

# PRODUCT CATALOGUE



***SPECTROX***  
***WELDING REDEFINED***

EFFICIENCY



QUALITY



TRANSPARENCY

# ABOUT US

**Spectrox is one of the leading companies offering quality repair and maintenance consumables with significant presence in sugar, steel and mining industries. With business operations spanning across India, Spectrox has firmly established itself as a prominent player in its chosen industry.**

**Spectrox introduced the Indian Sugar Industry to world-class welding consumables for mill roller arcing and hard facing in 1981. Since then, we continue to offer industry-leading welding consumables manufactured by global welding companies as their sole distributors in India.**

**With almost 45 years of experience in trading and marketing, we service all leading sugar plants pan-India offering quality welding electrodes and wires for the various applications. We with our channel partners are striving to bring evermore improved products in partnerships with our principals that reduce production losses, increase productivity and life of industrial components.**

**We are associated with Lincoln Electric Holdings Inc (USA) -- the world's largest manufacturer of welding consumables and equipment - - as their sole distributor for the sugar industry in India. We are also the distributors for Welding Alloys South Asia -- one of the leading welding consumable companies with major presence in sugar, steel, hydropower, cement, mining, and oil & gas sectors. Our company-branded products are manufactured by an established ISO 9001 company in India.**

**When you buy from us you are always assured of the best quality material manufactured in the state-of-the-art production units globally. The best of quality raw materials purchased by our OEM's with best production practices and standardised packaging confirming to environmental norms defines our product superiority.**



# INDEX

**1**

**Sugar Roller  
Mill Arcing  
Electrodes /  
Wires**

**2**

**Special  
Hardfacing  
Electrodes**

**3**

**Special  
Stainless  
Steel Electrodes**

**4**

**Cast  
Iron  
Electrodes**

**5**

**Low Alloy  
High Tensile  
Steel Electrodes**

**6**

**Special  
Electrodes  
for Welding  
Carbon Steels**

**7**

**Cutting &  
Gouging  
Electrodes**

**8**

**General  
Purpose  
Electrodes**

**9**

**Application  
Chart**

# Sugar Roller Mill Arcing Electrodes

MANUFACTURED BY LINCOLN ELECTRIC CO. (Brazil)

## Azucar STS 80

### CLASSIFICATIONS

AWS 2576 2358-A4

DIA 8555 E-10-55r

### DESCRIPTION

Roller wear can lose 15-25% of the cane feeding rate as the sugar mill feed rolls becomes smooth and lose their grip. **Azucar STS 80** increases the efficiency and the life of the mill by adding a rough wear resistant deposit of high alloy carbide type weldmetal which increases traction. Surface area is increased by 12% and the co-efficient of friction by 0.4. The electrode can be applied while the mill is running as well as on dry rolls, thus reducing non profitable down time. This will effectively increase the overall surface area of the roller by 16% resulting in maximizing the grip on cane and thereby reducing POL%, wear and stoppage and increase recovery by 0.25 to 1% maximum.

### APPLICATION

The hardness and resistance to impact make s **Azucar STS 80** suitable for use in a large variety of applications which include mill roller roughening, excavator bucket lips and teeth, dragline buckets, conveyor screws, rock chutes etc.

### TECHNIQUE

To be limited to maximum two layers and has to be held at an angle of 45° to 90° from the horizontal. This has to be done when the roller is moving at 3 to 4 RPM. For simple hard facing application this has to be done on down hand position at 140 to 180 Amps.

**HARDNESS** : 54-60 HRC

### RECOMMENDED AMPERAGE

For 3.25mm × 350mm -110 to 180 Amps

For 4.00mm × 450mm -130 to 180 Amps (Dry)

and 180 to 230 Amps (Wet Condition) in touch with roller

### PACKING

3.25 mm × 350 mm - 15 kgs sealed red tin packing

4.00 mm × 450 mm - 20 kgs sealed red tin packing

**LINCOLN**  
**ELECTRIC**

# Sugar Roller Mill Arcing Electrodes

MANUFACTURED BY LINCOLN ELECTRIC CO. (Brazil)

## Unimax V-80

### CLASSIFICATIONS

AWS 2576 2358 -A4

DIN 8555 E-10 -55r

### DESCRIPTION

**Unimax V-80** deposits a tough eutectic of austenite and metal carbide that can withstand impact at medium loads under abrasive conditions. Deposits are rough and globular protrusions of high alloy complex martensitic chromium carbides.

### APPLICATION

The hardness and resistance to impact makes this electrode suitable for use in a large variety of applications which include mill roll roughening, excavator bucket lips and teeth, dragline buckets, conveyor screws, rock chutes, etc.

### TECHNIQUE

The application of this electrode is best limited to two layers. It should be further noted that deposits are subject to relief checking.

### HARDNESS

54-60 HRc

### RECOMMENDED AMPERAGE

For 3.25mm × 350mm - 110 to 180Amps

For 4.00mm x 450mm -130 to 180Amps (Dry)

and 180 to 230Amps (Wet Condition) in touch with roller

### PACKING

3.25 mm × 350 mm - 15 kgs sealed tin packing

4.00 mm × 450 mm - 20 kgs sealed tin packing



# Sugar Roller Mill Arcing Electrodes

MANUFACTURED BY WELDING ALLOYS SOUTH ASIA

## SUPER ZUCAR-E

### CLASSIFICATIONS

EN 14700: E Fe14

### DESCRIPTION

High-recovery basic coated electrode, specially designed for hardfacing or "Roller Arcing" of sugar mill crusher rolls with high arc quality and weldability with little slag gives easy arc re-ignition even on wet rolls. The electrode is tough, wear-resistant deposit, alloyed with carbide-forming elements; and, resistant to friction, abrasion and corrosion. The weld deposit retains its roughness during sugar cane crushing, ensuring maximum "grip".

### APPLICATION

**SUPER ZUCAR -E** has been specially developed for "roller arcing" sugar mill rolls during "pre-arcing" or whilst crushing. Hemispherical spot welds give excellent grip on materials such as sugar cane. Also suitable for hardfacing crusher hammers and other crushing equipment, augers, conveyor screws and earthmoving components such as bucket lips and ground engaging tools. It deposits a tough, wear-resistant alloy which combats wear on components subjected to heavy abrasion and moderate to heavy impacts.

### TECHNIQUE

EN ISO 6947: All positions except overhead

ASME IX:

**HARDNESS** : 60 HRc as undiluted

### PACKING

3.15 mm x 350 mm - 5kgs vacuum sealed plastic box

4.00 mm x 350 mm - 5kgs vacuum sealed plastic box

5kgs x 4 = 20kgs corrugated carton box

# Sugar Roller Mill Arcing Wire

MANUFACTURED BY LINCOLN ELECTRIC CO. (Brazil)

## Lincoln-STS TUB 1001 M OA

### DESCRIPTION

Metal Cored Wire designed to be used without shielding gas (open arc) developed to deposit in transfer, an alloy of Chromium Carbides in an austenitic matrix of high hardness resistant to wear by abrasion in a humid environment, providing excellent performance during sugarcane milling. This filler metal is used to coat milling jackets in the sugar - alcohol Industry by spraying, providing better bagasse drag and increased yield.

### APPLICATION

**Lincoln-STS TUB 1001 M OA** offers an excellent performance using a conventional torch for dry splattering (off-season) applicable on power source machine for open arc with changeable nozzle size that responds adequately to the demands of the environment of the process of spraying.

### TECHNIQUE

This filler metal does not require shielding gas (open arc) recommended for semi-automatic, automatic and robotic applications using a constant voltage power source (CV) direct current and reverse polarity (DCEP). The best performance is achieved using power source welding equipment.

**HARDNESS** : 53-60 HRc as welded

Wire Diameters (mm)	Welding Position	Amperage (A)	Voltage (V)	CTWD mm
2.4	Flat and Horizontal	200-400	27-36	25 to 35
2.8	Flat and Horizontal	250-450	27-36	

Diameters / Package		
2.4	12.5 kg SPOOL	100 or 250 kg DRUM
2.8	12.5 kg SPOOL	100 or 250 kg DRUM





# Sugar Roller Mill Arcing Wire

MANUFACTURED BY WELDING ALLOYS SOUTH ASIA

## HARDFACE ROLLARC-O

### CLASSIFICATIONS

EN 14700 TZFe14 50 GR

DIN 8555 MF 10 GF 50 GR

### DESCRIPTION

It is an "open arc" self-shielded tubular wire designed for cane sugar rollers arcing to increase the surface roughness (gripping action) due to the high density and shape of the spatters. The globules deposit is resistant to high abrasion and semi corrosion. Outstanding bonding onto lamellar graphite grey cast iron. Designed for inter-season (preventive/dry arcing) and in operation (curative/wet arcing) applications. The primary carbides and eutectic carbides of the M7C3 type are present in the matrix.

### APPLICATION

**HARDFACE ROLLARC-O** can be used for arcing of groove flanks on cane sugar rollers and arcing of groove tips. Other applications are ore sintering, crushing, riddling, blast furnace hoppers and throats, screw conveyors, manufacture of cement and ceramics.

### TECHNIQUE

This filler metal does not require shielding gas (open arc) recommended for semi-automatic, automatic and robotic applications using a constant voltage power source (CV) direct current and reverse polarity (DCEP). The best performance is achieved using power source welding equipment.

**HARDNESS:** 46-54 HRc

### CONDITIONS OF USE

Current type	Shielding
DC (+) / DC (-)	Self-shielded

### OPERATING CONDITIONS

Diameter [mm]	Amperage [A] Range	Voltage [V] Range	Stick-out [mm] Range
2.8	250 – 450	22 – 28	25 – 40

### WELDING POSITIONS

Flank arcing: position "16h"; 45° angle torch  
Tip arcing: position "12h"; 22.5° angle torch

### PACKAGING

Diameter	2.4 mm
Standard packaging [EN ISO 544]	Spool : BS 300
Weight	15 kg



# Sugar Roller Mill Arcing Wire

MANUFACTURED BY WELDING ALLOYS SOUTH ASIA

## HARDFACE MAXEXTRACT

### CLASSIFICATIONS

EN 14700: T Fe15

### DESCRIPTION

This is a tubular wire for self-shielded metal arc hardfacing with high chromium cast iron deposit containing a high proportion of hard primary chromium carbides in a tough austenitic matrix. The deposit is suitable for hardfacing components subject to extremely severe abrasive wear and moderate impact.

### APPLICATION

**HARDFACE MAXEXTRACT** is used for hardfacing components undergoing wear by earth, sand and abrasives. In the sugar industry it is has excellent deposit in tear drop technology and displays controlled spatters on the grinding roll.

### TECHNIQUE

This filler metal does not require shielding gas (open arc) recommended for semi-automatic, automatic and robotic applications using a constant voltage power source (CV) direct current and reverse polarity (DCEP). The best performance is achieved using power source welding equipment.

**HARDNESS:** 58-64 HRc

### CONDITIONS OF USE

Current type	Protection
DC+	Self-shielded

### OPERATING CONDITIONS

Diameter [mm]	Wire feed speed [m/min]		Intensity [A]		Voltage [V]		Stick-out [mm]	
	Range	Optimum	Range	Optimum	Range	Optimum	Range	Optimum
1.2	3.7 - 18.0	9.0	100 - 250	170	21 - 28	26	10 - 25	20
1.6	1.8 - 12.0	8.0	160 - 320	250	24 - 30	28	10 - 25	25
2.0	2.0 - 8.0	6.0	200 - 400	260	25 - 32	29	20 - 30	30
2.4	2.0 - 8.0	5.0	250 - 450	350	26 - 32	30	25 - 30	30
2.8	1.5 - 7.0	4.5	250 - 450	400	26 - 32	30	25 - 30	30
3.2	1.5 - 6.0	4.0	250 - 550	480	26 - 32	31	25 - 30	30

Recovery: 90 %

### WELDING POSITIONS

Flat, half up, half down

### PACKAGING

Diameter	2.4 mm
Standard packaging	EN ISO 544: BS 300 spool
Weight	15 kg





# Special Hardfacing Electrodes

MANUFACTURED BY LINCOLN ELECTRIC CO. (Brazil)

## Azucar STS 100

### CLASSIFICATIONS

AWS 2576 2355-A4

DIN 8555 E-10-55A

### DESCRIPTION

This is a chromium carbide hardfacing electrode for use in the downhand position only. The weld deposits are unmachinable but can be ground. The deposited metal is highly resistant to abrasive wear with moderate to high impact and is recommended for special hard facing applications on carbon steels; 14% manganese steels and cast iron. Can be used for hardfacing components subject to high temperature upto 600°C.

### APPLICATION

In sugar mills **Azucar STS 100** can be used for the hardfacing of cane knives fibrizor hammers shredder hammers, trash plates, scrapper plates, screw conveyor, arm grabs, excavator bucket lips and teeth and TRPF rollers. This electrode also has many applications in the Steel, Power, Cement, Paper and Mining Industries.

### TECHNIQUE

All the above components can be hardfaced after removing the old weld deposit if any by grinding. The welding procedure should follow from top leading to end using criss cross welding pattern with maximum two layers to eliminate relief checks.

**HARDNESS** : 58-64 HRc

### RECOMMENDED AMPERAGE

For 3.25 mm × 350 mm - 100 to 130 Amps

For 4.00 mm × 450 mm - 140 to 180 Amps

### PACKING

3.25 mm X 350 mm - 15 kgs sealed red tin packing

4.00 mm × 450 mm - 20 kgs sealed red tin packing



# Special Hardfacing Electrodes

MANUFACTURED BY LINCOLN ELECTRIC CO. (Brazil)

## Lincoln EH CR 70

### DESCRIPTION

This filler metal provides high resistance to corrosion / abrasion, even in parts exposed to high temperatures. In the sugar and alcohol industry where, maximum efficiency against wear is required. The deposits are an alloy of chromium boride as it contains 2% boron.

### APPLICATION

Two layers of **Lincoln EH CR 70** is the maximum recommended to be applied using this stick electrode. Best used applications like scrapper plates, hammers etc. This consumable is also indicated for coating and repairing ore buckets, sinter breakers, blast furnace feed chutes, screw conveyors.

### TECHNIQUE

Reverse polarity (DC+) is recommended and this filler metal welds in flat and horizontal positions. This product is not recommended for applications where impact is required.

**HARDNESS (HRc) : 60-67 HRc**

### Recommended Welding Parameters

Diameters (mm)	Welding Position	Amperage (A)	Voltage (V)
2.25	Flat Horizontal	180-200	20-26
4.00	Flat Horizontal	210-260	20-28
5.00	Flat Horizontal	220-310	24-31

### PACKING

4.00 mmx450mm - 20kgs sealed red tin packing



# Special Hardfacing Electrodes

MANUFACTURED BY WELDING ALLOYS

## WA HARDFACE HC TE

**Tubular SMAW Electrode**

### CLASSIFICATION

EN 14700: T Fe1,5

### DESCRIPTION

- High chromium cast iron for hardfacing components subjected to extremely severe abrasive wear and moderate impact.
- This electrode gives a single layer hardness of 50 HRC
- The deposit contains a high proportion of hard primary chromium carbides in a tough austenitic matrix.

### APPLICATIONS

Typical applications include palm oil extruders, screw conveyors, gyratory crusher cones and mantles, dredge pump bodies, mining and earth moving equipment, agricultural equipment, wear plates, sugar mill crusher hammers, drag line components, quarry and sand handling equipment, brick manufacturing equipment etc.

### TYPICAL ALL-WELD METAL ANALYSIS

C	Mn	Cr
5.5	1.5	30

Structure: chromium carbides in an austenitic matrix.

### TYPICAL ALL-WELD METAL MECHANICAL PROPERTIES

All-weld metal: 61 HRC

### CONDITIONS OF USE

Electrode Ø x L (mm)	6.0 x 450	8.00 x 450	12.0 x 450
Current (A)	85 -135	130 -190	200 - 430

Polarity: AC or DC

### WELDING POSITIONS

Flat, half up and half down.

### PACKAGING

Electrode Ø x L (mm)	Quantity	Weight [kg]
6.0 x 450	~ 61	4 x 5.0
8.0 x 450	~ 36	4 x 5.0
12.0 x 450	~ 17	4 x 5.0

Other packaging and other sizes: please consult us

### TIP COLOUR IDENTIFICATION

- Blue





## SPECTROX MAXHARD 350

### CLASSIFICATIONS

IS 7303 EFe -B314

### DESCRIPTION

It is a medium-heavy coated rutile, air hardening type electrode for hardfacing on mild steel, carbon steel and low alloy steels.

### APPLICATION

**SPECTROX MAXHARD 350** is used for shear blades, cold-punching dies, conveyor parts, crawler parts, axle, sprockets, latch bars, pulleys, brake shoes, large cog wheels and other steel castings, where resistance to abrasion combined with toughness is required.

### TECHNIQUE

This electrode is suitable for positional welding and recommended three layer deposit. This should be re-dried at 120°C for half an hour prior to use for maximum efficiency.

### HARDNESS

38 - 47 HRc (3 layers)

### RECOMMENDED AMPERAGE

4.00 mm × 350 mm - 120 to 160 Amps  
AC/DC<sup>+</sup>

### PACKING

4.00mm × 350mm - 5kgs sealed plastic box  
5kgs x 4 = 20kgs corrugated carton box

## SPECTROX MAXHARD 650

### CLASSIFICATIONS

DIN 8555 E6-UM-606

### DESCRIPTION

A medium heavy coated rutile type electrode for hard facing on mild steel, carbon steel and low alloy steels, where approx 57 HRc is required.

### APPLICATION

**SPECTROX MAXHARD 650** is suitable for abrasion, impact or a combination of both, such as metal cutting and forming tools, hot and cold punching dies, drill bits, shears and croppers, oil expeller, crusher hammers, cane and bamboo cutting knives, crane wheels, conveyor buckets etc.

### TECHNIQUE

This electrode is suitable for positional welding and recommended three layer deposit. This should be re-dried at 120°C for half an hour prior to use for maximum efficiency.

### HARDNESS

57-61 HRc (3 layers)

### RECOMMENDED AMPERAGE

4.00 mm × 350 mm -120 to 160 Amps  
AC/DC<sup>+</sup>

### PACKING

4.00mm × 350mm - 5kgs sealed plastic box  
5kgs x 4 = 20kgs corrugated carton box



## SPECTROX MAXHARD 750

### CLASSIFICATIONS

ASW 2576 1130 - A4

DIN 8555 E-1-300

### DESCRIPTION

It is high alloy composition electrode for excellent resistance to abrasion.

The bead has smooth appearance and takes high polish during service.

This highly polished surface provides a very low coefficient of friction. The electrode is ideal for steel parts requiring resistance to severe abrasive wear.

### APPLICATION

The application of **SPECTROX MAXHARD 750** are extensive in repairs and maintenance of earth moving machinery and other equipment used in construction, mining, cement and agriculture industries, in coal and ash handling plants in thermal power plants etc. The deposit is ideal to combat severe abrasion encountered in bucket lips, pads and tooth portion, fan blades, plow shears, scrapers, road rippers, industrial knife.

### TECHNIQUE

Clean the area to be welded. Remove fatigued or damaged metal. For hardenable steels use a buffer layer of **SPECTROX DS 312**. A buffer layer of **SPECTROX CI 55** may be beneficial when depositing on cast irons. Preheat the casting if necessary. Avoid using more than two layers.

### HARDNESS

58-62 HRc as deposited

### RECOMMENDED AMPERAGE

4.00 mm × 350 mm - 130 to 150 Amps

AC/DC<sup>+</sup>

### PACKING

4.00mm × 350mm - 5kgs sealed plastic box

5kgs x 4 = 20kgs corrugated carton box

## SPECTROX MAXHARD 850

### DESCRIPTION

This is a tubular wire for self-shielded metal arc hardfacing with high chromium cast iron deposit containing a high proportion of hard primary chromium carbides in a tough austenitic matrix. The deposit is suitable for hardfacing components subject to extremely severe abrasive wear and moderate impact. The deposit is suitable for hardfacing components subject to extremely severe abrasive wear and moderate impact.

### APPLICATION

Application of **SPECTROX MAXHARD 850** are extensive where high pressure, abrasion or metal to metal wear is involved like refractory press screw, brick press screw, conveyor screw, dozer blades, bucket teeth and lips, tube mill and rolling mill guides, wire straightening rolls and dies, pug mill knife, auger blades, boring tools, cement die rings.

### TECHNIQUE

Clean area by grinding to be welded. Remove fatigued, cracked, deformed material. For medium or high tensile steels, use buffer layer of **SPECTROX LH 7018**. For high carbon or air hardenable steels, use buffer layer of **SPECTROX DS 312**. Avoid using more than two layers.

### HARDNESS

55-60 HRc

### RECOMMENDED AMPERAGE

4.00 mm x 350 mm 130 to 170 Amps  
AC/DC<sup>+</sup>

### PACKING

4.00 mm x 350 mm - 5kgs sealed plastic box  
5kgs x 4 = 20kgs corrugated carton box



## SPECTROX DS 312

### DESCRIPTION

It is low heat input electrode for joining of unknown and dissimilar steels. The deposit is of Machinable type and controlled duplex grain structure provides very high resistance to cracking. The weld chemistry makes the deposit very tough, ductile and wear resistant.

### APPLICATION

**SPECTROX DS 312** is recommended for joining and repairs of very critical components of mining and earth moving equipment parts including automobile springs, gear box main shafts, key ways of shafts, joining of wear plates, repair of buckets of various capacities. Also useful for joining of high carbon, low and high alloyed steels, and high speed steels, tool steels and manganese steels etc.

### TECHNIQUE

Remove any visible cracks and damaged material. Use short arc and employ lowest possible current. Employ short stringer beads using skip and staggered welding sequence. Chip slag between passes and peen the deposit when it is hot.

### MECHANICAL PROPERTIES

Tensile Strength : 80-85Kgf/mm<sup>2</sup>

### HARDNESS

19 Hrc

### RECOMMENDED AMPERAGE

3.15mm × 350mm – 55-95 Amps

4.00mm x 350mm – 95-135 Amps

AC/DC<sup>+</sup>

### PACKING

3.15 mm x 350 mm - 5kgs vacuum packed sealed plastic box

4.00mm × 350mm - 5kgs vacuum packed sealed plastic box

5kgs x 4 = 20kgs corrugated carton box



## SPECTROX SS 308L

### CLASSIFICATIONS

AWS A/SFA – 5.4 E 308L-16

IS 5206/E19.9LR26

### DESCRIPTION

A rutile basic coated all position electrode. Excellent slag removal, smooth and uniform bead and easy striking are the characteristics. Extra low carbon content gives added resistance to inter-granular corrosion.

### APPLICATION

**SPECTROX SS 308L** is for welding of Cr-Ni steels of AISI grades 301, 302, 304, 308 equipment used in brewing equipment; steam piping; vacuum pump parts; chemical processing; dairy & food industry; textile drying equipment; and, pharmaceutical processing.

### TECHNIQUE

Austenitic materials are generally insensitive to the presence of hydrogen; however, since moisture in the electrode coating can lead to porosity in the weld metal. It is recommended that the electrodes be rebaked/ re-dried at 300°C for 1-2 hours prior to use.

### MECHANICAL PROPERTIES

Tensile Strength : 520 N/mm<sup>2</sup> (min)

Elongation: 35-40% (30 min)

### RECOMMENDED AMPERAGE

3.15mm x 350mm – 70-105 Amps

4.00mm x 350mm – 90-145 Amps

AC/DC<sup>+</sup>

### PACKING

3.15 mm x 350 mm - 5kgs vacuum packed sealed plastic box

4.00mm x 350mm - 5kgs vacuum packed sealed plastic box

5kgs x 4 = 20kgs corrugated carton box

## SPECTROX SS 309L

### CLASSIFICATIONS

AWS A/SFA – 5.4 E309-16

IS 5206 E23.12L R26

### DESCRIPTION

A rutile basic coated all position electrode giving 25/12, Cr-Ni deposit which has excellent corrosion and oxidation resistance in continuous service up to 1100°C. For welding of corrosion and heat resistant Cr-Ni steels to themselves or to mild steel.

### APPLICATION

The weld deposit of **SPECTROX SS 309L** offers higher temperature oxidation resistance than 18/8 Cr-Ni grade stainless steel. Useful in welding of clad steel. This is good for high temperature applications like heat exchangers, heat treatment trays and boxes, vats, tanks etc. This has low spatter loss with high strength and elongation properties.

### TECHNIQUE

Austenitic materials are generally insensitive to the presence of hydrogen; however, since moisture in the electrode coating can lead to porosity in the weld metal. It is recommended that the electrodes be rebaked/ re-dried at 300°C for 1-2 hours prior to use.

### MECHANICAL PROPERTIES

Tensile Strength : 520 N/mm<sup>2</sup> (min)

Elongation : 30-35% (30 min)

### RECOMMENDED AMPERAGE

3.15mm x 350mm – 70-105 Amps

4.00mm x 350mm – 120-140 Amps

AC/DC<sup>+</sup>

### PACKING

3.15 mm x 350 mm - 5kgs vacuum packed sealed plastic box

4.00mm x 350mm - 5kgs vacuum packed sealed plastic box

5kgs x 4 = 20kgs corrugated carton box



## SPECTROX RJ 022

### CLASSIFICATIONS

AWS A/SFA – 5.4  
E309L Mo-16  
IS 5206 / E23.12.2LR26

### DESCRIPTION

A rutile basic coated all position electrode giving 25/12/2.5 Mo weld deposit. It gives a smooth arc, easy removal of slag and uniform bead. Excellent resistance to chemical corrosion and heat.

### APPLICATION

**SPECTROX RJ 022** is used for welding of corrosion and heat resistant Cr-Ni steels to themselves or to mild steel. The electrode is useful in welding clad steel and for building corrosion heat resistant layer on mild or low alloy steels.

### TECHNIQUE

Austenitic materials are generally insensitive to the presence of hydrogen; however, since moisture in the electrode coating can lead to porosity in the weld metal. It is recommended that the electrodes be rebaked/ re-dried at 300°C for 1-2 hours prior to use.

### MECHANICAL PROPERTIES

Tensile Strength : 520 N/mm<sup>2</sup> (min)  
Elongation % : 30 min

### PACKING

3.15 mm x 350 mm - 5kgs packed sealed plastic box  
4.00mm x 350mm - 5kgs packed sealed plastic box  
5kgs x 4 = 20kgs corrugated carton box

## SPECTROX OL 027

### DESCRIPTION

The electrode has a specially formulated, which gives smooth, dense, high strength, porosity free deposit even on old and dirty cast irons. It is an all position electrode, which can be used on all types of cast iron. The deposit, however cannot be machined. The deposit has excellent colour match with parent metal and match evenly with the casting.

### APPLICATION

**SPECTROX OL 027** can be used for repairs of all types of cast iron where machinability of deposit is not an essential requirement. It can be used for welding machine bases gears cams, valve bodies, foundry castings, non Machinable motor or generator housing, building up worn out cast iron components subjected to abrasive wear. The electrode is ideal for joining cast iron to steel.

### TECHNIQUE

Clean the area to be welded of dirt, grease, oil, scale or oxide. Whenever possible for best results, preheat the casting to about 150°C. Maintain the inter-pass temperature to the same level. Use short arc and stringer bead technique to minimize localized heating of casting. Peen the deposit when hot to minimize shrinkage stresses. Use lowest possible current.

### MECHANICAL PROPERTIES

Tensile Strength : 38-42 Kgf/mm<sup>2</sup> (min)

### HARDNESS

51-54 Hrc

### RECOMMENDED AMPERAGE

3.15mm x 350mm – 90-130 Amps

4.00mm x 350mm – 110-150 Amps

AC/DC<sup>+</sup>

### PACKING

3.15 mm x 350 mm - 5kgs sealed plastic box

4.00mm x 350mm - 5kgs sealed plastic box

5kgs x 4 = 20kgs corrugated carton box



## SPECTROX CI 55

### DESCRIPTION

An ideal electrode for welding of all weldable cast irons. It is also useful on casting with relatively high phosphorous. The electrode welds with a smooth, stable arc giving a flat, dense and crack free deposit. This electrode yields bond strength more than that of **SPECTROX CI 95**.

### APPLICATION

The superior bond strength and crack resistance makes **SPECTROX CI 55** useful for heavy work pieces or where higher stresses occur like machine frames, lathe beds, cast iron dies, valve bodies, foundry defects, pump casing, differential housing etc. It is also used for joining of ferritic and pearlitic high strength irons such as malleable mechanite and ductile irons and also for welding these types to steel.

### TECHNIQUE

The surfaces to be welded should be free from grease, oil dirt and paint. Avoid localised heat input by operating at lowest possible current, stringer beads and skip weld technique. Maintain low inter-pass temperature.

### MECHANICAL PROPERTIES

Tensile Strength : 35-40 Kgf/mm<sup>2</sup> (min)

Elongation % : 10%

### HARDNESS

10-17 HRc

### RECOMMENDED AMPERAGE

3.15mm x 350mm – 50-100 Amps

4.00 mm x 350 mm – 80 -130 Amps

AC/DC<sup>+</sup>

### PACKING

3.15 mm x 350 mm – 5kgs sealed plastic box

4.00 mm x 350 mm – 5kgs sealed plastic box

5kgs x 4 = 20kgs corrugated carton box



## SPECTROX CI 95

### DESCRIPTION

An ideal electrode for cold welding of cast iron. It deposits a machinable weld which bonds to cast iron in a smooth and flat way. The deposit has very little mixing with base metal. Since the electrode operates on low voltage and current, the heat input to the base metal is at minimum. When properly made the welds are free from porosity and cracks.

### APPLICATION

**SPECTROX CI 95** is an excellent electrode for cold welding of grey cast iron to itself or to steel. Also suitable for surfacing cast iron parts subjected to erosion, corrosion and high temperatures. It can be used for repairing intricate cast iron parts, water pump housing, electric motor bodies, machine frames, cylinder blocks, gears, pulleys, sugar mill rollers, glass moulds, cast iron dies, coupling, oil sump etc.

### TECHNIQUE

Clean area to be welded of grease, oil and dirt. Weld with short arc using lowest possible current for good dense deposit. Direct the arc on weld pool with correct manipulation. The molten pool is brought forward over the surface of cast iron in a manner resembling to brazing. Peen the hot bead to reduce shrinkage stresses.

### MECHANICAL PROPERTIES

Tensile Strength : 35-40 Kgf/mm<sup>2</sup> (min)

Elongation % : 15%

### HARDNESS

8-10 HRc

### RECOMMENDED AMPERAGE

3.15mm × 350 mm – 50-100 Amps

4.00 mm × 350 mm – 80-130 Amps

AC/DC<sup>+</sup>

### PACKING

3.15 mm x 350 mm – 5kgs sealed plastic box

4.00 mm × 350 mm – 5kgs sealed plastic box

5kgs x 4 = 20kgs corrugated carton box

## SPECTROX MAXPULSE 9018

### CLASSIFICATIONS

E 9018 -B3

### DESCRIPTION

A medium heavy coated, low hydrogen, iron powder type, all position electrode with weld deposit of approximately 2.30% Cr and 1% Mo steel for welding 2Cr/1Mo and similar creep resistant steels.

### APPLICATION

**SPECTROX MAXPULSE 9018** is suitable in welding of flange, forged fittings, valves, seamless tubes and pipes for high temperature applications in power plants, refinery, petro chemical and fertilizer units and P22 type of steels and dredgers.

### TECHNIQUE

The weld deposit is of radiographic quality and creep resistant up to 600°C. Re-drying temperature is 300°C for 1 hr.

### MECHANICAL PROPERTIES OF ALL WELD METAL

Tensile Strength (N/mm<sup>2</sup>) : 620

Yield Strength (N/mm<sup>2</sup>) : 530 Min

Elongation % : 17 (min)

CVN IMPACT@+27 : 50-100 J min

AC/DC<sup>+</sup>

### PACKING

3.15 mm x 350 mm - 5kgs sealed plastic box

4.00mm x 350mm - 5kgs sealed plastic box

5kgs x 4 = 20kgs corrugated carton box



## SPECTROX 660 LH

### DESCRIPTION

It is a high deposition efficiency welding electrode, giving dense and crack free deposit, which has excellent X-ray quality. Due to higher strength and ductility of deposit toughness is high giving excellent impact resistance at ambient and sub-ambient temperature.

### APPLICATION

**SPECTROX 660 LH** is an excellent electrode for joining and building up of low and medium carbon steels. Ideal for dissimilar sections, restrained joints, problematic steels having high sulphur, phosphorous, lead etc., plant and equipment subject to dynamic loading and impact, steel casting and for depositing buffer layers before hard surfacing. Also ideal for crane boom, dumper chassis, cast steel, chassis, swing drum, gear teeth, idler, sprocket, shovel rack pinion etc..

### TECHNIQUE

Clean area to be welded. For good results, dry electrodes at 250C. °  
Preheating may prove beneficial for repairs of oil or grease soaked components or welding heavy sections in cast steels.

### MECHANICAL PROPERTIES

Tensile Strength (N/mm<sup>2</sup>) : 55-60  
Elongation (Typical) % : - 30%

### RECOMMENDED AMPERAGE

3.15mm x 350mm – 100-140 Amps  
4.00mm x 350mm – 120-160 Amps

### PACKING

3.15 mm x 350 mm - 5kgs sealed plastic box  
4.00mm x 350mm - 5kgs sealed plastic box  
5kgs x 4 = 20kgs corrugated carton box

## SPECTROX TRENCHCUT

### DESCRIPTION

A medium heavy coated electrode for cutting and piercing ferrous and non-ferrous metals.

### APPLICATION

**SPECTROX TRENCHCUT** is useful on carbon steels, low alloy steels, stainless steels, cast irons and non-ferrous alloys. Hold the electrodes at 45° to the job and use sawing motion to cut.

**WELDING CURRENT : AC/DC**

### PACKING

3.15 mm x 350 mm - 5kgs sealed plastic box  
4.00mm x 350mm - 5kgs sealed plastic box  
5kgs x 4 = 20kgs corrugated carton box

## SPECTROX MAXGOUGE

### DESCRIPTION

The electrode has a special coating to produce high blowing effects and a hot exothermic arc to remove metal efficiently.

### APPLICATION

**SPECTROX MAXGOUGE** is useful in chamfering gouging and grooving all metals commonly used in industry. It is useful for gouging out old/defective weldmetal, bevelling cracks, removing unwanted sections, flashes, risers etc.

**WELDING CURRENT : AC/DC**

### PACKING

3.15 mm x 350 mm - 5kgs sealed plastic box  
4.00mm x 350mm - 5kgs sealed plastic box  
5kgs x 4 = 20kgs corrugated carton box



## SPECTROX GARUDA 6013

### CLASSIFICATIONS

IS 814 ER 4224X

AWS A5.1 E-6013

### DESCRIPTION

It is an all position medium coated mild steel electrode of outstanding quality permitting use of low open circuit voltage, excellent welding performance and mechanical properties with radiographic soundness are easily achievable.

### APPLICATION

**SPECTROX GARUDA 6013** is suitable for all types of mild steel structures, plant machinery pipes and dredgers.

### MECHANICAL PROPERTIES

Tensile Strength (N/mm<sup>2</sup>) : 410 - 510

Yield Strength (N/mm<sup>2</sup>) : 330 Min

Elongation (L-5d) % : 22 min

CVN IMPACT@0° : 47 J min

### WELDING CURRENT : DC+/AC50V

3.15mm x 350 mm – 100-140 Amps

### PACKING

3.15 mm x 350 mm – 2.5kgs corrugated carton

## SPECTROX 7018LH

### CLASSIFICATIONS

IS 814 EB5426H<sub>3</sub>JX

AWS A/SFA – 5.1E-7018

DIN 191 3 E5144B1026

### DESCRIPTION

A basic coated low hydrogen all position electrode with metal recovery of 110% approximately. The weld deposit has good toughness and excellent X-ray quality. It gives excellent arc stability, smooth arc and is very easy in slag removal.

### APPLICATION

**SPECTROX 7018LH** is used in welding boiler and pressure vessels, penstocks, storage tanks, bridges, heavy structures subjected to dynamic loading and under restrained conditions. Welding of mild steel, pressure vessel, ship plates boilers, penstocks and all jobs involving static and dynamic loading. Also welding of heavy sections, free cutting steels etc.

### MECHANICAL PROPERTIES

Tensile Strength (N/mm<sup>2</sup>) - 550 - 650

Yield Strength (N/mm<sup>2</sup>) - 430-540

Elongation % : 24-28%

OCVN IMPACT@ -30°C : 50-60 J

AC/DC<sup>+</sup>

### WELDING CURRENT

3.15mm x 350mm – 100-140 Amps

### PACKING

3.15 mm x 350 mm – 2.5kgs corrugated carton



# Application Chart

SI	Product	Application	Base Metal	Wear / Damage	Packaging Qty
1	SPECTROX MAXHARD 350	Cane Grab	Cast Steel	Abrasion + Impact	5Kgs plastic box in 20kgs corrugated box
2	SPECTROX MAXHARD 350	Cane Pusher Arms	Med. Carbon Steel	Impact + Abrasion	5Kgs plastic box in 20kgs corrugated box
3	SPECTROX MAXHARD 350	Lateral Carrier Gear	Alloy Steel	Abrasion	5Kgs plastic box in 20kgs corrugated box
4	SPECTROX MAXHARD 350	Cane Sprocket	Stainless Steel	Friction + Compression	5Kgs plastic box in 20kgs corrugated box
5	SPECTROX MAXHARD 350, HF AP – O	Crown Pinion	Cast Steel	Friction + Compression	5Kgs plastic box in 20kgs corrugated box
6	SPECTROX MAXHARD 350	Trash Beam	Alloy Steel	Corrosion	5Kgs plastic box in 20kgs corrugated box
7	SPECTROX MAXHARD 350	Inter Carrier Shaft	Steel	Friction	5Kgs plastic box in 20kgs corrugated box
8	SPECTROX MAXHARD 350	Coupling*	Cast Steel / Cast Iron	Friction + Impact	5Kgs plastic box in 20kgs corrugated box
9	SPECTROX MAXHARD 350	Roller Square Ends*	Cast Steel	Friction + Impact	5Kgs plastic box in 20kgs corrugated box
10	SPECTROX MAXHARD 350	Centrifuge Shaft *	Alloy Steel	Friction	5Kgs plastic box in 20kgs corrugated box
11	SPECTROX MAXHARD 350	Mill Gear	Alloy Steel	Friction + Abrasion	5Kgs plastic box in 20kgs corrugated box
12	SPECTROX MAXHARD 350	Carrier Runner*	EN8, ENg(F)	Friction + Corrosion	5Kgs plastic box in 20kgs corrugated box
13	SPECTROX MAXHARD 650	Shredder Stock Bar	Manganese Steel	Abrasion + Impact	5Kgs plastic box in 20kgs corrugated box
14	SPECTROX MAXHARD 650	Tail Bar*	Cast Steel	Friction + Impact	5Kgs plastic box in 20kgs corrugated box
15	SPECTROX MAXHARD 650	Pump Impeller	Steel	Erosion	5Kgs plastic box in 20kgs corrugated box
16	Azucar STS 100 / SPECTROX MAXHARD 650	I.D. Fan	Steel	Erosion	5Kgs plastic box in 20kgs corrugated box
17	SPECTROX MAXHARD 650	Trash Plate	Cast Steels	Erosion + Corrosion	5Kgs plastic box in 20kgs corrugated box
18	SPECTROX MAXHARD 650	C I scrapper plate hard facing	Cast Iron	Erosion + Corrosion	5Kgs plastic box in 20kgs corrugated box
19	SPECTROX MAXHARD 650	Roller Square end*	EN8, ENg(F)	Erosion + Corrosion	5Kgs plastic box in 20kgs corrugated box
20	SPECTROX MAXHARD 650	Tail Bar Coupling*	EN8, ENg(F)	Friction + Impact	5Kgs plastic box in 20kgs corrugated box
21	SPECTROX MAXHARD 650	Cane Carrier	EN8, ENg(F)	Corrosion + Impact	5Kgs plastic box in 20kgs corrugated box
22	SPECTROX MAXHARD 650	Rack Carrier	EN8, ENg(F)	Friction + Mild Corrosion	5Kgs plastic box in 20kgs corrugated box
23	SPECTROX SS 309L	Centrifuge Drum	Cast Steels	Breakage	5Kgs plastic box in 20kgs corrugated box
24	SPECTROX SS 309L	Pump Rotor (Mud)	Cast Steels	Erosion	5Kgs plastic box in 20kgs corrugated box
25	SPECTROX SS 309L	Mill Housing	Cast Steels	Cracks	5Kgs plastic box in 20kgs corrugated box
27	SPECTROX SS 309L	Static Collar	Cast Steels	Corrosion Breaking	5Kgs plastic box in 20kgs corrugated box
28	SPECTROX CI 95	Geared Pump Rotor	Cast Iron	Breakage	5Kgs plastic box in 20kgs corrugated box
29	SPECTROX CI 95	Pump Body	Cast Iron	Breakage	5Kgs plastic box in 20kgs corrugated box
30	SPECTROX CI 95	Electric Motor Housing & End Shield	Cast Iron	Breakage	5Kgs plastic box in 20kgs corrugated box

# Application Chart

SI	Product	Application	Base Metal	Wear / Damage	Packaging Qty
31	SPECTROX CI 95	Mill Roller	Cast Iron	Breakage	5Kgs plastic box in 20kgs corrugated box
32	SPECTROX CI 95	Roller Teeth Building	Cast Iron	Breakage	5Kgs plastic box in 20kgs corrugated box
33	SPECTROX CI 95	CI Coupling	Cast Iron	Breakage	5Kgs plastic box in 20kgs corrugated box
34	Azucar STS 100 4mm / 3.25 mm, LN EH CR 70, HF TIC - O	Cane Knives	Carbon Steel	Impact + Corrosion	20kgs / 15Kgs sealed tin box (4mm x 450mm / 3.25mm x 350mm)
35	Azucar STS 100 4mm / 3.25 mm, LN EH CR 70, HF HC – O, HF TIC - O	Fibrizer Hammer*	Alloy Steel	Corrosion + Impact + Abrasion	20kgs / 15Kgs sealed tin box (4mm x 450mm / 3.25mm x 350mm)
36	Azucar STS 100 4mm / 3.25 mm, LN EH CR 70, HF HC – O, HF TIC - O	Shredder Hammer	Alloy Steel	Corrosion + Impact + Abrasion	20kgs / 15Kgs sealed tin box (4mm x 450mm / 3.25mm x 350mm)
37	Azucar STS 100 4mm / 3.25 mm, LN EH CR 70, HF HC – O	Anvil Plate*	Cast Steel	Impact + Mild Corrosion	20kgs / 15Kgs sealed tin box (4mm x 450mm / 3.25mm x 350mm)
38	Azucar STS 100 4mm / 3.25 mm, LN EH CR 70/ SPECTROX MAXHARD 850	Trash Plate	Cast Steel	Friction + Abrasion+ Corrosion	20kgs / 15Kgs sealed tin box (4mm x 450mm / 3.25mm x 350mm)
39	Azucar STS 100 4mm / 3.25 mm, LN EH CR 70, HF HCX – O/ SPECTROX MAXHARD 750	TRPF/ GRPF	Cast Steel	Corrosion + Impact + Abrasion	20kgs / 15Kgs sealed tin box (4mm x 450mm / 3.25mm x 350mm)
40	SPECTROX DS 312 / SPECTROX SS 309L / SPECTROX RJ 022	Roller Journal	Alloy Steel/ Forged Steel	Friction + Corrosion	5Kgs plastic box in 20kgs corrugated box
41	SPECTROX DS 312 / SPECTROX SS 309L/ HF GAMMA 812 NX-E	Problem Steel	(Unknown Composition)	Friction + Corrosion	5Kgs plastic box in 20kgs corrugated box
42	SPECTROX DS 312 / SPECTROX SS 309L	Tools Dies and Springs	Tool Steel, EN 15	Breakage	5Kgs plastic box in 20kgs corrugated box
43	SPECTROX SS 308L	Vacuum Pump	AISI 302,304,321,347 SS	Corrosion	5Kgs plastic box in 20kgs corrugated box
44	SPECTROX SS 308L	Chemical Handling Equipment	AISI 302,304,321,347 SS	Corrosion	5Kgs plastic box in 20kgs corrugated box
45	SPECTROX SS 308L	Steam Piping	AISI 302,304,321,347 SS	Corrosion	5Kgs plastic box in 20kgs corrugated box
46	SPECTROX SS 308L	Brewing Equipment	AISI 302,304,321,347 SS	Corrosion	5Kgs plastic box in 20kgs corrugated box
47	Azucar STS 80 4mm / 3.25 mm, Unimax STS V 80 4mm/ LN STS TUB 1001 MOA, Zucar E, Rollarc – O, HF WA MAXEXTRACT	Roller Arcing	Cast Iron	Corrosion + Friction	20kgs / 15Kgs sealed tin box (4mm x 450mm / 3.25mm x 350mm) ; 12.5 Kgs Vacuum packed Standard Spool
48	Azucar STS 80 4mm / 3.25 mm, Unimax STS V 80 4mm/ LN STS TUB 1001 MOA, Zucar E, Rollarc – O, HF WA MAXEXTRACT	Roller Tip Arcing	Cast Iron	Corrosion + Friction	20kgs / 15Kgs sealed tin box (4mm x 450mm / 3.25mm x 350mm) ; 12.5 Kgs Vacuum packed Standard Spool
49	Garuda E 6013	Multipurpose Electrode	Mild steel electrode	Corrosion	5Kgs plastic box in 20kgs corrugated box
50	SPECTROX MAXPULSE 9018	Boiler, pipelines	High Tensile, Low alloy steels	Corrosion	5Kgs plastic box in 20kgs corrugated box
51	SPECTROX LH 7018, HF TIC – O	Boiler, pipelines, power plant	Coated iron powder with control hydrogen electrode	Corrosion + Breakage	5Kgs plastic box in 20kgs corrugated box
52	SPECTROX MAXGOUGE	Gouging, Gouge rods	Chamfering, gouging, grooving	Corrosion + Breakage	5Kgs plastic box in 20kgs corrugated box
53	SPECTROX TRENCHCUT	Cut Rods	Cast Iron	Corrosion + Breakage	5Kgs plastic box in 20kgs corrugated box
54	SPECTROX OL 027	Instant repair of online leakages	Cast Iron to Steel	Friction + Abrasion	5Kgs plastic box in 20kgs corrugated box



# Product Packaging



## Our Commitment to Excellence

<b>LINCOLN ELECTRIC</b>			
<b>AZUCAR STS 80</b>			
Diâmetro e Comprimento (Diameter x Length) (mm)			
4.00 X 450			
Norma/Regulamento (Standard/Regulation)			
DC 180-210A			
Processo de Soldagem (Welding Process)			
1F, 1G, 2F			
Lot (Batch)	Size (Qty)	Int. Std.	Free weight (Net Weight) (kg)
18726063	21/11/23	AA	20.0 Kg
Código (Code)			
BRAZUC80L2044			
Certificado (Certificate)			
7 898409 053382			

### Certificado de Qualidade (Quality certificate)

**Produto (Product):** AZUCAR STS 80  
**Código (Code):** BRAZUC80L2044  
**Dímetro (Diameter):** 4,00 mm  
**Lote (Batch):** 18726063  
**Especificação (Specification):** EN 14700  
**Classificação (Classification):** EFe-14

Análise Química (Chemical Analysis) (%)						Schedule
C	Si	S	P	Mn	Cr	
4.03	3.2	0.002	0.01	0.8	32	H

#### Informações adicionais (Additional Information)

Dureza (Hardness): 57 HRC

Lincoln Electric do Brasil Emite (Issuer): Isaque Nascimento Data (Date): 27/11/2023

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 Tel: 55 11 2431-4700 R 321/320 Fax: 55 11 2432-9364  
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### INSPECTION CERTIFICATE 3.1

EN 10204 3.1

31/1/2025

Description: WA HARDFACE SUPER ZUCAR-E  
 Lot No: WASH2025010840364

Dimension: 4.0mm X 350mm

Procurement specifications						
EN ISO 14344	Schedule 3					
AWIS 5.01	Schedule H					
EN ISO 14344	Class C1					
AWIS 5.01	Class C1					
All weld metal chemical analysis (% by weight)						
C	Mn	Si	Cr	Fe		
4.12	1.02	3.52	31.02	Rem		
All weld metal deposit typical mechanical properties according to EN 10204 2.2						
Rm [MPa]	Rp0.2 [MPa]	AS [%]	CVN [J]	Hardness [As Welded]		
				60-62 (HRC)		

This digitally prepared certificate is valid without signature  
 Ce certificat préparé numériquement est valide sans signature



## AHMEDNAGAR OFFICE



### SPECTROX TECHNICAL SERVICES (STS)

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## DELHI OFFICE



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