



# Product Data Sheet

# OK 78.16

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

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

## REASON FOR ISSUE

Coating and alloy type amended.

## GENERAL

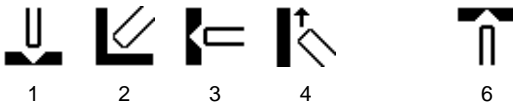
OK 78.16 is a CrMo-alloyed electrode for the welding of 0.25C-1Cr-0.3Mo-alloyed quenched and tempered steel grades. The heat treatment requirements for the weld metal are the same as those for the parent plate. The weld metal of OK 78.16 is also suitable for flame hardening. The welding of high tensile 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



## 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

| Properties           | ISO              |     |     | AWS              |
|----------------------|------------------|-----|-----|------------------|
|                      | As welded<br>Min | Max | Typ | As welded<br>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)<br>Ø x Length | Current (A) |     | W   | η   | N    | B    | H    | T  | U  | Welding<br>Positions |
|------------------------------|-------------|-----|-----|-----|------|------|------|----|----|----------------------|
|                              | Min         | Max |     |     |      |      |      |    |    |                      |
| 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