# DURAMAX STAINLESS ELECTRODE DM312-16

***Classification:*** **E312-16** **AWS A5.4 / ASME SFA 5.4**

## *Description, Characteristics & Applications:*

DURAMAX E312-16 has a nominal composition (wt.-%) of 30 Cr, 9 Ni. These electrodes have been found valuable in welding dissimilar metals, especially when one of the base metals is a stainless steel high in nickel. The deposit is a two-phase weld deposit with substantial amounts of ferrite in an austenitic matrix. Even with considerable dilution by austenite-forming elements, such as nickel, the microstructure remains two-phase and thus highly resistant to weld metal cracks and fissures. Applications should be limited to service temperature below 800°F to avoid formation of secondary brittle phases.
DM312-16 is utilized for welding stainless steels to mild steels and for welding high strength steels that are difficult to weld with ferritic electrodes.
DM312-16 electrode is work-hardenable and hot-cracking resistant.

## *Typical Chemical Composition (%)*

| AWS Spec. | C | Cr | Ni | Mo | Mn | Si | P | S | Cu | |
|---|---|---|---|---|---|---|---|---|---|---|
| A5.4 | 0.15 max | 28.0-32.0 | 8.0 - 10.5 | 0.75 max | 0.5 - 2.5 | 1.00 max | 0.04 max | 0.03 max | 0.75 max | |
| Typical | 0.12 | 29.0 | 9.50 | 0.23 | 1.70 | 0.47 | 0.02 | 0.01 | 0.12 | |

## *Typical Mechanical Properties as Welded*

| Tensile Strength (n/mm²) | Yield Strength (n/mm²) | Elongation (%) | Hardness | Ferrite WRC (FN) | CVN Impacts (J) @ °C |
|---|---|---|---|---|---|
| 660 Min | ----- | 22% Min | ------- | ------ | ------- |

## *Typical Welding Parameters DCEP or AC*

| Diameter | Type of Current | Amperage Range | | Voltage Range |
|---|---|---|---|---|
| | | Flat | Out of Position | |
| 3/32" | DCEP or AC | 70 - 80 | 65 - 80 | 20 - 23 |
| 1/8" | DCEP or AC | 80 - 110 | 75 - 95 | 21 - 24 |
| 5/32" | DCEP or AC | 120 - 160 | 100 - 120 | 22 - 25 |
| 3/16" | DCEP or AC | 170 - 190 | Not recommended | 23 - 25 |

NOTE: Maintaining a proper welding procedure, including pre-heat and interpass temperatures, may be critical depending on the type and thickness of material being welded.
POLARITY: DCEP or AC
DCEP = DC, Electrode Positive (reverse polarity) has the most weld penetration.
AC: medium weld penetration (can have more spatter)
WELDING POSITIONS: All Positions
USE LESS AMPS ON THIN METAL; MORE AMPS ON THICK METAL