



**USERS FIRST CHOICE**



# **Seth Electrodes Pvt. Ltd.**



## **PRODUCT CATALOGUE**

### **OFFICE :**

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**COMPANY PROFILE**

- ⚡ Seth Electrodes Pvt. Ltd. (SEPL) was established in the year 1987 as a Private Limited Co., Sited at Khurai, Madhya Pradesh.
- ⚡ The SEPL is one of the ISO-9001-2008 Certified Company.
- ⚡ SEPL manufactures a wide range of Manual Metal Arc Welding Electrodes and its present range of products comprise of different types which includes Mild Steel, Stainless Steel, Low Hydrogen, Cast Iron, Hardsurfacing, Cutting, Gouging and Low- Heat-Input electrodes for maintenance welding.
- ⚡ Products are on approval list of Bureau of Indian Standards (BIS), Indian Railways (RDSO), Lloyd's Register of Shipping, BHELTrichy and Directorate of Boilers (MP).
- ⚡ The Prestigious clients of SEPL are almost all the Loco Work shops of Indian Railways, Steel Authority of India Ltd. (SAIL). Dept. of Telecommunications etc.
- ⚡ The Company is run by a team of technocrats and experts from the field of welding technology.



**RANGE OF APPROVALS**



Chief Inspector of Boilers & Smoke Nuisances

# MILD STEEL GENERAL PURPOSE ELECTRODES

## K - CORD

RUTILE BASED GENERAL PURPOSE WELDING ELECTRODE FOR RADIOGRAPHIC WELDS.

### \* CODIFICATION :-

AWS/SFA 5.1 : E - 6013	IS : 814 - 2004 : ER - 4211
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### \* CHARACTERISTICS & APPLICATIONS :-

K-CORD is a medium coated rutile type electrode for general purpose welding of Mild Steel, light and medium fabrication works of Radiographic quality. Smooth and steady arc, uniform ripples and shining weld bead, easy slag detachability, excellent striking and restricking properties are the salient features of K-Cord. It can be used on AC/ DC (-) on all conventional welding positions. Ideally suited for light and medium fabrications, structures, welding of storage tanks, window grills and gates, auto bodies.

### \* CHEMICAL ANALYSIS OF WELD - METAL (%)

C %	Mn. %	Si. %	S. %	P
0.10 max	0.35 - 0.60	0.3 max	0.03 max	0.03 max

### \* MECHANICAL PROPERTIES OF WELD METAL:-

Yield Strength	Ultimate Tensile Strength	Elongation GL-5d %	Reduction In Area %	CVN ImpactValume (Min)at 27°C / 0°C
Kg/mm <sup>2</sup> 42 - 47	Kg/mm <sup>2</sup> 46 - 56	26 - 30	50 - 70	Joules 70 - 50
N/mm <sup>2</sup> 410 - 460	N/mm <sup>2</sup> 460 - 550			Kgf.m 7/5

### \* CURRENT REQUIREMENTS : AC / DC

SIZE (MM)	2.5 X 350	3.15 X 350	4.0 X 450	5.0 X 450
CURRENT (AMP)	60 - 80	90 - 130	140 - 170	180 - 230

## KAYNOZ - 7-S

EXCELLENT WELDING ELECTRODE FOR RADIOGRAPHIC WELD DEPOSITS ON MILD STEELS.

### \* CODIFICATION :-

AWS/SFA 5.1 : E - 6013	IS : 814 - 2004 : ER - 4211 X
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### \* CHARACTERISTICS & APPLICATIONS :-

KAYNOZ -7-S is a medium coated, Rutile type, general purpose electrode designed to produce excellent Radiographic quality weld-beed on mild steel jobs, it produces a shining weld deposit with a minimum spatter level with other characteristics of welder's choice, i.e. effortless slag removal and easier operation in all conventional welding positions (FHVO). **KAYNOZ-7-S** can be used either on A C. welding machines with an Open Circuit Voltage of not less than 50 Volts or Welding ractifier with positive or negative polarity. **KAYNOZ-7-S** is Ideal for all fabrication jobs, structural works of boilers, ships, storage tanks, bridges, railway coaches/wagons.

### \* CHEMICAL ANALYSIS OF WELD - METAL (%)

C %	Mn. %	Si. %	S. %	P
0.10 max	0.40 - 0.65	0.3 max	0.03 max	0.03 max

### \* MECHANICAL PROPERTIES OF WELD METAL:-

Yield Strength	Ultimate Tensile Strength	Elongation GL-5d %	Reduction In Area %	CVN ImpactValume (Min)at 27°C / 0°C
Kg/mm <sup>2</sup> 42 - 47	Kg/mm <sup>2</sup> 47 - 56	26 - 30	50 - 70	Joules 70 - 50
N/mm <sup>2</sup> 410 - 460	N/mm <sup>2</sup> 460 - 550			Kgf.m 7/5

## KAYNOZ - 7

RUTILE TYPE GENERAL PURPOSE WELDING ELECTRODE.

### \* CODIFICATION :-

AWS/SFA 5.1 : E - 6013	IS : 814 - 2004 : ER - 4211X
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### \* CHARACTERISTICS & APPLICATIONS :-

KAYNOZ - 7 is a general purpose, Rutile type, medium coated welding electrode for mild steel. Stable arc which is easy to strike & restrike, Moderately fluid molten metal, easily detachable slag, finely rippled bead and least spatters are the salient features of kaynoz-7. Weldmetal exhibits excellent mechanical properties in its class of electrodes. It can be used to weld any type of fabrication work, Machinery construction, furniture, pipelines, wagons & coaches, bridges, ships, tanks, trailers, automobile chassis & several other jobs. It can be used in all posiions.

### \* CHEMICAL ANALYSIS OF WELD - METAL (%)

C %	Mn. %	Si. %	S. %	P
0.10 max	0.35 - 0.60	0.3 max	0.03 max	0.03 max

### \* MECHANICAL PROPERTIES OF WELD METAL:-

Yield Strength	Ultimate Tensile Strength	Elongation GL-5d %	Reduction In Area %	CVN ImpactValume (Min)at 27°C / 0°C
Kg/mm <sup>2</sup> 42 - 47	Kg/mm <sup>2</sup> 46 - 56	26 - 30	50 - 70	Joules 70 - 50
N/mm <sup>2</sup> 410 - 460	N/mm <sup>2</sup> 460 - 550			Kgf.m 7/5

### \* CURRENT REQUIREMENTS : AC / DC

SIZE (MM)	2.5 X 350	3.15 X 350	4.0 X 450	5.0 X 450
CURRENT (AMP)	60 - 80	90 - 130	140 - 170	180 - 230

## KAYNOZ - 7-SS

EXCELLENT HEAVY COATED WELDING ELECTRODE FOR RADIOGRAPHIC WELD DEPOSITS ON HEAVY SECTIONS.

### \* CODIFICATION :-

AWS/SFA 5.1 : E - 6013	IS : 814 - 2004 : ERR - 4221 X
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### \* CHARACTERISTICS & APPLICATIONS :-

KAYNOZ -7-SS is a heavy coated, Rutile type, general purpose electrode designed to produce excellent Radiographic quality weld-beed on mild steel jobs. It produces a shining weld deposit with a minimum spatter level with other characteristics of welder's choice, i.e. effortless slag removal and easier operation at all conventional welding positions (FHVO). **KAYNOZ-7-SS** can be used either on A C. welding machines with an Open Circuit Voltage of not less than 50 Volts or Welding ractifier with positive or negative polarity. **KAYNOZ-7-SS** is Ideal for all fabrication jobs, structural works of boilers, ships, storage tanks, bridges, railway coaches/wagons.

### \* CHEMICAL ANALYSIS OF WELD - METAL (%)

C %	Mn. %	Si. %	S. %	P
0.10 max	0.4 - 0.65	0.4 max	0.03 max	0.03 max

### \* MECHANICAL PROPERTIES OF WELD DEPOSIT (UNDILUTED):-

Yield Strength	Ultimate Tensile Strength	Elongation GL-5d %	Reduction In Area %	CVN ImpactValume (Min)at 27°C / 0°C
Kg/mm <sup>2</sup> 44 - 48	Kg/mm <sup>2</sup> 48 - 56	26 - 30	50 - 70	Joules 70 - 50
N/mm <sup>2</sup> 430 - 470	N/mm <sup>2</sup> 470 - 550			Kgf.m 7/5

### \* PRECAUTIONS :-

Always run the electrodes within the specified current range. \* Store the welding consumables in a dry place only. \* Parent metal should be free from all sports of surface contaminations, like dirt, grease rust etc.

## LOW HYDROGEN BASIC COATED ELECTRODES

### KAYNOTRODE

LOW HYDROGEN BASIC COATED WELDING ELECTRODES FOR MILD & MEDIUM TENSILE STEELS.

**\* CODIFICATION :-**

AWS/SFA 5.1 : E - 7016	IS : 814 - 2004 : EB 5424 H <sub>2</sub> X
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**\* CHARACTERISTICS & APPLICATIONS :-**

KAYNOTRODE- is basic coated, hydrogen controlled welding electrode which produces tough & ductile Radiographic quality weld-beed. It is suitable for operationa on AC/DC [+] and the deposits have excellent crack resistance properties. This electrode can be used on rigid sections of mild steels, medium / high tensile steels and cast steels. It is ideal for the steels of unknown composition and for non rrachinable deposits on cast iron. Laying of buffer layers before hardsurfacing can be easily handled with Kaynotrode. Typical applications include tractor & earthmoving machine parts, hydraulic gates, heavy chains and conveyors, rail coaches S wagons, ships, road rollers etc.

**\* CHEMICAL-MECHANICAL PROPERTIES : [TYPICAL]**

C %	Mn. %	Si. %	S. %	P
0.10 max	0.9 - 1.3	0.6max	0.03 max	0.03 max

**\* MECHANICAL PROPERTIES OF WELD DEPOSIT (UNDILUTED):-**

Yield Strength	Ultimate Tensile Strength	Elongation GL-5d %	Reduction In Area %	CVN ImpactValume (Min)at 27°C / 0°C
Kg/mm <sup>2</sup> 46 - 51	Kg/mm <sup>2</sup> 55 - 66	26 min	60 min	Joules 90 - 30
N/mm <sup>2</sup> 450 - 510	N/mm <sup>2</sup> 540 - 650			Kgf.m 9/3

**\* WELDING INSTRUCTION :-**

Electrodes should be perfectly dry. Moist electrodes should be rebaked at 250°C for one hour before use. Arc length should be kept shorter to have evenly rippled beed.

### KAYNOTHERME

HIGH RECOVERY, IRON POWER, HYDROGEN CONTROLLED ELECTORDE FOR MILD & MEDIUM TENSILE STEELS.

**\* CODIFICATION :-**

AWS/SFA 5.1 : E - 7018	IS : 814 - 2004 : EB 5426 H <sub>3</sub> JX
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**\* CHARACTERISTICS & APPLICATIONS :-**

KAYNOTHERME is high deposition efficiency, low Hydrogen, Iron Power based basic electrode which can easily be used on AC/DC (+) in all conventional Welding positions. It deposits tough & ductile welds of about 115% metal recovery with Radiographic quality. It is specially used in heavy structural works where Joints are under strain and subjected to dynamic loads & impacts. Some of the critical applications include Railway Coaches, Wagons, Ships, Heavy bridges . Earth moving equipments, Blast Furnace shells, Rotary Boilers, Pressure Vessels etc.

**\* CHEMICAL-MECHANICAL PROPERTIES : (TYPICAL)**

C %	Mn. %	Si. %	S. %	P
0.10 max	0.9 - 1.3	0.6max	0.03 max	0.03 max

**\* MECHANICAL PROPERTIES OF WELD DEPOSIT (UNDILUTED):-**

Yield Strength	Ultimate Tensile Strength	Elongation GL-5d %	Reduction In Area %	CVN ImpactValume (Min)at 27°C / 0°C
Kg/mm <sup>2</sup> 46 - 51	Kg/mm <sup>2</sup> 55 - 66	26 min	60 min	Joules 90 - 30
N/mm <sup>2</sup> 450 - 510	N/mm <sup>2</sup> 540 - 650			Kgf.m 9/3

**\* WELDING INSTRUCTION :-**

Store the electrodes in dry and moisture free storage room. Preheat the electrodes for one hour at 250°C. before use and keep these dried electrodes in holding oven where a temp. of around 100°C is maintained. Use short arc to obtain better metal recovery

### KAYNOTHERME - 1

HIGH RECOVERY. HEAVY COATED .IRON POWDER. HYDROGEN CONTROLLED ELECTRODE FOR LOW TEMPERATURE SERVICE.

**\* CODIFICATION :-**

AWS/SFA 5.1 : E - 7018-1	IS : 814 - 2004 : EB 5426 H <sub>3</sub> JX
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**\* CHARACTERISTICS & APPLICATIONS :-**

KAYNOTHERME-1 is high deposition efficiency, low Hydrogen, Iron Power based basic electrode which can easily be used on AC/DC (+) in all conventional Welding positions. It deposits tough & ductile welds of about 115% metal recovery with Radiographic quality. It is specially used in heavy structural works where Joints are under strain and subjected to dynamic loads & impacts , specially at subzero temperature services. It gives an Impact value of about 30 Joules at minus 46°C. Some of the critical applications include Railway Coaches, Wagons, Ships, Heavy bridges , Earth moving equipments, Blast Furnace shells, Rotary Boilers, Pressure Vessels etc.

**\* CHEMICAL-MECHANICAL PROPERTIES : (TYPICAL) (UNDILUTED WELD - METAL)**

C %	Mn. %	Si. %	S. %	P
0.10 max	0.9 - 1.3	0.6max	0.03 max	0.03 max

**\* MECHANICAL PROPERTIES OF WELD DEPOSIT (UNDILUTED):-**

Yield Strength	Ultimate Tensile Strength	Elongation GL-5d %	Reduction In Area %	CVN ImpactValume (Min)at 27°C / 0°C
Kg/mm <sup>2</sup> 46 - 52	Kg/mm <sup>2</sup> 55 - 66	26 min	55 min	Joules 30
N/mm <sup>2</sup> 450 - 510	N/mm <sup>2</sup> 540 - 650			

**\* WELDING INSTRUCTION :-**

Store the electrodes in dry and moisture free storage room. Preheat the electrodes for one hour at 250°C. before use and keep these dried electrodes in holding oven where a temp. of around 100°C is maintained. Use short arc to obtain better metal recovery.

## ELECTRODES FOR WEATHERING STEELS

### KAYTHERME (SPL)

SPECIAL PURPOSE ELECTRODE FOR WEATHERING SEELS

**\* CODIFICATION :-**

AWS/SFA 5.5 : E - 8018 W2	IS : 1395 - 82 E55B - G126
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**\* CHARACTERISTICS & APPLICATIONS :-**

KAYTHERME (SPL) is a special purpose welding electrode designed for welding of weathering steels like CORTEN or SAILCOR specially used in Railways, petro chemical industries & chemical Industries where excellent resistance against atmospheric corrosion is required. A balanced alloy addition of 0.60 % Cr., 0.60 % Ni and equal amount of copper, exhibites in the weld chemistry of undiluted deposits of Kaytherme (SPL), very good resistance against atmospheric corrosion. Weld beed is of Radiographic quality and electrode can be used on AC ( OCV 90V Min.) 90 or DC(+) in all conventional welding positions.

**\* CHEMICAL-MECHANICAL PROPERTIES : (TYPICAL) (UNDILUTED WELD - METAL)**

C %	Mn. %	Si. %	Cr. %	Ni. %	Cu. %	S. %	P. %
0.12 max	0.5 - 1.3	0.35 - 0.80	0.45 - 0.70	0.4 - 0.8	0.30 - 0.75	0.3 max	0.3 max

**\* MECHANICAL PROPERTIES OF WELD DEPOSIT (UNDILUTED):-**

Yield Strength	Ultimate Tensile Strength	Elongation GL-5d %	Reduction In Area %	CVN ImpactValume (Min)at 17°C / 27°C
N/mm <sup>2</sup>	N/mm <sup>2</sup>	22 - 25	40 min	40 / 148
470 - 570	560 - 650			

**\* WELDING INSTRUCTIONS :-**

Rebake the electrodes at 250° C for one hour before use. Use short arc and lower currents.

# ELECTRODES FOR WEATHERING STEELS

## 308.COM

RUTILE BASED ECONOMICAL WELDING ELECTRODE FOR STAINLESS STEEL.

**\* CODIFICATION :-**

AWS/SFA 5.4 : E - 308 - 16    IS : 5206 -83 : E19.9 R 26

**\* CHARACTERISTICS & APPLICATIONS :-**

308.COM is a Stainless steel electrode which can be operated in all conventional Welding positions with ease on the materials of similar composition. It yields a deposit of 19 Cr 9 Ni Radiographic Weld Metal of well tuned ferritic level. Weld metal has excellent resistance against cracking, corrosion and scalling at elevated service temp, upto 350°C. Atmospheric oxidation is resisted upto 800°C. Slag detachability is very good and welding characteristics are pleasing. Typical application can be named as stainless steel storage tanks, structures, fabrication materials, S.S. mixers and apparatus used in fertilizer, soap and milk industries.

**\* CHEMICAL-MECHANICAL PROPERTIES : (TYPICAL)**

C %	Mn. %	Si. %	Cr. %	Ni. %	Ma %	Cu %	S. %	P. %
0.08 max	0.5-2.5	0.9 max	18 - 21	9 - 11	0.75 max	0.75 max	0.3 max	0.4 max

**\* MECHANICAL PROPERTIES OF WELD DEPOSIT (UNDILUTED):-**

Ultimate Tensile Strength	Elongation GL-5d %	CVN Impact Volume (Min)at 17°C / 27°C
N/mm <sup>2</sup> 550 - 640	35 - 45	70 Joules

**\* WELDING INSTRUCTIONS :-**

Electrodes should be dry at the time of use. Moist electrodes should be re-dried at 250° C for 1hour. Area to be welded must be free from oil / grease or other contamination.

## 309.COM

SPECIAL PURPOSE STAINLESS STEEL ELECTRODE FOR SIMILAR/DISSIMILAR/ PROBLEMATIC STEELS.

**\* CODIFICATION :-**

AWS/SFA 5.4 : E - 309 - 16    IS : 5206-83 : E 23.12 R 26

**\* CHARACTERISTICS & APPLICATIONS :-**

309.COM has been developed specially for the Welding of problematic steels where weldability appears to be difficult. It deposits a weld bead containing 25% Cr & 12% Ni combined with lower carbon contents. The deposited metal has excellent resistance to corrosion, oxidation and scaling at elevated temperature upto 1100°C. It can be used either on AC or on DC (+). Soft and stable arc, easier restriking, effortless slag removal and finely rippled bead are the remarkable features. Deposits are of Radiographic quality. 309.COM is nicely suited for welding of stainless steel of AISI - 309 grade; 18/8 stainless steel to carbon steels and for overlaying jobs on mild steel for improving wear resistance.

**\* CHEMICAL-MECHANICAL PROPERTIES : (TYPICAL)**

C %	Mn. %	Si. %	Cr. %	Ni. %	Ma %	Cu %	S. %	P. %
0.10 max	0.5-2.5	0.9 max	22 - 25	12 - 14	0.75 max	0.75 max	0.3 max	0.4 max

**\* MECHANICAL PROPERTIES OF WELD DEPOSIT (UNDILUTED):-**

Ultimate Tensile Strength	Elongation GL-5d %	CVN Impact Volume at 27°C
N/mm <sup>2</sup> 550 - 640	30 - 40	Joules 70 min

**\* WELDING INSTRUCTION :-**

Keep the electrodes dry. Moist electrodes to be redried for one hour at 150C. before use. Use minimum current and short arc avoiding excessive weaving. Weld area should be free from all sorts of Surface contamination.

## 308L.COM

WELDING ELECTRODE FOR LOW CARBON STAINLESS STEEL.

**\* CODIFICATION :-**

AWS/SFA 5.4 : E - 308L - 16    IS : 5206 : 83 : E 19.9L R 26

**\* CHARACTERISTICS & APPLICATIONS :-**

308L.COM is a Low carbon Stainless steel electrode which can be operated in all conventional Welding positions with ease on the materials of similar composition. It yields a deposit of 19 Cr. 9 Ni. Radiographic Weld Metal of well tuned ferritic level. Weld metal has excellent resistance against cracking, corrosion and scalling at elevated service temp, upto 350°C. Atmospheric oxidation is resisted upto 800° C. Slag detachability is very good and welding characteristics are pleasing. Typical application can be named as stainless steel storage tanks, structures, fabrication materials, S.S. mixers and apparatus used in fertilizer, soap and milk industries.

**\* CHEMICAL-MECHANICAL PROPERTIES : (TYPICAL)**

C %	Mn. %	Si. %	Cr. %	Ni. %	Ma %	Cu %	S. %	P. %
0.04 max	0.5-2.5	0.9 max	18 - 21	9 - 11	0.75 max	0.75 max	0.3 max	0.4 max

**\* MECHANICAL PROPERTIES OF WELD DEPOSIT (UNDILUTED):-**

Ultimate Tensile Strength	Elongation GL-5d %	CVN Impact Volume (Min)at 17°C / 27°C
N/mm <sup>2</sup> 520 - 640	35 - 45	Joules 70 min

**\* WELDING INSTRUCTION :-**

Electrodes should be dry at the time of use. Moist electrodes should be re-dried at 200° C for 1 hour. Area to be welded must be free from oil / grease or other contaminations.

## 309L.COM

SPECIAL PURPOSE,LOW CARBON, STAINLESS STEEL ELECTRODE FOR SIMILAR/DISSIMILAR/ PROBLEMATIC STEELS.

**\* CODIFICATION :-**

AWS/SFA 5.4 : E - 309L-16    IS : 5206-83 : E 23. 12 LR 26

**\* CHARACTERISTICS & APPLICATIONS :-**

309L.COM has been developed for Low Carbon Welding of problematic steels where weldability appears to be difficult. It deposits a weld bead containing 25% Cr & 12% Ni combined with lower carbon contents. The deposited metal has excellent resistance to corrosion, oxidation and seal- Tig at elevated temperature upto 1100°C. It can be used either on AC or on DC (+). Soft and stable arc, easier restriking, effortless slag removal and finely rippled bead are the remarkable features. Deposits are of Radiographic quality. 309L.COM is nicely suited for welding of stainless steel of AISI-309L grade; 18/8 stainless steel to carbon steels and for overlaying jobs on mild steel for improving wear resistance.

**\* CHEMICAL-MECHANICAL PROPERTIES : (TYPICAL)**

C %	Mn. %	Si. %	Cr. %	Ni. %	Ma %	Cu %	S. %	P. %
0.04 max	0.5-2.5	0.9 max	22 - 25	12 - 14	0.75 max	0.75 max	0.3 max	0.4 max

**\* MECHANICAL PROPERTIES OF WELD DEPOSIT (UNDILUTED):-**

Ultimate Tensile Strength	Elongation GL-5d %	CVN Impact Volume (Min)at 27°C
N/mm <sup>2</sup> 520 - 640	30 - 40	Joules 70 min

**\* WELDING INSTRUCTION :-**

Keep the electrodes dry. Moist electrodes to be redried for one hour at 150°C. before use. Use minimum current and short arc avoiding excessive weaving. Weld area should be free from all sorts of surface contamination.

## ELECTRODES FOR WEATHERING STEELS

### 316.COM

STAINLESS STEEL ELECTRODE OF 316 TYPE DEPOSITS.

**\* CODIFICATION :-**

AWS/SFA 5.4 : E - 316 -16 | IS : 5206-83 : E 19.1 2.2 R 26

**\* CHARACTERISTICS & APPLICATIONS :-**

316.COM is a rutile based Stainless steel electrode depositing weld metal of 18 Cr-11 Ni 2.5 Mo chemical composition. The deposited metal displays excellent mechanical properties including high creep strength. The addition of Molybdenum in the electrode increases the resistance of weld metal to pitting corrosion upto 850° C. Electrode can be operated either on DC (+) or AC. Beed js smooth and finely rippled.Slag detachability is easy. Beeds are of Radiographic quality. 316.COM is ideal for joining or resurfacing of wrought and cast materials conforming to AISI 316 grade of materials and the materials of similar composition.

**\* CHEMICAL-MECHANICAL PROPERTIES : [TYPICAL]  
(UNDILUTED WELD - METAL)**

C %	Mn. %	Si. %	Cr. %	Ni. %	Ma %	S. %	P. %	Cu %
0.04 max	0.5-2.5	0.9 max	17 - 20	11 - 14	2 - 3	0.3 max	0.4 max	0.75 max

**\* MECHANICAL PROPERTIES OF WELD DEPOSIT (UNDILUTED):-**

Ultimate Tensile Strength	Elongation GL-5d %	CVN ImpactValume (Min)at 27°C
N/mm <sup>2</sup> 490 - 600	30 - 40	Joules 70 min

**\* WELDING INSTRUCTION :-**

Electrodes should be dry. Moist electrodes to be rebaked at 200°C. for about one hour followed by slow cooling in same oven upto 50°C. Deposit stringer beed and use low current keeping the length of the arc as short as possible.

### EssEss-Mn

HEAVY COATED BASIC TYPE AUSTENITIC STAINLESS STEEL ELECTRODE.

**\* CODIFICATION :-**

IS : 5206 : 83 E 18.8 MnR - 26

**\* CHARACTERISTICS & APPLICATIONS :-**

EssEss-Mn is a special purpose welding electrode with SS core wire of 304L grade having a basic type heavy coated covering which enables the electrode to perform well on all conventional welding positions (FHVO) with ease. The Deposits of EssEss-Mn are of fuilly Austenitic quality which are very tough in nature and its physical properties are maintained even when the steels being welded are of different compositions. Heat resistance properties are maintained upto 900°c. EssEss-Mn is ideal for joining Mn-steel to mild steel, repairing of cracks in Mn-steels, casting & surfacing Mn-steel rails. Additionally it can be used for laying buffer layers on variety of steels

**\* CHEMICAL-MECHANICAL PROPERTIES : [TYPICAL]  
(UNDILUTED WELD - METAL)**

C %	Mn. %	Si. %	Cr. %	Ni. %	Ma %	S. %	P. %
0.12 max	5 - 8	0.9 max	17 - 20	7 - 10	0.5	0.03 max	0.04 max

**\* MECHANICAL PROPERTIES OF WELD DEPOSIT (UNDILUTED):-**

Ultimate Tensile Strength	Elongation GL-5d %
N/mm <sup>2</sup> 600 - 650	30 - 40

**\* WELDING INSTRUCTION :-**

Electrodes should be dry. Moist electrodes to be rebaked at 200°C. for about one hour followed by slow cooling in same oven upto 50°C. Deposit stringer beed and use low current keeping the length of the arc as short as possible.

### 316L.COM

STAINLESS STEEL ELECTRODE OF 316L TYPE DEPOSITS.

**\* CODIFICATION :-**

AWS/SFA 5.4 : E 316L -16 | IS : 5206 : 83 - E 19.12.2L R-26

**\* CHARACTERISTICS & APPLICATIONS :-**

316L.COM is a Low carbon Stainless steel electrode depositing weld metal of 18 Cr-11 Ni 2.5 Mo chemical composition. The deposited metal displays excellent mechanical properties including high creep strength. The addition of Molybdenum in the electrode increases the resistance of weld metal to pitting corrosion upto 850° C. Electrode can be operated either on DC (+) or AC Beed is smooth and finely rippled.Slag detachability is easy. Beeds are of Radiographic quality. 316L.COM is ideal for joining or resurfacing of wrought and cast materials conforming to AISI 316 / 316L grade of materials and the materials of similar composition.

**\* CHEMICAL-MECHANICAL PROPERTIES : [TYPICAL]**

C %	Mn. %	Si. %	Cr. %	Ni. %	Ma %	Cu %	S. %	P. %
0.04 max	0.5-2.5	0.9 max	17 - 20	11 - 14	2 - 3	0.75 max	0.3 max	0.4 max

**\* MECHANICAL PROPERTIES OF WELD DEPOSIT (UNDILUTED):-**

Ultimate Tensile Strength	Elongation GL-5d %	CVN ImpactValume (Min)at 27°C
N/mm <sup>2</sup> 490 - 600	30 - 40	Joules 70 min

**\* WELDING INSTRUCTION :-**

Electrodes should be dry. Moist electrodes to be rebaked at 200°C. for about one hour followed by slow cooling in same oven upto 50°C. Deposit stringer beed and use low current keeping the length of the arc as short as possible.

## ELECTRODES FOR HARD FACING

### HARDFACE - 300 R

AN ELECTRODE FOR HARDFACING APPLICATIONS.

**\* CODIFICATION :-**

IS - 7303 - 74 : E Fe B 314

**\* CHARACTERISTICS & APPLICATIONS :-**

HARDFACE -300 R is Rutile based heavy coated electrode designed for hardfacing jobs of machine components. Weldmetal is highly resistant to abrasive wear with moderate impact. The deposit is air hardening type and is very useful for Hardfacing applications on Mild and low alloy steel where a hardness of 30-40 RC is required. Deposit of Hardface-300 R can be machined with carbide tools. For better results 2 layers are recommended. Typical uses include shear blades, punching dies, rail ends and crossings, couplings, conveyor parts, sprockets, Idle wheels, pulleys, shafts, axles etc.

**\* CHEMICAL-MECHANICAL PROPERTIES : (TYPICAL)**

C %	Mn %	Si %	Cr %
0.16	1.05	0.55	3.50

**\* HARDNESS OF 2 LAYERED DEPOSIT ON M.S.**

30-40 RC

**\* CURRENT REQUIREMENTS : AC IDC**

SIZE (MM)	3.15 X 450	4.00 X 450	5.00 X 450
CURRENT (AMP)	100 - 140	150 - 180	190 - 240

**\* WELDING INSTRUCTIONS :-**

Excessive weaving should be avoided and arc length should be kept as low as possible. Electrodes should be dry. Moist electrodes to be redried at 120°C for one hour before use.

## ELECTRODES FOR HARD FACING

### HARDFACE - 60 RC

UNIQUE ELECTRODE FOR AIR HARDENING TYPE HARD FACING APPLICATIONS.

**\* CHARACTERISTICS & APPLICATIONS :-**

HARDFACE -60 RC produces a very hard & sound weld deposit which has excellent resistance to abrasion combined with moderate impact. Two layered hardness on mild steel is between 50-60 RC ( 500-600 BHN) & hence machining is not possible. Jobs can only be grinded. Weld bead is free from porosity & running characteristics are pleasing. Arc is very stable and deslagging is easy. Hardface 60 RC is Suitable to lay hardface layers on worn out parts for enhancing its service life. Some typical applications can be termed as excavator teeth, muller ploughs, oil expeller worms, plough shares, crushing hammers, crane wheels, scraper blades etc.

**\* CHEMICAL-MECHANICAL PROPERTIES : [TYPICAL]**

C %	Min %	Si. %	Cr. %	Hardness
2.50	1.60	0.65	2.65	(55-60 RC 2 layered Deposit )

**\* CURRENT REQUIREMENTS : AC / DC**

SIZE (MM)	3.15 X 450	4 X 450	5 X 450
CURRENT (AMPS)	100 - 130	140 - 170	170 - 200

**\* WELDING INSTRUCTIONS :-**

### HARDFACE - 600 LH

A LOW HYDROGEN AIR HARDENING TYPE HARDFACING ELECTRODE FOR MAXIMUM SERVICE LIFE.

**\* CODIFICATION :-**

IS - 7303 - 74 : E Fe 1C 314

**\* CHARACTERISTICS & APPLICATIONS :-**

HARDFACE - 600 LH is a basic coated electrode depositing air hardening weld metal which has excellent resistance to abrasion or impact or both together in worn out machine parts to obtain maximum service life. Deposited hardness on M. S. ranges from 48- 52 RC on a single layer to 55-60 RC on two layers & hence it is non machinable. Being a low hydrogen electrode, the deposits are sound & free from porosity. Excessively worn out parts can also be reclaimed by using Hardface-600 LH and buffer layers can also be layed with it. Some of the applications are Tractor Idlers & Grouzers, shovel lips, drive shaft bushing & bearing, cultivator shovels, muller plough, Bamboo Chipper Knives, Cane Cutting Knives, etc.

**\* CHEMICAL-MECHANICAL PROPERTIES : (TYPICAL)**

C %	Min %	Cr. %	V %	Hardness
0.50	0.75	6.2	0.40	( 2 layered Deposit 55-60 RC)

**\* CURRENT REQUIREMENTS : AC / DC (+)**

SIZE (MM)	3.15 X 450	4 X 450	5 X 450
CURRENT (AMPS)	100 - 130	140 - 170	170 - 200

**\* WELDING INSTRUCTION :-**

Do not use high current. Electrodes should be dry. Moist electrodes to be redried at 125°C. for one hour before use. Deposit Short & Stringer beads.

### HARDFACE - MN

ELECTRODE FOR RESURFACING OF AUSTENITIC MANGANESE STEEL.

**\* CODIFICATION :-**

IS - 7303 - 74 : E Fe Mn A

**\* CHARACTERISTICS & APPLICATIONS :-**

HARDFACE - Mn is a basic coated AC/DC electrode depositing an austenitic manganese steel weld metal. The Deposits of Hardface - Mn have excellent resistance of wear due to abrasion & high impact. Because of high Manganese recovery in weld bead. It is ideally suited for resurfacing of wornout austenitic manganese steel parts containing 12-14% Manganese. When Hardface -Mn is to be used on plain carbon steel or low alloy steels, a buffer layer of stainless steel electrodes ( such as chromicord - 18-8-5 ) should be applied & then Hardface - Mn should be used for subsequent layers. Prime uses are in Crusher Jaws, Dragline Bucket teeth , Ball mills, Railway Crossings, Cement Grinder rings, Muller tyres etc.

**\* CHEMICAL-MECHANICAL PROPERTIES : [TYPICAL]**

C %	Mn %	Si %	S %	P %	Hardness	
0.65	14.0	0.75	0.025	0.025	As deposited 170 - 230 BHN	Under work Hardening 400 - 550 BHN

**\* CURRENT REQUIREMENTS : AC / DC (+)**

SIZE (MM)	3.15 X 450	4 X 450	5 X 450
CURRENT (AMP)	90 - 120	130 - 160	160 - 210

**\* WELDING INSTRUCTION :-**

The Parent material should be free from all sorts of contamination, such as rust, dust, grease/oil or any foreign matters. Do not allow the job to be over heated. Use minimum possible current and remove the work hardened zone by grinding, if any.

## MACHINABLE & NON MACHINABLE CASE - IRON ELECTRODES

### S.E. MONEL

ELECTRODE FOR MACHINABLE WELDS ON CAST IRON

**\* CODIFICATION :-**

AWS/SFA 5.15 : E NiCu B    IS : 5511 - 91 : E - Ni Cu - 2

**\* CHARACTERISTICS & APPLICATIONS :-**

S.E. MONEL is Special Purpose Electrode with Nickel - Copper alloy core wire and a matching blend of flux covering which makes it possible to weld Cast Iron without excessive generation of heat to prevent cracks & minimise the dilution in HAZ (Heat Affected Zone) of the Casting. It gives very good bonding. Slag is easily removable and weld bead is free from porosity and Cracks. Machinability is remarkable. It is ideally suited for sound and crackfree welding on grey, Malleable Cast Iron, Joining of Sphero. Jal iron to each other or to steels or monel alloys. Resurfacing or building of worn out parts, broken section, valve bodies, sprockets, pump castings, gears, filling - up of casting defects are the areas where S.E. MONEL can easily be used.

**\* CURRENT REQUIREMENTS : AC/DC (+)**

SIZE (MM)	2.50 mm	3.15 mm	4.00 mm	5.00 mm
CURRENT (AMP)	40 - 70	60 - 110	80 - 130	120 - 180

**\* PRECAUTIONS :-**

For better results pre-heat the electrodes upto 150°C. for one hour before use. Clean the surface to be welded from all sorts of contamination. Use the current as low as possible and deposit shorter beads.

## MACHINABLE & NON MACHINABLE CASE - IRON ELECTRODES

### FeNi No. 1

NICKEL-IRON BASED ELECTRODE FOR MACHINABLE JOBS ON CAST IRON.

**\* CODIFICATION :-**

AWS/SFA 5.15 : E Ni Fe Cl

**\* CHARACTERISTICS & APPLICATIONS :-**

FeNi No.1 is a Nickel Iron alloy electrode which produces high strength, ductile and machinable weld deposit that matches with the colour of the metal being welded. FeNi No.1 is, therefore, suitable for joining and repairing of components made of cast iron. Castings which have higher level of Phosphorous can also be welded with ease using FeNi No. 1. Operations are quiet, with good fusion characteristics.

FeNi No.-1 is most suitable electrode for a variety of cast irons, e.g. grey cast iron, nodular cast iron, malleable cast iron, etc. Successful uses are, impellers, pump casings, rectification of casting defects, ingot moulds, engine heads and other machinery parts. Welding of cast iron with other steels can also be handled with FeNi No. -1

**\* TYPICAL COMPOSITION OF UNDILUTED WELD DEPOSIT: -**

C %	Mn. %	Si. %	Ni. %	Fe.
0.95	0.80	1.0	52.0	Remaining

**\* CURRENT REQUIREMENTS : AC / DC (+) OCV 50 V Min**

SIZE (MM)	2.50 X 350	3.15 X 350	4.0 X 350	5.0 X 350
CURRENT (AMP)	60 - 90	90 - 120	30 - 160	170 - 190

**\* PRECAUTIONS :-**

Always run the electrodes within the specified current range. \* Parent metal should be free from all sorts of surface contaminations, like dirt, grease rust etc. Preheating of the job between 250- 500°C. may be required depending upon the size and type of job. To avoid the post weld crack possibilities, welded job should be covered with the layer of asbestos or lime till it arrives at ambient temperature.

### CASTWELD - MN

VERSATILE ELECTRODE FOR NON MACHINABLE WELD ON CAST IRON.

**\* CODIFICATION :-**

AWS/SFA 5.15 : Est

**\* CHARACTERISTICS & APPLICATIONS :-**

CASTWELD - NM is a Graphite based welding electrode which produces non machinable welds on cast iron. It is recommended to weld either cast iron to cast iron or cast iron to mild and low alloy steels. The deposit of Castweld-NM is abrasion resistant. It can be applied for all the welding jobs on cast iron, cast steel machine parts/equipments and repair/reclamation works where machining is not required.

**\* CURRENT REQUIREMENTS : AC/DC**

SIZE (MM)	2.5 mm	3.15 mm	4.00 mm	5.00 mm
CURRENT (AMP)	60 - 90	90 - 130	130 - 150	150 - 200

**\* WELDING INSTRUCTIONS :-** Electrodes should be dry. Redry at ,100°C. for one hour before use. Heavy castings may require preheating to obtain better weld - bonding. Current should be kept as low as possible to avoid excessive heat - generation and bead should be kept short & stringer.

## CUTTING & GOUGING ELECTRODES

### CLEARCUT

COST SAVING & EASY TO USE ELECTRODE FOR CUTTING OF METALS.

**\* CHARACTERISTICS & APPLICATIONS :-**

CLEARCUT is a cutting electrode which eliminates the need to have costly implements for the cutting operations of any metal. This has been designed to cut carbon steels,, low, medium and high alloy steels, cast iron and other metals. This can be used in all welding positions.

CLEARCUT handles high current with very ease. It develops smooth, penetrating and forceful arc which helps the metal to cut at a faster speed. The cut edges of the metals can be as smooth & clean as obtained by gas- cutting.

CLEARCUT is very helpful electrode in scrap- yards where dismantling job has to be taken- up in mass.

**\* CURRENT REQUIREMENTS : AC/DC (+)**

SIZE (MM)	3.15 mm	4.00 mm	5.00 mm
CURRENT (AMP)	140 - 180	180 - 240	240 - 320

### S.E. CHAMFER

ELECTRODES FOR GOUGING & CHAMFERING APPLICATIONS.

**\* CHARACTERISTICS & APPLICATIONS :-**

S.E.CHAMFER has been designed for Chamfering & Gouging application of several type of ferrous/non ferrous metals. The Blending used to coat the core wire of electrode gives highly exothermic & penetrating arc which makes the performance of electrode as better & better. This electrode, thus, saves oxyacetylene gases & allied implements of special type of cutting torches. It's highly forceful arc removes all unwanted metals with ease and saves valuable time.

S.E. CHAMFER can easily be used for gouging/chamfering on Mild steel, Low Alloy, Stainless Steel, Castings, & several other ferrous & non ferrous metals to have a chamfered surface or to remove undesired metallic parts or nuts/bolts etc.

**\* CURRENT REQUIREMENTS : AC/DC (+)**

SIZE (MM)	2.5 mm	3.15 mm	4.00 mm	5.00 mm
CURRENT (AMP)	120 - 170	150 - 200	220 - 280	280 - 360



## COMPARITIVE CHARTE

S.No.	AWS CODE	SETH	MODI	ADOR	ESAB	D & H (S)
<b>(A) RUTILE TYPE ELECTRODES FOR MILD STEELS</b>						
1	E 6013	K - CORD	S. Super	Metalbond	Indospeed-S	Econotherme
2	E 6013	KAYNOZ - 7	S. Standard	Superbond	Ferrospeed Plus	Norma
3	E 6013	KAYNOZ- 7 - S	S. Ultra	Superbond-S	ESAB 28	Medio
4	E 6013	KAYNOZ - 7 - SS	Rekord	Superbond-SS	VORTEX - 1	Exobel
<b>(B) LOW HYDROGEN ELECTRODES FOR HIGH TENSILE STEELS</b>						
1	E 7016	KAYNOTRODE	MODI 7016	Tenalloy-16	Ferroweld-1 / ESAB 56	Indotherme
2	E 7018	KAYNOTHERME	MODI 7018	Supabase	Ferroweld-2 / ESAB 36H	Supratherme
3	E 7018-1	KAYNOTHERME - 1	MODI 7018 (Spl)	Tenalloy R (Spl)	ESAB 36H (Spl)	Supratherme (Spl)
4	E 8018-W2	KAYTHERME (SPL)	MODI COR	Ultracorten III	-----	Corotherme (Spl)
<b>(C) ELECTRODES FOR STAINLESS STEEL</b>						
1	E-308-15	308.COM	CRONI 18/8	Superinox 1A	OK 61.50	Rutox A
2	E-308L-16	308L.COM	SS 308L	Superinox 1C	OK 61.30	Rutox B
3	E-309-16	309.COM	SS309	Betinox D	OK 67.67	Cronitherme 25/12
4	E-309L-16	309L.COM	SS 309L	Betinox DL	OK 67.60	D & H 309L
5	E-316-16	316.COM	SS 316	Superinox 2A	OK 63.50	Rutox Mo
6	E-316L-16	316L.COM	SS 316L	Superinox 2C	OK 63.30	Rutox D
7	E-317-15	EssEss-Mn	MODI SS Mn		Chromoweld G	SIA
<b>(D) ELECTRODES FOR HARDFACING</b>						
1		HARDFACE-300R	Super Hard Alloy	Zedalloy 600	Duroid 650	SHC - SIX
2		HARDFACE-60 RC	Modi 600	Zedalloy 550	Duroid 650B	D & H 630H
3		HARDFACE-600 LH	Modi 650	Zedalloy 550 (LH)	Duromangan	Bor C
4		HARDFACE-MN	MoDI Mn	Zedalloy 12 Mn		SMA
<b>(E) MACHINABLE &amp; NON MACHINABLE CASE-IRON ELECTRODES</b>						
1	E Nicu B	S.E.MONEL	Modi - NICU	Cast Monel	Ferrolloid-1	D & H Monel
2	E NiFeCi	Feni No.1	Castron Feni	Ferricast	Esab 802	D & H IIII CI
3		CASTWELD - MN	LOMELT 401			
<b>(F) CUTTING &amp; GOUGING ELECTRODES</b>						
1		CLEARCUT	LOMELT 601	E - 901		Lotherm 801
2		S.E.CHAMFER	LOMELT 602	E - 902		Lotherm 802



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