mo**	**W**	**Ni**	**Other**
Specification	0.50 max	2.5 max	20.0 to 22.5	12.5 to 14.5	2.5 to 3.5	Rem.	0.50 max

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 350	45 - 70	1	10	10
3.15 x 350	80 - 100	1	10	10
4.0 x 350	90 - 130	1	10	10



NICALLOY Mo-12

NON FERROUS (Ni Alloys)

Nickel base Electrode for application from cryogenic to elevated temperature

CLASSIFICATION : ISO 14172	AWS A/SFA 5.11
E Ni 6627 (NiCr21MoFeNb)	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 :  **DCEP**

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 minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

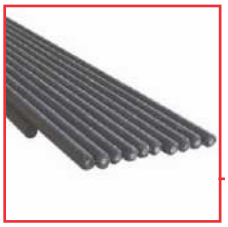
	C	Mn	Fe	S	P	Si
Specification	0.03 max	2.2 max	5.0 max	0.02 max	0.03 max	0.7 max
	Cu	**Cr**	**Nb+Ta**	**Mo**	**Ni**	**Other**
Specification	0.50 max	20.5-22.5	1.0-2.8	8.8-10.0	Rem.	0.50 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	CVN Impact at -196°C, J	Lateral Expansion, mils
Specification	As Welded	650 min	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 350	45 - 70	1	10	10
3.15 x 350	80 - 100	1	10	10
4.0 x 350	90 - 130	1	10	10



NICALLOY 671

NON FERROUS (Ni Alloys)

Ni-Cr-Co-Mo-Fe type welding electrode

CLASSIFICATION : ISO 14172	AWS A/SFA 5.11
E Ni 6117 (NiCr22Co12Mo)	E NiCrCoMo-1

KEY FEATURES :

- Basic coated non synthetic electrode
- Ni-Cr-Co-Mo-Fe type weld
- Resistant to hot cracking
- Optimum strength, creep and oxidation resistance above 820°C upto 1150°C in wide variety of corrosive media

WELDING POSITION : 

DCEP

TYPICAL APPLICATIONS :

- Welding of Ni-Cr-Co-Mo type and similar grade alloys to themselves and to steel
- Incoloy 800HT, 803 and cast alloys such as HK-40, HP and HP-45 modified
- Welding of Inconel 617 alloy
- For surfacing steel with Ni-Cr-Co-Mo weld metal
- Suitable for application in ethylene production plants, gas turbines etc.
- Suitable for material 1.4958, 1.4959, 2.4663
- Aerospace industry for engine components, after burners, turbine seals, heat treating equipment and high temperature service applications

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

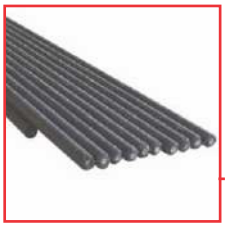
	C	Mn	Fe	P	S	Si
Specification	0.05-0.15	0.3-2.5	5.0 max	0.03 max	0.015 max	0.75 max
	Cu	**Ni**	**Co**	**Cr**	**Nb+Ta**	**Mo**
Specification	0.50 max	Rem.	9.0-15.0	21.0-26.0	1.0 max	8.0-10.0

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	620 min	25 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	1	10	10
3.15 x 350	70-95	1	10	10
4.0 x 350	90-120	1	10	10



NICALLOY 3545Nb

NON FERROUS (Ni Alloys)

High temperature cast alloys with high carbon content in petrochemical industry

CLASSIFICATION : ISO 14172

E Ni Z (NiCr35Fe15Nb0.8)

KEY FEATURES :

- Rutile coated electrode
- High temperature resistant with good creep strength
- Smooth and stable arc
- Easy slag removal
- Fine rippled seam structure

WELDING POSITION : DCEP

TYPICAL APPLICATIONS :

- Reformers tubes in petrochemical installations
- Service temperature upto 1170°C
- Joining and surfacing high alloyed 35/45CrNi
- High temperature cast materials

REDRYING CONDITION : 250 - 350°C for 1 hr min. (Also available in vacuum packed condition)

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

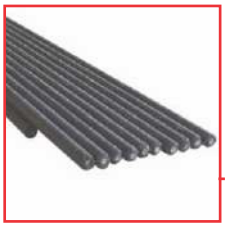
	C	Mn	Si	Cr	Ni	Nb	Fe
Specification	0.45	0.8	1.0	35.0	45.0	0.9	Bal.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	600 min	8

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



NICALLOY Fe-7

NON FERROUS (Ni Alloys)

Basic coated Nickel Chromium iron Alloy electrode for Inconel Alloy welding

CLASSIFICATION : ISO 14172	AWS A/SFA 5.11
E Ni 6152 (NiCr30Fe9Nb)	E NiCrFe-7

KEY FEATURES :

- Basic type coating
- Ni-Cr-Fe type deposit
- Higher Cr content improves resistance to Stress corrosion Cracking
- Resistance to high temperature oxidation
- All Positional welding capability
- For overlay applications minimum three layers must be deposited

WELDING POSITION : 

DCEP

TYPICAL APPLICATIONS :

- Welding of alloys of Alloy 690 type
- Overlay welding in the nuclear industry
- Welding of steam generators in nuclear power plants
- Dissimilar Joining
- Joining Ni based alloys to steel
- Welding in harsh, corrosive condition e.g. desalination, petrochemical and power generation plants

REDRYING CONDITION : 350°C for 1 hr

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

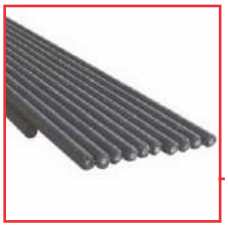
	C	Mn	Fe	S	P	Si	Cu
Specification	0.05 max	5.0 max	7.0 – 12.0	0.015 max	0.03 max	0.75 max	0.50 max
	Cr	**Nb+Ta**	**Al**	**Mo**	**Ni**	**Ti**	**Other**
Specification	28.0-31.5	1.0-2.5	0.50	0.5 max	Rem.	0.50	0.50 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	690 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-14

NON FERROUS (Ni Alloys)

Nickel base electrode for C-276 material joining

CLASSIFICATION : ISO 14172	AWS A/SFA 5.11
E Ni 6686 (NiCr21Mo16W4)	E NiCrMo-14

KEY FEATURES :

- Basic coated non synthetic electrode
- Weld metal is of C-276 type
- Excellent corrosion resistance in reducing, oxidizing, crevice and pitting conditions
- Electrode gives smooth arc, medium penetration, uniform bead and easy slag removal
- All position welding capability

WELDING POSITION :  **DCEP**

TYPICAL APPLICATIONS :

- Welding of Nickel alloys like N06686, N06625, N10276, and N06022
- Used to join duplex, super-duplex and super-austenitic stainless steels, as well as nickel alloys
- Welding operations in chemical and petrochemical process, oil and gas, marine industries
- Used for overlay cladding of iron-base metals under corrosive environments

REDRYING CONDITION : 250-300°C for 2-3 hrs

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

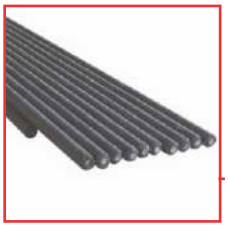
	C	Mn	Fe	S	P	Si	Other
Specification	0.02 max	1.0 max	5.0 max	0.02 max	0.02 max	0.25 max	0.50 max
	Cu	**Ti**	**Cr**	**Mo**	**W**	**Ni**	
Specification	0.50 max	0.25 max	19-23	15-17	3.0 – 4.4	Rem.	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Specification	As Welded	690 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



NICALLOY NiMo-7

NON FERROUS (Ni Alloys)

Nickel based electrode for LNG storage systems

CLASSIFICATION : ISO 14172

E Ni 1066 (NiMo28)

KEY FEATURES :

- Basic coated electrode
- High Moly content offers protection against pitting & crevice corrosion
- Can combat corrosion especially in the chemical industry.
- Normally are used only in the flat position

WELDING POSITION :

AC (70 OCV)/DCEP

TYPICAL APPLICATIONS :

- Joining of nickel-molybdenum base metals are ASTM B 333, B 335, B 619, B 622, and B 626
- Welding the clad side of joints in steel clad with a nickel-molybdenum alloy
- Suitable for equipment handling reducing chemical environments
- Applications in the chemical process industry involving sulfuric, phosphoric and acetic acid

REDRYING CONDITION : 300°C for 1 hrs

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

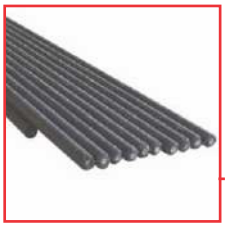
	C	Mn	Fe	S	P	Si	Other
Specification	0.02 max	1.75 max	2.25 max	0.03 max	0.04 max	0.2 max	0.50 max
	Cu	**Co**	**Cr**	**Mo**	**W**	**Ni**	
Specification	0.50 max	1.0 max	1.0 max	26-30	1.0 max	Rem	

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	50-95	1	10	10
3.15 x 300	80-120	1	10	10
4.0 x 300	120-160	1	10	10



SUPER CuNi

NON FERROUS (Ni Alloys)

Welding electrode for welding of Copper-Nickel Alloys

CLASSIFICATION : AWS A/SFA 5.6

ECuNi

KEY FEATURES :

- Typical 70Cu-30Ni type weld deposit
- Easy slag removal
- Shiny and uniform bead
- Crack resistant weld
- No preheating required
- Weld deposit resistant to sea water

WELDING POSITION :

DCEP

TYPICAL APPLICATIONS :

- Welding of wrought and cast 70/30, 80/20, 90/10 Copper-Nickel alloys to themselves or to each other
- Welding of Copper-Nickel alloys of up to 30% Ni
- Clad side of copper-nickel clad steels
- Surfacing applications where high resistance to corrosion, erosion or cavitation is required
- Ship building, food industries, desalinization plants, refrigerators, heat exchangers

REDRYING CONDITION : 250-300°C for minimum 1 hr

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

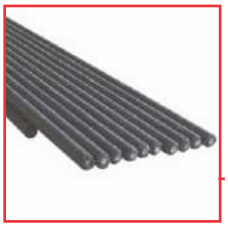
	C	Fe	Si	Ni+Co	P
Specification	1.0-2.50	0.40-0.75	0.50 max	0.03 max	29.0-33.0
	S	**Pb**	**Ti**	**Cu+Ag**	
Specification	0.015 max	0.02 max	0.50 max	Bal.	

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	Hardness, HBS
Specification	As Welded	350 min	20 min.	60-80

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	60-80	1	10	10
3.15 x 350	90-100	1	10	10
4.0 x 350	110-130	1	10	10



ALBOND 5 Si

NON FERROUS (Al Alloys)

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 :

DCEP

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 & 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.

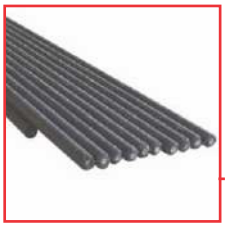
MECHANICAL PROPERTIES OF ALL WELD METAL :

	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**



ALBOND 12 Si

NON FERROUS (Al Alloys)

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. 200ºC

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 % :

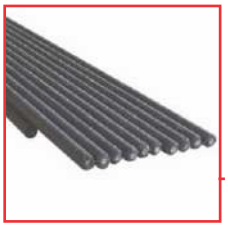
	Si	Fe	Al
Typical	11.2	0.2	Bal.
Specification	9.0-12.0	0.50 max	Bal.

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



BRONZE

NON FERROUS (Cu Alloys)

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 :

DCEP

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 : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

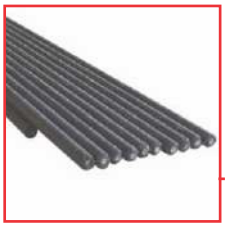
	Cu	Sn	P
Typical	94.8	5.0	0.2
Specification	92.0-96.0	4.0-6.0	0.10-0.35

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 350	40-70	1	10	10
3.15 x 350	80-110	1	10	10
4.0 x 350	110-160	1	10	10



BRONZE Al-A2

NON FERROUS (Cu Alloys)

Aluminium Bronze Stick Electrode

CLASSIFICATION : IS 8666

E CuAl-A2

KEY FEATURES :

- Copper-Aluminum electrode
- Excellent Marine Corrosion resistance
- Typical 91% Cu-9% Al deposit
- Weld Metal exhibits high strength and good ductility

WELDING POSITION :

DCEP

TYPICAL APPLICATIONS :

- Joining of Aluminium Bronze
- Surfacing of Aluminium Bronze
- Joining of copper alloys to Steel and surfacing of steel
- For use in ship building, chemical and paper industries

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

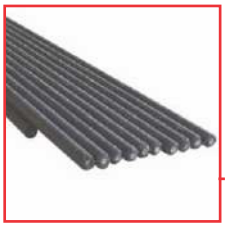
	Cu	Al	Fe
Typical	Bal	9.3	1.2
Specification	Remainder	9.0-9.5	1.50 max

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%
Typical	As Welded	440	24
Specification		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 350	40-60	1	10	10
3.15 x 350	100-120	1	10	10
4.0 x 350	120-140	1	10	10



BRONZE NiAl

NON FERROUS (Cu Alloys)

Nickel-Aluminium Bronze stick electrode

CLASSIFICATION : SFA-5.6

ECuNiAl

KEY FEATURES :

- Copper-Nickel-Aluminium electrode
- Excellent resistance to corrosion, erosion, and cavitation in salt or brackish water
- Good suitability for simultaneous stress strain caused by seawater, cavitation and erosion

WELDING POSITION :

DCEP

TYPICAL APPLICATIONS :

- Joining and rebuilding of cast and wrought nickel-aluminium bronze materials
- Weld cladding on cast iron materials and steel
- Application include ship fittings, ship propellers, power plant valves, piping systems, intake screens, oil recovery pumps and propeller gear housings
- For use in ship building, chemical and paper industries

REDRYING CONDITION : 250-300°C for minimum 1 hr.

CHEMICAL COMPOSITION OF UNDILUTED WELD METAL, Wt % :

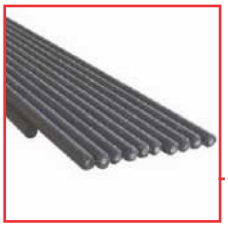
	Mn	Fe	Si	Ni+Co	Al	Pb	Si	Cu+Ag
Specification	0.5-3.5	3.0-6.0	1.5 max	4.0-6.0	8.0-9.5	0.02 max	1.5 max	Bal.

MECHANICAL PROPERTIES OF ALL WELD METAL :

	Condition	UTS, MPa	EL%	HARDNESS, HV
Specification	As Welded	500 min	10 min	163-205

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Cartons/Box	Net wt./Box, Kg
2.5 x 350	40-60	1	10	10
3.15 x 350	100-120	1	10	10
4.0 x 350	120-140	1	10	10



CAG E612

GOUGING and CUTTING

Copper coated carbon graphite Electrode for air arc Gouging

KEY FEATURES :

- Formulated from carbon and graphite to combine the erosion resistance
- High electrical conductivity
- Lower oxidation speed of graphite
- Better arc stability
- Can be operated at high amperages
- Reduced radiation increases operator comfort

TYPICAL APPLICATIONS :

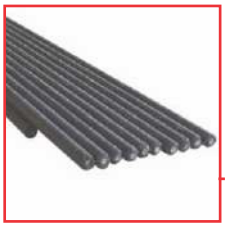
- For cutting, gouging or beveling all metals
- In foundries, for pad washing, cleaning fins and risers, removal of cracks, sand pockets
- For back gouging, beveling and removing defects in welds and castings
- For pre-weld preparation of broken parts, removing hard surfacing before rebuilding and cutting unwanted parts

PROCEDURE :

Fix the electrode CAG E612 in to the special torch with DC+ and set the appropriate current. Point the electrode to the part to be removed and strike it by touching the base metal. Base metal melts and gets blown away by compressed air.

PARAMETERS - PACKING DATA :

Ø x L, mm	Approx Pcs/Carton	Amperage, A
6.0	125	250-350
8.0	75	350-450
9.0	60	450-550
12.0	35	700-900



CAG 9900

GOUGING and CUTTING

Electrode for Grooving without Oxygen

KEY FEATURES :

- Special electrode with high blowing effect
- Produce hot exothermic penetrating arc
- Molten metal is blown away quickly
- Provides good visibility
- The cut is smooth, molten and blown away material can be removed easily
- Does not damage the metal structure

TYPICAL APPLICATIONS :

- For chamfering, gouging and making grooves in all conductive metals
- For removing defective welds and rivets without using oxyacetylene and compressed air
- Removing flashers and risers in foundry castings
- For bevelling cracks in machine frames without dismantling
- Cutting of metal parts on building sites

PROCEDURE :

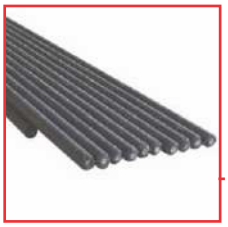
The electrode is inclined to the surface at a 35° angle. The arc is pushed deeper and forward to drive the molten metal and slag onwards. For deeper groove, repeat procedure in stages until the required depth is reached.

POLARITY :

AC/DCEP

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Net wt./Box, Kg
3.2 x 350	250-350	5	20
4.0 x 350	300-400	5	20
5.0 x 350	350-500	5	20



CAG 9901

GOUGING and CUTTING

Electrode for cutting without Oxygen

KEY FEATURES :

- Cutting electrode with special coating
- Special coating gives a stable arc during the cutting or piercing process
- The kerfs are clean and narrow
- Suitable for all positions
- Produce negligible slag

TYPICAL APPLICATIONS :

- Cutting and piercing of steel, cast iron, copper materials, aluminium
- Excellent for burning rivets
- Dismantling work at sites
- Cutting out unwanted metal in foundry castings
- Oxyacetylene or compressed air need not be used

PROCEDURE :

After striking the arc, swing the arc back and forth as in sawing. Maintain the motion and at the same time dig the arc deeper and deeper in to the metal. For piercing holes, push the arc in and out until the metal is pierced. Use DC with electrode negative for best results.

POLARITY :

AC/DCEN

PARAMETERS - PACKING DATA :

Ø x L, mm	Amperage, A	Wt./Carton, Kg	Net wt./Box, Kg
3.2 x 350	150-250	5	20
4.0 x 350	200-300	5	20
5.0 x 350	250-400	5	20

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