

## CLASSIFICATION

|            |                |         |   |        |        |
|------------|----------------|---------|---|--------|--------|
| AWS A5.4   | E308L-15       | A-Nr    | 8 | Mat-Nr | 1.4316 |
| ISO 3581-A | E 19 9 L R 2 1 | F-Nr    | 5 |        |        |
|            |                | 9606 FM | 5 |        |        |

## TEMPERATURE RANGE

Pressurized parts : -196...+350°C  
Oxidation resistance : to 800°C

## GENERAL DESCRIPTION

A rutile-basic all position stainless steel electrode for 304L or equivalent steels  
Specially developed for vertical down welding on DC  
Root pass in grooves with root opening  
High corrosion resistance in oxidizing environments

## WELDING POSITIONS (ISO/ASME)



PG/3Gd

## CURRENT TYPE

DC +

## APPROVALS

TÜV DB

+ +

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

| C    | Mn  | Si  | Cr   | Ni  | FN (acc.WRC 1992) |
|------|-----|-----|------|-----|-------------------|
| 0.02 | 0.8 | 0.7 | 20.0 | 9.8 | 4-10              |

## MECHANICAL PROPERTIES, TYPICAL, ALL WELD METAL

| Condition  | 0.2% Proof strength (N/mm <sup>2</sup> ) | Tensile strength (N/mm <sup>2</sup> ) | Elongation (%)     | Impact ISO-V(J)              |       |        |
|--|--|---------------------------------------|--------------------|------------------------------|-------|--------|
|  |  |                                       |                    | +20°C                        | -20°C | -120°C |
| Required: AWS A5.4<br>ISO 3581-A<br>Typical values | not required<br>min. 320                 | min. 520<br>min. 510                  | min. 35<br>min. 30 | not required<br>not required |       |        |
| AW   | 440                                      | 600                                   | 40                 | 70                           | 50    | 40     |

## PACKAGING AND AVAILABLE SIZES

| Carton + PE foil                      | Diameter (mm) | 2.5 | 3.2 |
|---------------------------------------|---------------|-----|-----|
|                                       | Length (mm)   | 300 | 300 |
| Pieces / unit<br>Net weight/unit (kg) |               | 190 | 130 |
|                                       |               | 2.9 | 3.1 |

Identification Imprint: 308L-15 / VERTAROSTA 304 L Tip Color: grey

Vertarosta® 304L: rev. C-EN24-01/02/16

# Vertarosta® 304L

## EXAMPLES OF MATERIALS TO BE WELDED

| Steel grades                          | EN 10088-1/-2 | EN 10213-4     | Mat. Nr          | ASTM/ACI<br>A240/A312/A351 | UNS              |
|---------------------------------------|---------------|----------------|------------------|----------------------------|------------------|
| <b>Extra low carbon [C &lt;0.03%]</b> |               |                |                  |                            |                  |
|                                       | X2CrNi19-11   |                | 1.4306           | (TP)304L<br>CF-3           | S30403<br>J92500 |
|                                       | X2CrNi18-10   |                | 1.4311           | (TP)304LN<br>302,304       | S30453<br>S30400 |
| <b>Medium carbon [C &gt;0.03%]</b>    |               |                |                  |                            |                  |
|                                       | X4CrNi18-10   |                | 1.4301<br>1.4308 | (TP)304<br>CF 8            | S30409<br>J92600 |
|                                       |               | GX5CrNi19-10   |                  |                            |                  |
| <b>Ti-, Nb stabilized</b>             |               |                |                  |                            |                  |
|                                       | X6CrNiTi18-10 |                | 1.4541           | (TP)321<br>(TP)321H        | S32100<br>S32109 |
|                                       | X6CrNiNb18-10 |                | 1.4550           | (TP)347<br>(TP)347H        | S34700<br>S34709 |
|                                       |               | GX5CrNiNb19-10 | 1.4552           | CF-8C                      | J92710           |

## CALCULATION DATA

| Sizes                  |   | Current<br>range<br>(A) | Current<br>type | Arc time | Energy  | Dep. rate | Weight/<br>1000 pcs<br>(kg) | Electrodes/<br>kg weldmetal<br>B | kg electrodes/<br>kg weldmetal<br>1/N |
|------------------------|---|-------------------------|-----------------|----------|---------|-----------|-----------------------------|----------------------------------|---------------------------------------|
| Diam. x length<br>(mm) | - per electrode at max. current -<br>(S)* |                         |                 | E(kJ)    | H(kg/h) |           |                             |                                  |                                       |
| 2.5 x 300              | 60-70                                     | DC+                     | 44              | 65       | 0.81    | 15.0      | 101                         | 1.52                             |                                       |
| 3.2 x 300              | 80-110                                    | DC+                     | 51              | 117      | 1.2     | 23.5      | 59                          | 1.39                             |                                       |

\*Stub end 35mm

## WELDING PARAMETERS, OPTIMUM FILL PASSES

| Diameter<br>(mm) | Welding positions |
|------------------|-------------------|
|                  | PG/3Gdown         |
| 2.5              | 70A               |
| 3.2              | 100A              |