

## Stainless steel electrode

### Classification

AWS A5.4-92 : E307-16\*  
EN 1600-97 : E 18 8 Mn R 12

\* Deviation: see remarks

### Temperature Range

pressurized parts: -60 ... +350°C  
scaling resistance: n.a.

### General description

A rutile- basic all position 5%Mn-alloyed stainless steel electrode

Especially developed for steels difficult to weld, such as:

- Armour plate
- Austenitic high Mn-steels

Often used for buffer layers in "hardfacing" applications

Weldable on AC and DC+ polarity

### Welding positions



ISO/ASME PA/1G PB/2F PC/2G PF/3G up PE/4G PF/5G up

### Current type

AC / DC electr. +

### Approvals

TÜV

+

### Chemical composition (w%), typical, all weld metal

| C    | Mn  | Si  | Cr   | Ni  |
|------|-----|-----|------|-----|
| 0.09 | 5.0 | 0.6 | 18.5 | 8.5 |

### Mechanical properties, all weld metal

|                       | Condition | 0.2% Proof strength<br>(N/mm <sup>2</sup> ) | Tensile strength<br>(N/mm <sup>2</sup> ) | Elongation<br>(%) | Impact ISO-V(J) |       |
|-----------------------|-----------|---|--|-------------------|-----------------|-------|
|                       |           |   |  |                   | +20°C           | -60°C |
| Required: AWS A5.4-92 |           | not required                                | min. 590                                 | min. 30           | not required    |       |
| EN 1600-97            |           | min. 350                                    | min. 500                                 | min. 25           | not required    |       |
| Typical values        | AW        | 450   | 650                                      | 35                | 110             | 75    |

### Packaging, available sizes and identification

|           |                         |     |     |     |
|-----------|-------------------------|-----|-----|-----|
|           | Diameter (mm)           | 2.5 | 3.2 | 4.0 |
|           | Length (mm)             | 350 | 350 | 350 |
| Unit: Box | Pieces / unit (nominal) | 125 | 135 | 85  |
|           | Net weight/unit (kg)    | 2.6 | 4.7 | 4.6 |

### Identification

Imprint: 307-16 /Arosta 307

Tip colour: dark blue

Arosta® 307: rev. EN 15

**Materials to be welded**

Various steel grades, such as:

- Armour plate
- Hardenable steels including steels difficult to weld
- Non-magnetic austenitic steels
- Work hardening austenitic manganese steels
- Dissimilar steel grades (CMn-steels to stainless steel)
- Problem steels

**Calculation data**

| Sizes<br>Diam. x length<br>(mm) | Current<br>range type<br>(A) | Current | Arc time<br>- per electrode at max. current -<br>(s)* | Energy<br>E(kJ) | Dep.rate<br>H(kg/h) | Weight/<br>1000 pcs.<br>(kg) | Electrodes/<br>kg weldmetal<br>B | kg Electrodes/<br>kg weldmetal<br>1/N |
|---------------------------------|------------------------------|---------|---|-----------------|---------------------|------------------------------|----------------------------------|---------------------------------------|
| 2.5 x 350                       | 70 - 80                      | DC+     | 52  | 108             | 0.74                | 20.4                         | 94                               | 1.92                                  |
| 3.2 x 350                       | 90 - 120                     | DC+     | 56  | 148             | 1.2                 | 34.7                         | 54                               | 1.87                                  |
| 4.0 x 350                       | 110 - 140                    | DC+     | 84  | 251             | 1.3                 | 53.6                         | 33                               | 1.77                                  |

\* stub end 35mm

**Welding parameters, optimum fill passes**

| Welding position:<br>Diameter (mm) | PA/1G<br>Current (A) | PB/2F | PC/2G | PF/3G up | PE/4G | PF/5G up |
|------------------------------------|----------------------|-------|-------|----------|-------|----------|
| 2.5                                | 80                   | 80    | 80    | 80       | 80    | 80       |
| 3.2                                | 100                  | 100   | 100   | 90       |       |          |
| 4.0                                | 140                  | 115   | 130   | 110      |       |          |

**Remarks**

Deviations: chemical composition:

Mn = 4.5 - 6.0%

AWS: Mn = 3.30 - 4.75%