

Oxford Alloy[®] 321 AWS ER321 • Stainless Steel



Key Features

- ❖ Titanium acts in reducing intergranular chromium carbide precipitation and thus increasing resistance to intergranular corrosion.
- ❖ Used for welding chromium nickel stainless steel base metal of similar composition.

Conformances

AWS/ASME SFA 5.9
ER321
UNS S2180

| Chemical Composition - As required per AWS 5.9 | | | | | | |
|--|-------------|------------------------------|---------------|--------------|-------------|-------------|
| C | Mn | Si | Cr | Ni | Mo | S |
| 0.08 max | 1.0- 2.5 | 0.30- 0.65 | 18.5- 20.5 | 9.0- 10.5 | 0.75 max | 0.03 max |
| P | Cu | Ti | | | | |
| 0.03 max | 0.75 max | 9 X C min / 1.0 max | | | | |

| Mechanical Properties - As required by AWS 5.9 | | | |
|---|-------------------------------|-----------------------------|-----------------|
| AWS Requirements Typical Results - As welded | Tensile Strength MPa (ksi) | Yield Strength MPa (ksi) | Elongation % |
| | Not Specified | | |
| | 590 (86) | 380 (55) | 40 |

| Typical Welding Parameters | | | | | |
|----------------------------|------|---------|-------|---------|--|
| Diameter | | Process | Volt | Amps | Shielding Gas |
| in | (mm) | | | | |
| .035 | 0.9 | GMAW | 22-23 | 180-210 | Spray Transfer 98% Argon / 2% Oxygen |
| .045 | 1.2 | GMAW | 23-25 | 195-260 | |
| 1/16 | 1.6 | GMAW | 25-28 | 260-390 | |
| .035 | 0.9 | GMAW | 19-23 | 55-170 | Short Circuiting Transfer 90% Helium / 7 1/2 % Argon / 2 1/2 CO ₂ |
| .045 | 1.2 | GMAW | 19-23 | 100-185 | |
| 1/16 | 1.6 | GMAW | | | |
| 1/16 | 1.6 | GTAW | 14-18 | 90-130 | 100% Argon |
| 3/32 | 2.4 | GTAW | 15-20 | 120-175 | 100% Argon |
| 1/8 | 3.2 | GTAW | 15-20 | 150-220 | 100% Argon |

| Diameters & Packaging | | | | | |
|-----------------------|------|------------------------------|----------------------------|------|-----------------------------|
| Oxford Alloys USA | | | Oxford Alloys Asia Pacific | | |
| Diameter (in) | Form | Packaging (lbs) | Diameter (mm) | Form | Packaging (kgs) |
| .035 | GMAW | 33 lb spool 1980 lb pallet | 0.9 | GMAW | 15 kg spool 900 kg pallet |
| .045 | GMAW | 33 lb spool 1980 lb pallet | 1.2 | GMAW | 15 kg spool 900 kg pallet |
| 1/16 | GMAW | 33 lb spool 1980 lb pallet | 1.6 | GMAW | 15 kg spool 900 kg pallet |
| 1/16 | GTAW | 10 lb tube 40 lb carton | 1.6 | GTAW | 5 kg tube 20 kg carton |
| 3/32 | GTAW | 10 lb tube 40 lb carton | 2.4 | GTAW | 5 kg tube 20 kg carton |
| 1/8 | GTAW | 10 lb tube 40 lb carton | 3.2 | GTAW | 5 kg tube 20 kg carton |

Actual test results may vary. Refer test result disclaimer on page 140.