

# Sureweld 10P

The red coated Sureweld 10P is an all-position cellulosic electrode developed for the pipe welding industry in order to improve ductility in the weld deposit while maintaining the standard welding characteristics needed for a pipe welding electrode. Sureweld 10P produces a steady, deep penetrating arc and maintains the proper keyhole in an open root. This electrode will produce X-ray quality joints in flat, horizontal, overhead, vertical-up, and vertical-down procedures. Sureweld 10P is recommended for welding API grades A25, A, B and X42 pipe and general structural, ship, barge and storage tank fabrication. It may also be used for welding root passes in higher grade pipe in some circumstances.

<b>Classifications:</b>	AWS A5.1:E6010, ASME SFA 5.1
<b>Approvals:</b>	ABS AWS A5.1: E6010
<b>Industry or Segmentation:</b>	Pipeline, Industrial and General Fabrication, Civil Construction

Approvals are based on factory location. Please contact ESAB for more information.

## Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Elongation
As Welded	465 MPa (67 ksi)	550 MPa (79 ksi)	29 %

## Typical Charpy V-Notch Properties

Condition	Testing Temperature	Impact Value
As Welded	-18 °C (0 °F)	37 J (27 ft-lb)
As Welded	-29 °C (-20 °F)	30 J (22 ft-lb)

## Typical Weld Metal Analysis %

C	Mn	Si	S	P
0.12	0.30	0.20	0.02	0.01

## Deposition Data

Diameter	Optimal Amps	Amps	Deposition Rate	Efficiency (%)
2.4 mm (3/32 in.)	75 A	40-75 A	0.7 kg/h (1.5 lb/h)	72 %
3.2 mm (1/8 in.)	100 A	80-140 A	0.9 kg/h (2.1 lb/h)	76.3 %
3.2 mm (1/8 in.)	130 A	80-140 A	1 kg/h (2.3 lb/h)	68.8 %
4.0 mm (5/32 in.)	140 A	130-175 A	1.3 kg/h (2.8 lb/h)	73.6 %
4.0 mm (5/32 in.)	170 A	130-175 A	1.3 kg/h (2.9 lb/h)	64.1 %
4.8 mm (3/16 in.)	160 A	150-210 A	1.5 kg/h (3.3 lb/h)	74.9 %
4.8 mm (3/16 in.)	190 A	150-210 A	1.6 kg/h (3.5 lb/h)	69.7 %

# Sureweld 10P Plus

Sureweld 10P Plus is a modified version of the standard 10P electrode and can be differentiated by its gray coating. It has also been developed for the pipe welding industry but has a more consistent burn-off and a more forgiving arc burn. This provides a better bead profile and sidewall fusion with lower spatter. Sureweld 10P Plus will maintain the proper keyhole in an open root and will produce X-ray quality joints in the flat, horizontal, overhead, vertical-up, and vertical-down procedures. Sureweld 10P Plus is recommended for welding API grades A25, A, B and X42 pipe and general structural, ship, barge and storage tank fabrication. It may also be used for welding root passes in higher grade pipe in some circumstances.

<b>Classifications:</b>	AWS A5.1:E6010, ASME SFA 5.1
<b>Approvals:</b>	CWB CSA W48, ABS AWS A5.1: E6010
<b>Industry or Segmentation:</b>	Pipeline, Industrial and General Fabrication, Civil Construction

Approvals are based on factory location. Please contact ESAB for more information.

## Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Elongation
As Welded	503 MPa (72.9 ksi)	599 MPa (86.9 ksi)	25 %

## Typical Charpy V-Notch Properties

Condition	Testing Temperature	Impact Value
As Welded	-29 °C (-20 °F)	45 J (33 ft-lb)

## Typical Weld Metal Analysis %

C	Mn	Si	S	P
0.15	0.60	0.20	0.01	0.01

## Deposition Data

Diameter	Optimal Amps	Amps	Deposition Rate	Efficiency (%)
2.4 mm (3/32 in.)	75 A	40-75 A	0.7 kg/h (1.5 lb/h)	72 %
3.2 mm (1/8 in.)	100 A	80-140 A	0.9 kg/h (2.1 lb/h)	76.3 %
3.2 mm (1/8 in.)	130 A	80-140 A	1 kg/h (2.3 lb/h)	68.8 %
4.0 mm (5/32 in.)	140 A	130-175 A	1.3 kg/h (2.8 lb/h)	73.6 %
4.0 mm (5/32 in.)	170 A	130-175 A	1.3 kg/h (2.9 lb/h)	64.1 %
4.8 mm (3/16 in.)	160 A	150-210 A	1.5 kg/h (3.3 lb/h)	74.9 %
4.8 mm (3/16 in.)	190 A	150-210 A	1.6 kg/h (3.5 lb/h)	69.7 %

# Sureweld 710P

Sureweld 710P is an all-position cellulosic electrode that is especially suited for welding high strength pipe. It produces the consistent, deep penetration required to maintain a proper keyhole when vertical-down welding in open root pipe joints. X-ray quality joints can be produced with Sureweld 710P using flat, horizontal, overhead, vertical-up and vertical-down welding procedures. Sureweld 710P is recommended for welding API grades X46, X52, and X56 pipe. It may also be used for welding root passes in higher grade pipe in some circumstances.

<b>Classifications:</b>	AWS A5.5:E7010-P1, ASME SFA 5.5
<b>Approvals:</b>	Conforms to E7010-G
<b>Industry or Segmentation:</b>	Industrial and General Fabrication, Pipeline

Approvals are based on factory location. Please contact ESAB for more information.

## Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Elongation
As Welded	480 MPa (69 ksi)	560 MPa (81 ksi)	22 %

## Typical Charpy V-Notch Properties

Condition	Testing Temperature	Impact Value
As Welded	-29 °C (-20 °F)	39 J (29 ft-lb)
As Welded	-46 °C (-50 °F)	35 J (26 ft-lb)

## Typical Weld Metal Analysis %

C	Mn	Si	S	P	Ni	Mo
0.10	0.30	0.20	0.02	0.01	0.50	0.24

## Deposition Data

Diameter	Optimal Amps	Amps	Deposition Rate	Efficiency (%)
2.4 mm (3/32 in.)	75 A	40-75 A	0.7 kg/h (1.5 lb/h)	72 %
3.2 mm (1/8 in.)	100 A	80-140 A	0.9 kg/h (2.1 lb/h)	76.3 %
3.2 mm (1/8 in.)	130 A	80-140 A	1 kg/h (2.3 lb/h)	68.8 %
4.0 mm (5/32 in.)	140 A	130-175 A	1.3 kg/h (2.8 lb/h)	73.6 %
4.0 mm (5/32 in.)	170 A	130-175 A	1.3 kg/h (2.9 lb/h)	64.1 %
4.8 mm (3/16 in.)	160 A	150-210 A	1.5 kg/h (3.3 lb/h)	74.9 %
4.8 mm (3/16 in.)	190 A	150-210 A	1.6 kg/h (3.5 lb/h)	69.7 %

## Sureweld 6010

Sureweld 6010 is an all-position, quick solidifying cellulosic type electrode with minimal spatter and excellent arc control. It offers deep penetration and easy removal of slag which allows single and multiple pass welds of x-ray quality. Sureweld 6010 adapts exceptionally well to vertical and overhead projects on all mild steels. It can also be used to weld low alloy and high resistance steels where the thickness of the sections is 1/4" or less. Sureweld 6010 is used extensively in the welding of holding tanks, freight cars, and truck chassis.

<b>Classifications:</b>	AWS A5.1:E6010
<b>Industry or Segmentation:</b>	Industrial and General Fabrication, Mobile Equipment, Ship/Barge Building

### Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Reduction in Area	Elongation
<b>100% CO<sub>2</sub></b>				
As Welded	427 MPa (62 ksi)	490 MPa (71 ksi)	65 %	28 %

### Typical Weld Metal Analysis %

C	Mn	Si	S	P
0.10	0.36	0.20	0.01	0.01

### Deposition Data

Diameter	Amps	Deposition Rate	Efficiency (%)
2.4 mm (3/32 in.)	60-80 A	0.9 kg/h (2 lb/h)	60 %
3.2 mm (1/8 in.)	85-120 A	1.1 kg/h (2.4 lb/h)	63.9 %
4.0 mm (5/32 in.)	140-175 A	1.4 kg/h (3 lb/h)	71.9 %
5.0 mm (3/16 in.)	170-210 A	1.7 kg/h (3.7 lb/h)	67 %

# Sureweld 6011

Sureweld 6011 is an all-position, cellulosic type electrode designed for AC. It produces an easily controlled forceful arc with deep penetration and a high quality weld metal which will pass specification requirements for radiography. Sureweld 6011 is used primarily for welding mild steels such as ASTM A-36, A-283, A-284, A-285, A-515, A516 and ABS hull and boiler steel. Typical applications include welding of buildings, piping, shipbuilding, pressure vessels and tanks. AC-DCEP (Electrode Positive).

<b>Classifications:</b>	AWS A5.1:E6011
<b>Industry or Segmentation:</b>	Industrial and General Fabrication, Mobile Equipment, Ship/Barge Building

## Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Reduction in Area	Elongation
As Welded	462 MPa (67 ksi)	524 MPa (76 ksi)	56 %	22 %

## Typical Weld Metal Analysis %

C	Mn	Si	S	P
0.10	0.36	0.15	0.012	0.012

## Deposition Data

Diameter	Optimal Amps	Amps	Deposition Rate	Efficiency (%)
2.4 mm (3/32 in.)	70 A	60-80 A	0.9 kg/h (2 lb/h)	60 %
3.2 mm (1/8 in.)	100 A	85-120 A	1.1 kg/h (2.4 lb/h)	70 %
4.0 mm (5/32 in.)	140 A	140-175 A	1.7 kg/h (3.7 lb/h)	77 %
5.0 mm (3/16 in.)	180 A	170-210 A	1.8 kg/h (4.1 lb/h)	73 %

# Sureweld 6013

Sureweld 6013 is an all-position electrode. The arc is very stable even when low-voltage open circuit transformers are used. The power of its arc allows depositing quick welds, medium penetration, and good appearance. Sureweld 6013 eliminates the risk of trapping the slag due to its special characteristics and mineral coating. Sureweld 6013 is used on a wide array of mild steel fabrication where ease of operation and good appearance is required. Sureweld 6013 is recommended for welding vehicle bodies, profiles, tanks, ducts chassis, freight cars, ornamental jobs and thin-sheet structures.

<b>Classifications:</b>	AWS A5.1:E6013
<b>Approvals:</b>	CWB CSA W48: E4913
<b>Industry or Segmentation:</b>	Industrial and General Fabrication, Mobile Equipment, Ship/Barge Building

## Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Reduction in Area	Elongation
As Welded	482 MPa (70 ksi)	558 MPa (81 ksi)	55 %	27 %

## Typical Charpy V-Notch Properties

Condition	Testing Temperature	Impact Value
As Welded	0 °C (32 °F)	47 J (35 ft-lb)

## Typical Weld Metal Analysis %

C	Mn	Si	S	P	Ni	Cr	Mo	V
0.10	0.60	0.50	0.030	0.035	0.30	0.20	0.20	0.05

## Deposition Data

Diameter	Amps	Deposition Rate	Efficiency (%)
2.4 mm (3/32 in.)	60-90 A	0.7 kg/h (1.6 lb/h)	73 %
3.2 mm (1/8 in.)	120-135 A	1 kg/h (2.1 lb/h)	73 %
4.0 mm (5/32 in.)	145-190 A	1.2 kg/h (2.6 lb/h)	75 %
4.0 mm (5/32 in.)	145-190 A	1.45 kg/h (3 lb/h)	74 %

# Sureweld 7014

Sureweld 7014 is an iron powder coated electrode permitting the use of higher welding currents while improving the deposition rate. The use of an iron powder coating also improves deposition efficiency. High speeds and high heats can be used without undercut. Slag removal is excellent. Sureweld 7014 is widely used for welding mild steels such as ASTM A-36, A-113, A-283, A-284, A-285, A-306, A-515 and A-516. Typical applications include construction equipment, metal fixtures, automotive parts, barges and farm machinery.

<b>Classifications:</b>	AWS A5.1:E7014
<b>Industry or Segmentation:</b>	Industrial and General Fabrication, Mobile Equipment, Ship/Barge Building

## Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Reduction in Area	Elongation
As Welded	420 MPa (61 ksi)	490 MPa (71 ksi)	64 %	28 %

## Typical Weld Metal Analysis %

C	Mn	Si	S	P
0.04	0.30	0.14	0.02	0.02

## Deposition Data

Diameter	Amps	Deposition Rate	Efficiency (%)
2.4 mm (3/32 in.)	70-100 A	0.9 kg/h (2 lb/h)	60 %
3.2 mm (1/8 in.)	100-150 A	1.1 kg/h (2.4 lb/h)	63.9 %
3.2 mm (1/8 in.)	100-150 A	1.4 kg/h (3.1 lb/h)	61.1 %
4.0 mm (5/32 in.)	160-200 A	1.4 kg/h (3 lb/h)	71.9 %
4.0 mm (5/32 in.)	160-200 A	1.7 kg/h (3.7 lb/h)	67 %

# Sureweld 7024

Sureweld 7024 is a high speed, heavy-coated, iron powder electrode for high deposition rates on horizontal and downhand welding. Excellent operator appeal, produces equal 45° fillets, thereby eliminating over welding. Excellent bead appearance and self-cleaning slag. This electrode has good weldability and superior mechanical properties. It is particularly useful in obtaining increased penetration with little or no root porosity in horizontal or positioned fillets. Sureweld 7024 is ideal for making high speed horizontal fillet and lap welds on mild and some alloy steels, such as earthmoving and construction equipment, truck bodies, ships, barges and railcars. Sureweld 7024 exceeds the AWS A5.1 elongation% and Charpy V-Notch requirements for 7024-1.

<b>Classifications:</b>	AWS A5.1:E7024, ASME SFA 5.1
<b>Approvals:</b>	CWB CSA W48: E4924
<b>Industry or Segmentation:</b>	Industrial and General Fabrication, Barges, Mobile Equipment, Railcars

Approvals are based on factory location. Please contact ESAB for more information.

Typical Tensile Properties				
Condition	Yield Strength	Tensile Strength	Reduction in Area	Elongation
As Welded	490 MPa (71 ksi)	550 MPa (81 ksi)	63 %	26 %

Typical Charpy V-Notch Properties		
Condition	Testing Temperature	Impact Value
As Welded	-18 °C (0 °F)	34 J (25 ft-lb)

Typical Weld Metal Analysis %				
C	Mn	Si	S	P
0.06	0.80	0.30	0.018	0.01

Deposition Data				
Diameter	Optimal Amps	Amps	Deposition Rate	Efficiency (%)
4.0 mm (5/32 in.)	180 A	180-240 A	2.4 kg/h (5.3 lb/h)	71.3 %
4.0 mm (5/32 in.)	210 A	180-240 A	2.9 kg/h (6.3 lb/h)	72.5 %
4.0 mm (5/32 in.)	240 A	180-240 A	3.3 kg/h (7.2 lb/h)	69.4 %
4.8 mm (3/16 in.)	245 A	250-290 A	3.4 kg/h (7.5 lb/h)	69.2 %
4.8 mm (3/16 in.)	270 A	250-290 A	3.8 kg/h (8.3 lb/h)	70.5 %
4.8 mm (3/16 in.)	290 A	250-290 A	4.1 kg/h (9.1 lb/h)	68 %
5.6 mm (7/32 in.)	320 A	300-340 A	4.3 kg/h (9.4 lb/h)	72.4 %
5.6 mm (7/32 in.)	360 A	300-340 A	5.3 kg/h (11.6 lb/h)	69.1 %
6.4 mm (1/4 in.)	400 A	350-400 A	5.7 kg/h (12.6 lb/h)	71.7 %