

TYPE 304 (S30400)
TYPE 304L (S30403)

STAINLESS STEEL



Description

Type 304/304L is the modern version of "18-8" stainless steel containing approximately 18% chromium and 8% nickel and is the most commonly specified stainless steel used throughout the world. Type 304/304L is a versatile, general purpose stainless steel with good resistance to atmospheric corrosion, and to many chemicals and food and beverages. These grades can be specified in the annealed condition where they have very good formability. Higher nickel versions can be specified to enhance multi-stage deep drawing characteristics. Higher strength, cold-worked conditions can also be specified for Type 304/304L for spring type applications. Type 304/304L is non-magnetic in the annealed condition but may become slightly magnetic as a result of cold working.

Type 304L can be dual certified as 304 when the composition meets the lower carbon limit of 304L and the slightly higher strength levels of 304. Type 304L should be specified for welded applications as the low carbon version eliminates chromium carbide precipitation and enhances the corrosion resistance in the as-welded condition.

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Chemical Composition

Chemical Composition (wt%) limits as specified in ASTM A240 and ASME SA240*

Element	304	304L
Carbon	0.07	0.030 max
Chromium	17.5-19.5	17.5-19.5
Nickel	8.0-10.5	8.0-12.0
Manganese	2.00	2.00
Silicon	0.75	0.75
Nitrogen	0.10	0.10
Phosphorus	0.045	0.045
Sulfur	0.030	0.030

Mechanical Properties

Mechanical property requirements for annealed product as specified in ASTM A240 and ASME SA240

Property	304	304L
Yield Strength, min. (ksi)	30	25
Tensile Strength, min. (ksi)	75	70
Elongation, min. (%)	40	40
Hardness, max. (R _b)	92	92

Physical Properties

Physical properties for Type 304/304L stainless steel

Property	304/304L
Density, lb/in ³	0.285
Modulus of Elasticity, psi	28 x 10 ⁶
Coefficient of Thermal Expansion, 68-212°F, /°F	9.2 x 10 ⁻⁶
Thermal Conductivity, Btu/ft hr °F	9.4
Specific Heat, Btu/lb °F	0.12
Electrical Resistivity, Microhm-in	28.3

Standards

Typical standards for Type 304/304L stainless steel

304	304L
ASTM A240	ASTM A240
ASTM A666	ASTM A666
ASME SA240	ASME SA240
AMS 5513	AMS 5511