

PRODUCT DATA SHEET

Afrox 7018-1



Afrox 7018-1 is an AC/DC all-position basic coated hydrogen-controlled electrode of premium quality. It was designed for applications where fracture toughness and the most severe X-ray requirements in all positions are required. This electrode combines outstanding all-positional welding characteristics, excellent bead profile and appearance in both root and capping passes with a smooth stable arc and quick freezing weld metal. Its ability to operate at lower than normal currents and give a fully penetrating weld bead is of particular significance for root runs which are inaccessible for back gouging. These properties give the electrode outstanding welder appeal.

Applications

Afrox 7018-1 is used for the welding of a variety of carbon manganese and low alloy steels used in the fabrication of pressure vessels, pipe work and in general structural fabrication work. It is recommended for applications where severe X-ray requirements and mechanical properties have to be met.

Technique

As with all basic hydrogen-controlled electrodes, as short an arc as possible should be kept at all times. When starting with a new electrode, the arc should be initiated a short

distance ahead of the start or crater and worked back over this distance before continuing the weld in the required direction. On larger size joints, several stringer beads should be used where possible in preference to one large weaved bead to ensure optimum mechanical properties. DC- should be used for root passes where poor fit-up is a factor to be taken into account.

Re-drying Procedure

Hydrogen-controlled electrodes must be re-baked prior to use, the baking temperature required being governed by the maximum hydrogen content tolerable in the deposited weld metal. For a maximum of 5-10 ml H₂/100 g, re-bake at a temperature of 350-370°C for 1-2 hours. (Please consult the section regarding the storage, handling and treatment of low hydrogen electrodes given on page 305 of this section.)

Afrox 7018-1 is manufactured and tested in accordance with the requirements of AWS A5.01. Different class and schedules can be provided upon request.

Classifications

AWS	A5.1	E7018-1 H8
SABS	455	E5118/-4427H
EN	2560	E 42 4 B 32 H5

Approvals

Lloyds Register of Shipping Grade DXVuO,BF,3m,3Ym,H15

American Bureau of Shipping Grade 3Y,3H

Germanischer Lloyd Grade 3YH10

TÜV

South African Bureau of Standards

Typical Chemical Analysis (All weld metal)

% Carbon	0,05 - 0,09	% Sulphur	0,025 max
% Manganese	1,3 - 1,5	% Phosphorous	0,025 max
% Silicon	0,25 - 0,45		

Typical Mechanical Properties (All weld metal)

As Welded		Stress Relieved (630°C for 8 hours)	
0,2% Proof Stress	420 MPa min	0,2% Proof Stress	350 MPa min
Tensile Strength	510 - 570 MPa	Tensile Strength	485 MPa min
% Elongation on 50 mm	26 min	% Elongation on 50 mm	22 min
Charpy V-Notch at -29°C	130 J min	Charpy V-Notch at -29°C	80 J min
Charpy V-Notch at -46°C	80 J min		

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Typical Current Values (DC+/- for root welds or AC 70 OCV min)

Diameter (mm)	Downhand	Vertical-up	Overhead
2,5	70 - 100	75 - 85	80 - 90
3,15	90 - 135	95 - 110	100 - 110
4,0	135 - 200	140 - 155	145 - 155
5,0	180 - 260	–	–
6,3	245 - 380	–	–

Deposition Data

Note:

- 1) The deposition data given was established at the optimum current rating which would be approximately in the middle of the specified range.
- 2) The mass of weld metal deposited per arc hour is a theoretical value which does not take into account welder efficiency.

Diameter (mm)	Mass of an Electrode (g)	Burn-off Time (sec)	Mass of Metal Deposited per Electrode (g)	Mass of Weld Metal Deposited per Arc Hour (g)	No. Electrodes per kg of Weld Metal	kg Weld Metal per kg of Electrodes
2,5	21,6	64,2	13,6	761	74	0,62
3,15	33,4	70,0	21,3	1 094	47	0,63
4,0	52,0	71,9	34,0	1 700	30	0,65
5,0	100,3	100,3	67,7	2 428	15	0,67
6,3	150,6	110,5	104,2	3 394	10	0,69

Data for Welding Horizontal Fillet Welds

Diameter (mm)	Throat Thickness (mm)	Current (A)	Arc Time (sec)	Bead Length per Electrode (mm)	Welding Speed (m/h)
2,5	3,0	85	62,0	165	9,6
3,15	4,2	125	73,0	215	10,6
4,0	5,0	175	80,0	225	10,1
5,0	6,0	225	106,2	287	9,7
6,3	6,9	320	103,2	349	12,2

Packing Data

Diameter (mm)	Electrode Length (mm)	Approx. No. Electrodes/kg	Pack mass (kg)	Item Number (multi-kg pack)
2,5	350	46	3 x 4,0	W075282
3,15	350	30	3 x 4,0	W075283
4,0	350	19	3 x 4,0	W075284
5,0	450	10	3 x 6,0	W075285
6,3	450	7	3 x 6,0	W075287

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For more information contact the Afrox Customer Service Centre Tel: 0860 02 02 02
E-mail: customer.service@afrox.linde.com Website: www.afrox.com

