Description

Stainless Steel ER 312 is a nickel-chromium-iron alloy filler metal designed for welding cast alloys of similar composition. It is also valuable for welding dissimilar metals such as carbon steel to stainless steel, particularly those grades high in nickel. ER 312 produces a two-phase weld deposit with substantial percentages of ferrite in an austenite matrix, making it highly resistant to weld metal cracks and fissures.

Chemical Composition

Element	Weight %
Carbon (C)	0.15 max
Manganese (Mn)	1.0-2.5
Silicon (Si)	0.30-0.65
Chromium (Cr)	28-32
Nickel (Ni)	8-10.5
Sulfur (S)	0.03 max

Phosphorus (P)	0.03 max
Molybdenum (Mo)	0.75 max
Copper (Cu)	0.75 max

Mechanical Properties

Property	Value
Ultimate Tensile Strength	102,950 psi (710 MPa)
Offset Yield Strength 0.2%	85,550 psi (590 MPa)
Elongation	40%

Thermal & Physical Properties

No specific thermal or physical properties were mentioned in the given search results.

Other Designations

- AWS ER 312
- UNS S31380

Fabrication & Heat Treatment

ER 312 is typically used for welding applications. No specific heat treatment information was provided.

Applications

- Welding cast alloys of similar composition
- Welding dissimilar metals such as carbon steel to stainless steel, particularly those grades high in nickel

Supplied Forms

ER 312 is available as a Stainless Steel TIG, MIG and SUB-ARC welding wire.

Features

- Produces a two-phase weld deposit with substantial percentages of ferrite in an austenite matrix
- Highly resistant to weld metal cracks and fissures

DIN Number

The given search results do not mention a DIN number for ER 312 stainless steel.