# SL®19G

## Creep resistant basic electrode



### Classification

AWS A5.5-96 : E8018-B2 H4
EN 1599-97 : E CrMo1 B 32 H5

### General description

**Basic very low hydrogen all position electrode $H_{DM}$ <5ml/100g (SRP)**
**For welding creep and hydrogen resistant Cr Mo-steels**
**maximum service temperature 550°C**
**DC-welding preferred**
**115 - 120% recovery**
**Also available in vacuum sealed Sahara ReadyPack® (SRP)**

### Welding positions

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

### Current type

AC / DC electr. + / -

### Approvals

| BV | CTL | DNV | RINA | TÜV |
|---|---|---|---|---|
| C1M | + | 1Cr0,5Mo | C1M | + |

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

| C | Mn | Si | P | S | Cr | Mo | $H_{DM}$ |
|---|---|---|---|---|---|---|---|
| 0.06 | 0.75 | 0.6 | 0.015 | 0.01 | 1.1 | 0.5 | 3 ml/100g |

### Mechanical properties, all weld metal (for creep data see overleaf)

| | | Condition | 0.2% Proof strength (N/mm²) | Tensile strength (N/mm²) | Elongation (%) | Impact ISO-V(J) +20°C | Impact ISO-V(J) -20°C |
|---|---|---|---|---|---|---|---|
| Required: | AWS A5.5-96 | SR1) | min. 460 | min. 550 | min. 19 | not required | |
| | EN 1599-97 | SR2) | min. 355 | min. 510 | min. 20 | min. 47 | |
| Typical values: | | SR3) | 570 | 640 | 24 | 180 | 50 |

Stress relieved: SR1) = 690±14°C/1h, SR2) = 660-700°C/1h, SR3) = 700°C/1h

### Packaging, available sizes and identification

| | | | | | |
|---|---|---|---|---|---|
| | Diameter (mm) | 2.5 | 3.2 | 4.0 | 5.0 |
| | Length (mm) | 350 | 350 | 350 | 450 |
| Unit: Box | Pieces / unit (nominal) | 110 | 120 | 85 | 55 |
| | Net weight/unit (kg) | 2.6 | 4.6 | 4.7 | 6.1 |
| Unit: SRP | Pieces / unit | 67 | 50 | 28 | 23 |
| | Net weight/unit (kg) | 1.4 | 2.0 | 1.5 | 2.6 |

**Identification** Imprint: 8018-B2/SL19G Tip colour: red

**SL®19G: rev. EN 15**

## Materials to be welded

| Steel | Code | Type |
|---|---|---|
| Creep resisting steel | EN 10028-2 | 13 CrMo 4-5 |
| | EN 10083-1 | 25 CrMo 4 |
| | EN 10222-2 | 14 CrMo 4-5 |
| Tool steel | DIN 17210 | 16 MnCr 5 |

**Creep Data**

| Test temperature | °C | 400 | 450 | 500 | 550 | 600 |
|---|---|---|---|---|---|---|
| Yield strength Rp0.2% | $N/mm^2$ | 460 | 440 | 430 | | |
| Creep strength Rm/1000 | $N/mm^2$ | | | 300 | 140 | 80 |
| Creep strength Rm/10.000 | $N/mm^2$ | | 350 | 240 | 110 | 50 |
| Creep resistence Rp1%/10.000 | $N/mm^2$ | | 250 | 170 | 80 | 35 |



## Calculation data

| Sizes Diam. x length | Current range | Current type | Arc time - per electrode at max. current - | Energy | Dep.rate | Weight/ 1000 pcs. | Electrodes/ kg weldmetal | kg Electrodes/ kg weldmetal |
|---|---|---|---|---|---|---|---|---|
| (mm) | (A) | | (s)* | E(kJ) | H(kg/h) | (kg) | B | 1/N |
| 2.5 x 350 | 60 - 90 | DC+ | 63 | 114 | 0.71 | 21.0 | 80 | 1.67 |
| 3.2 x 350 | 80 - 130 | DC+ | 68 | 227 | 1.3 | 37.9 | 41 | 1.56 |
| 4.0 x 350 | 120 - 180 | DC+ | 79 | 367 | 1.6 | 54.9 | 29 | 1.59 |
| 5.0 x 450 | 160 - 240 | DC+ | 103 | 777 | 2.5 | 106.9 | 14 | 1.52 |

* stub end 35mm

## 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 | 80 | 85 | 80 | 85 | 80 | 80 |
| 3.2 | 130 | 120 | 130 | 120 | 120 | 120 |
| 4.0 | 150 | 145 | 140 | 140 | 140 | 140 |
| 5.0 | 225 | 225 | 210 | | | |

## Remarks

Recommended preheat temperature: 200 - 250°C

Recommended stress relieving temperature range 660 - 700°C (time depends on material thickness)

## Application Advice

Electrodes after removal from cardboard boxes redry 2-4h 350 ± 25°C