Description

Stainless Steel Grade 308L/1.4306 is a low carbon version of 308 stainless steel, primarily used for welding applications. It is known for its excellent corrosion resistance, particularly against intergranular corrosion, making it suitable for various environments, including those with moderate corrosive conditions.

Chemical Composition

The chemical composition of Grade 308L is as follows:

Element	Content (%)
Carbon (C)	0.03 max
Manganese (Mn)	1.0 - 2.5
Silicon (Si)	0.30 - 0.65
Chromium (Cr)	19.5 - 22.0
Nickel (Ni)	9.0 - 11.0
Sulfur (S)	0.03 max
Phosphorus (P)	0.03 max

Molybdenum (Mo)	0.75 max
Copper (Cu)	0.75 max

Mechanical Properties

The mechanical properties of Grade 308L/1.4306 are as follows:

Property	Value
Ultimate Tensile Strength	84,100 psi (580 MPa)
Yield Strength (0.2% Offset)	58,000 psi (400 MPa)
Elongation	40 - 42%

Thermal & Physical Properties

- Density: Approximately 8.0 g/cm³
- Melting Point: 1400 - 1450 °C (2550 - 2640 °F)
- Thermal Conductivity: 16.2 W/m·K
- Specific Heat: 500 J/kg·K

Other Designations

- UNS S30880
- AWS A5.9 ER308L
- ASME SFA 5.9

Fabrication and Heat Treatment

Grade 308L/1.4306 can be fabricated using standard techniques such as welding, machining, and forming. It does not require heat treatment to harden, as it is non-hardenable by heat treatment. However, post-weld heat treatment may be necessary in some applications to relieve stress.

Applications

Common applications of Grade 308L include:

- Welding of stainless steel types 304L, 321, and 347
- Food processing equipment
- Chemical containers
- Piping systems
- Pressure vessels

Supplied Form

Grade 308L is available in various forms, including:

- Welding wire (ER308L)
- Filler rods
- Bars

Features

- Excellent corrosion resistance
- Low carbon content reduces the risk of intergranular corrosion
- Good weldability and formability

DIN Number

The DIN designation for Grade 308L is DIN 1.4306.
This datasheet provides a comprehensive overview of Stainless Steel Grade 308L, highlighting its properties, applications, and specifications essential for material selection and engineering design.