Product Data Sheet

OK 78.16

E 'Manual metal-arc welding'
ESAB Perstorp AB Sweden

Prepared by	Qualified by	Approved by	Reg no	Cancelling	Reg date	Page
P-O Oskarsson	Tero Borg	J-P Ernoult	EN007358	EN007070	2016-08-18	1 (2)

REASON FOR ISSUE

Coating and alloy type amended.

GENERAL

OK 78.16 is a CrMo-alloyed electrode for the welding of 0.25C-1Cr-0.3Mo-alloyed quenched and tempered steel grades. The heat treatment requirements for the weld metal are the same as those for the parent plate. The weld metal of OK 78.16 is also suitable for flame hardening. The welding of high tensile strength steel with OK 78.16 should be carried out at a preheating temperature of minimum 200°C.

Polarity: DC+

Alloy Type: Low alloyed (1.15 % Cr ; 0.2 % Mo)
Coating Type: Basic covering

WELDING POSITIONS

1 2 3 4 6

CLASSIFICATIONS Electrode

SFA/AWS A5.5	E9018-G
EN ISO 18275-A	E 69 A Z B 42

APPROVALS

CE	EN 13479

APPROVALS (SPECIFIC)

Seproz	UNA 272581

CHEMICAL COMPOSITION

All Weld Metal (%)

	Min	Max
C	0.12	0.24
Si	0.2	0.6
Mn	0.5	1.1
P		0.020
S		0.020
Cr	0.8	1.2
Mo	0.15	0.25

MECHANICAL PROPERTIES OF WELD METAL

	ISO			AWS
	As welded			As welded
Properties	**Min**	**Max**	**Typ**	**Min**
Rp0.2 (MPa)	690		800	530
Rm (MPa)	760	960	900	620
A4 (%)				17
A5 (%)	17		17	
Charpy V at 20°C (J)	47		80	

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ECONOMICS & CURRENT DATA

Dimension (mm) Ø x Length	Current (A) Min	Current (A) Max	W	η	N	B	H	T	U	Welding Positions
2.5 x 350	75	100	2.2	120	0.64	70.0	0.90	58	20	1,2,3,4,6
3.2 x 450	105	140	4.7	120	0.64	32.5	1.40	78	21	1,2,3,4,6
4.0 x 450	145	195	6.7	115	0.66	22.5	1.90	83	22	1,2,3,4,6
5.0 x 450	190	260	9.7	110	0.68	15.0	2.80	86	23	1,2,3,4

W = Weight (kg / 100 electrodes)
η = Efficiency (g weld metal x 100 / g core wire)
N = Effective value (kg weld metal / kg electrodes)
B = Changes (number of electrodes / kg weld metal)
H = Deposit rate at 90% of max current (kg weld metal / hour arc time)
T = Fusion time at 90% of max current (s / electrode)
U = Arc voltage (V)

OTHER DATA

Welding and heat treatment conditions: All-weld specimens, interpass temperature 200-300 °C.

Stress relieving 1h at 620 °C, cooling in oven down to 200 °C, then in air:
Rp0.2= 740 N/mm2, A5= 19 %, Z= 63 %

Normalizing 15' at 860 °C, cooling in air, tempering 1h at 550 °C, cooling in oil (50-60 °C):
Rp0.2= 660 N/mm2, Rm= 770 N/mm2, A5= 21 %, Z= 63 %

Hardening in oil (50-60 °C) from 860 °C/30', tempering 20' at 550 °C, aircooled:
Typical: Rp0.2= 660 N/mm2, Rm= 770 N/mm2, A5= 19 %, Z= 64 %

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Welds in 1 Cr, 0.2 Mo QT-steel

Normalizing 15' at 860 °C, cooling in air, tempering at 550 °C, cooling in oil (50-60 °C):
Rm= 850 N/mm2

Hardening in oil (50-60 °C) from 860 °C/30', tempering 20' at 550 °C, aircooled:
Rm= 1100 N/mm2

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Soft annealing at 720-730 °C