

Ni-base electrode

Classification

AWS A5.4-92 : E383-16*
 EN 1600-97 : E 27 31 4 Cu L R 12

* Deviation: see remarks

General description

A rutile-basic all position fully austenitic NiCrMoCu electrode
 Especially for phosphoric and sulphuric acid plants
 Designed for Mo and Cu alloyed high NiCr-alloyed grades
 Very smooth bead appearance and easy slag release
 Also approved for welding dissimilar metals for service up to 450°C
 High resistance to pitting (PRE_N ~40)

Welding positions



Current type

AC / DC electr. +

Approvals

TÜV
 +

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

| C | Mn | Si | Ni | Cr | Mo | Cu |
|------|-----|-----|------|------|-----|-----|
| 0.02 | 0.8 | 0.9 | 31.0 | 27.1 | 3.5 | 0.9 |

Mechanical properties, all weld metal

| Condition | 0.2% Proof strength (N/mm ²) | Tensile strength (N/mm ²) | Elongation (%) | Impact ISO-V(J) +20°C |
|-----------------------|---|--|-------------------|--------------------------|
| Required: AWS A5.4-92 | not required | min. 520 | min. 30 | not required |
| EN 1600-97 | min. 240 | min. 500 | min. 25 | not required |
| Typical values | AW 440 | 640 | 38 | 70 |

Packaging, available sizes and identification

| | | | | |
|---------------|----------------------|-----|-----|-----|
| Diameter (mm) | 2.5 | 3.2 | 4.0 | |
| Length (mm) | 350 | 350 | 350 | |
| Unit: PE tube | Pieces / unit | 91 | 66 | 45 |
| | Net weight/unit (kg) | 1.8 | 2.0 | 2.0 |

Identification Imprint: NiCro 31/27

Tip colour: orange

NiCro 31/27: rev. EN 15

NiCro 31/27

Materials to be welded

| Material type | Code | Type | W.Nr. | ASTM/ACI | UNS |
|--|---------------|--------------------|--------|----------------|--------|
| Copper alloyed CrNiMo- and NiCrMo-steels | EN 10088-1/-2 | X1NiCrMoCu 31 27 4 | 1.4563 | | N08028 |
| | DIN 17744 | X1NiCrMoCu 25-20-5 | 1.4539 | Alloy 904L | N08904 |
| | | NiCr 21 Mo | 2.4858 | Alloy 825 | N08825 |
| | | NiCr 21 Mo 6Cu | 2.4641 | Alloy 825 h Mo | N08821 |
| | | X3NiCrMoTi 27 23 | 1.4503 | | |

Calculation data

| Sizes Diam. x length (mm) | Current range (A) | Current type | Arc time - per electrode at max.current - (s)* | Energy E(kJ) | Dep.rate H(kg/h) | Weight/ 1000 pcs. (kg) | Electrodes/ kg weldmetal B | kg Electrodes/ kg weldmetal 1/N |
|---------------------------------|-------------------------|-----------------|--|-----------------|---------------------|------------------------------|----------------------------------|---------------------------------------|
| 2.5x350 | 45-70 | DC+ | 52 | 95 | 0.84 | 21.3 | 83 | 1.75 |
| 3.2x350 | 70-95 | DC+ | 56 | 132 | 1.3 | 31.2 | 48 | 1.49 |
| 4.0x350 | 110-150 | DC+ | 53 | 198 | 2.0 | 46.0 | 34 | 1.56 |

* stub end 35 mm

Welding parameters, optimum fill passes

| Welding position: Diameter (mm) | PA/1G Current (A) | PB/2F | PC/2G | PF/3G up | PE/4G | PF/5G up |
|------------------------------------|----------------------|-------|-------|----------|-------|----------|
| 2.5 | 65 | 70 | 70 | 60 | 60 | 60 |
| 3.2 | 95 | 95 | 95 | 80 | 80 | 80 |
| 4.0 | 120 | 120 | | | | |

Remarks

Deviations: chemical composition:

Si = max. 1.2%

AWS: Si = max. 0.90%

Application advice

Welding with heat input max. 1.5 kJ/mm

Interpass temperature max. 150°C