# Arosta® 309S

EMR SAHARA®



## CLASSIFICATION

| | | | | | |
|---|---|---|---|---|---|
| **AWS A5.4** | E309L-16 | **A-Nr** | 8 | **Mat-Nr** | 1.4332 |
| **ISO 3581-A** | E 23 12 L R 3 2 | **F-Nr** | 5 | | |
| | | **9606 FM** | 5 | | |

## TEMPERATURE RANGE

**Pressurized parts :** -120...+300°C
**Oxidation resistance :** n.a

## GENERAL DESCRIPTION

**A rutile-basic high CrNi alloyed buffer electrode**
**For welding stainless steel to mild steel and root runs in clad steel**
**Applicable for root passes in N alloyed AISI 304LN steels**
**Excellent weldability and self releasing slag**
**High resistance to embrittlement**
**Weldable on AC and DC+ polarity**
**Also available in vacuum sealed Sahara ReadyPack® (SRP)**

## WELDING POSITIONS (ISO/ASME)

PA/1G PB/2F PC/2G PF/3Gu PE/4G PH/5Gu

## CURRENT TYPE

AC/DC +

## APPROVALS

| ABS | BV | RMRS | TÜV |
|---|---|---|---|
| + | 309L | SS/CMn | + |

## CHEMICAL COMPOSITION (W%), TYPICAL, ALL WELD METAL

| C | Mn | Si | Cr | Ni | FN (acc.WRC 1992) |
|---|---|---|---|---|---|
| 0.02 | 0.8 | 0.8 | 23.5 | 12.5 | 12-20 |

## MECHANICAL PROPERTIES, TYPICAL, ALL WELD METAL

| | Condition | 0.2% Proof strength (N/mm²) | Tensile strength (N/mm²) | Elongation (%) | Impact ISO-V(J) +20°C | Impact ISO-V(J) -20°C | Impact ISO-V(J) -120°C |
|---|---|---|---|---|---|---|---|
| Required: AWS A5.4 | | not required | min. 520 | min. 30 | not required | | |
| ISO 3581-A | | min. 320 | min. 510 | min. 25 | not required | | |
| Typical values | AW | 480 | 560 | 40 | 60 | 50 | 40 |

## PACKAGING AND AVAILABLE SIZES

| | | | | | |
|---|---|---|---|---|---|
| | **Diameter (mm)** | 2.5 | 3.2 | 4.0 | 5.0 |
| | **Length (mm)** | 350 | 350 | 350 | 350 |
| **Carton + PE foil** | **Pieces / unit** | 135 | 150 | 100 | 65 |
| | **Net weight/unit (kg)** | 2.8 | 5.0 | 5.0 | 5.0 |
| **SRP** | **Pieces / unit** | 69 | 56 | - | - |
| | **Net weight/unit (kg)** | 1.4 | 1.9 | - | - |

**Identification** Imprint: 309L-16 / AROSTA 309 S Tip Color: sea green

Arosta®309S: rev. C-EN25-01/02/16

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## EXAMPLES OF MATERIALS TO BE WELDED

| Steel grades | EN 10088-1/-2 | Mat. Nr | ASTM/ACI A240/A312/A351 | UNS |
|---|---|---|---|---|
| **Corrosion resistant cladsteels** | | | | |
| | X2CrNiN18-10 | 1.4311 | (TP)304LN | S30453 |
| | X2CrNi19-11 | 1.4306 | (TP)304L | S30403 |
| | | | CF-3 | J92500 |
| | X4CrNi18-10 | 1.4301 | (TP)304 | S30400 |

Dissimilar metals (mild and low alloy steel to CrNi or CrNiMo stainless steel)
Build-up welding on mild and low alloy steel
Bufferlayer CrNi-cladsteel

## CALCULATION DATA

| Sizes Diam. x length (mm) | Current range (A) | Current type | Arc time - per electrode at max. current - (S)* | Energy - per electrode at max. current - E(kJ) | Dep. rate - per electrode at max. current - H(kg/h) | Weight/ 1000 pcs (kg) | Electrodes/ kg weldmetal B | kg electrodes/ kg weldmetal 1/N |
|---|---|---|---|---|---|---|---|---|
| 2.5 x 350 | 40 - 75 | DC+ | 50 | 88 | 0.93 | 21.0 | 77 | 1.61 |
| 3.2 x 350 | 60 - 110 | DC+ | 58 | 160 | 1.3 | 32.5 | 46 | 1.49 |
| 4.0 x 350 | 80 - 150 | DC+ | 64 | 241 | 1.8 | 48.3 | 31 | 1.49 |
| 5.0 x 350 | 140 - 220 | DC+ | 68 | 372 | 2.8 | 78.0 | 19 | 1.49 |

*Stub end 35mm

## WELDING PARAMETERS, OPTIMUM FILL PASSES

| Diameter (mm) | Welding positions PA/1G | PB/2F | PC/2G | PF/3Gup | PE/4G | PH/5Gup |
|---|---|---|---|---|---|---|
| 2.5 | 70A | 70A | 70A | 60A | 60A | 60A |
| 3.2 | 100A | 100A | 100A | 70A | 70A | 70A |
| 4.0 | 140A | 140A | 140A | 80A | | |
| 5.0 | 180A | 180A | 180A | | | |