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305 Stainless Steel

DESCRIPTION
Type 305 Stainless Steel is an austenitic chromium nickel stainless steel that can be cold worked and deep drawn more readably than Type 302 and Type 304 due to an increased nickel content that decreases the work hardening rate of the material. It is nonmagnetic and cannot be hardened by thermal treatment.

PRODUCT FORMS
Sheet, Strip

SPECIFICATIONS
ASTM A240, AMS 5514

TYPICAL APPLICATIONS
Deep drawn or spun components, eyelets, electronic enclosure applications.

PROCESSING
Type 305 is not hardenable by heat treatment. Anneal at 1850 – 2050°F (1010 – 1121°C), then water quench or rapid air cool.

FORMING
Type 305 Stainless Steel is more readily formed, deep drawn and spun than Types 302 and 304 due to its lower work hardening rate.

WELDING
This particular alloy is generally considered to have comparable weldability to Types 304 and 304L, but autogenous arc welding sometimes causes hot cracking. Annealing after welding will be needed to offset any chromium carbide precipitation which might occur. When a filler is needed, AWS E/ER 308 is most often specified.

CORROSION
Type 305 is similar to Type 304 with respect to corrosion resistance. It offers good protection from a wide variety of solutions used in the chemical, textile, petroleum, dairy and food industries.

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CHEMICAL COMPOSITION: (ASTM A240)

Element	**Type 305**
Carbon	0.12 max.
Manganese	2.00 max.
Sulfur	0.030 max.
Phosphorus	0.045 max.
Silicon	0.75 max.
Chromium	17.0 - 19.0
Nickel	10.5 - 13.0

MECHANICAL PROPERTIES: (ASTM A240)

Type	**Yield Strength 0.2% offset** (KSI)	**Tensile Strength** (KSI)	**% Elongation** (2” Gauge Length)
305 Ann	30 min.	70 min.	40 min.

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PHYSICAL PROPERTIES

Density (lb./in^2) @ RT		0.29
Modulus of Elasticity in Tension (psi x 10^6)		28.0
Specific Heat (BTU/o F/lb.)	32 to 212 oF	0.12
Thermal Conductivity (BTU/hr/ft^2/ft)	212 oF	9.4
	932 oF	12.4
Mean Coefficient of Thermal Expansion (in. x 10^-6 per o F)	32 to 212 oF	9.6
	32 to 600 oF	9.9
	32 to 1,000 oF	10.2
	32 to 1,200 oF	10.4
Electrical Resistivity (micro ohms - cm)	at 70 oF	28.4
Melting Point Range (oF)		2550 - 3650
Oxidation Resistance - Continuous Service (oF)		1650
Oxidation Resistance - Intermittent Service (oF)		1500