Coreweld 89

New metal cored wire for high strength steel

Providing excellent sub-zero toughness down to -40ºC and low diffusible hydrogen levels with Ar- 5-15%CO_2 gas mixtures.

High strength steels are increasingly being used as they offer the designer the possibility of making lighter, higher performance structures with good overall cost effectiveness together with lower environmental impacts. The use of high-strength steel can mean lower fabrication costs, increased payloads, more durable products, more effective space utilisation and increased safety.

With this in mind a new metal cored wire has been developed specifically designed for welding high strength steel with Argon / CO_2 gas mixtures in the range Ar/5-25% CO_2 (EN ISO 14175 M20 and M21).

When welding high strength steel, it is very important to use low diffusible hydrogen welding consumables in order to avoid hydrogen induced cold cracking. Coreweld 89 falls into this area, meeting the strict AWS H4 and EN ISO H5 requirements.

Coreweld 89 has the usual beneficial features attributed to ESAB metal cored wires including a smooth arc transfer which produces minimal spatter and silica level on the weld metal surface. With the resulting wide arc the risk of lack of fusion defects is significantly reduced which can be a problem when using the GMAW process.

Typical applications are found in the manual, mechanized or robotic welding of components such as:

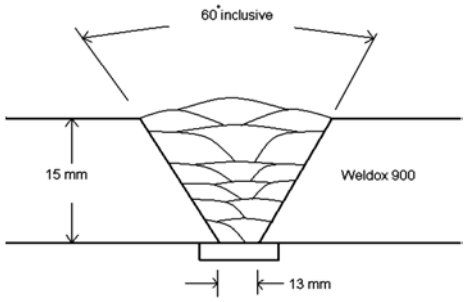
- Crane arms and other lifting equipment
- Booms for forest machinery
- Chassis and bodywork of commercial vehicles
- Load support and fastening equipment
- Load handling equipment
- Feeding and unloading hoppers
- Containers

- **High strength (>890 MPa Yield)**
- **Excellent toughness down to -40ºC**
- **Low diffusible hydrogen**
- **Low spatter**
- **Minimal slilica on weld surface**
- **Spray arc transfer in PA and PB welding positions**
- **CE approved**

XA 00160620

Weld procedure

Welding position	Downhand (PA)
Shielding gas	82% Argon / 8%CO_2
Polarity	DC+
Wire feed speed	7.3 m/min.
Electrode extension	15-20mm
Weld length	330mm
Preheat	100 – 130°C
Interpass	135 – 165°C
Plate material	Weldox 900



Welding parameters

Run	Layer	I (A)	U (V)	Arc time (sec)	Speed (cm/min)	H.I kJ/mm
1 to 2	1	255	27.3	48	41.3	1.01
3 to 4	2	254	27.3	60	33.0	1.26
5 to 7	3	255	27.3	50	39.6	1.05
8 to 10	4	250	27.3	56	35.4	1.16
11 to 13	5	260	27.3	70	28.3	1.51
14 to 16	6	256	27.3	90	22.0	1.91

Results

Rp0.2 (MPa)	Rm (MPa)	A5 (%)	Cv @ -20°C (J)	Cv @ -40°C (J)	Cv @ -60°C (J)
928	1009	18	71, 67, 72 Ave. 70	64, 62, 64 Ave. 63	51, 55, 49 Ave. 51

Classification

SFA/AWS A5.28	EN ISO 18276-A
E120C-G H4	T 89 4 Z M M 3 H5

Typical weld metal mechanical properties (%), M20, DC+

C	Si	Mn	P	S	Ni	Mo	Cr
0.10	0.53	1.25	0.010	0.010	2.40	0.71	0.58

Typical weld metal chemical composition M20, DC+

Rp0.2 (MPa)	Rm (MPa) A5 (%)	A5 (%)	(J @ -20°C)	CVN (J @ -40°C)	(J @ -60°C)
931	993	19	91	82	64

Packing/ordering information

Coreweld 89 diameter 1.2mm: 16kg 300mm diameter spool packed in Al foil. Other packaging such as 5kg spools or Marathon Pacs can be made available on request.

ESAB AB

Box 8004 S-402 77 Gothenburg, Sweden
Tel. +46 31 50 90 00.
Fax. +46 31 50 93 90
www.esab.com

XA 00160620