800-722-5029
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439 Stainless Steel

DESCRIPTION

Type 439 Stainless Steel is a ferritic stainless steel designed to resist corrosion in a variety of oxidizing environments from fresh water to boiling acids. It may be used in either the annealed, cold formed or as-welded condition in many applications where other stainless steel alloys such as Type 304, Type 410, Type 409 and Type 430are used. Type 439 may also be used in many oxidizing environments where Type 304 is considered adequate in terms of general corrosion resistance but is subject to chloride stress corrosion cracking. When application temperatures are too high for Type 409, Type 439 provides good oxidation and corrosion resistance for many automotive exhaust system components and residential furnace primary heat exchangers.

PRODUCT FORMS

Sheet, Strip

SPECIFICATIONS

ASTM A240

TYPICAL APPLICATIONS

Type 439 Stainless Steel is attractive for numerous automotive exhaust applications. Typical uses include tubular manifolds and other exhaust system components where temperatures may exceed the oxidation limit of Type 409, or where wet corrosion resistance, particularly to chlorides, is needed.

FORMING

Type 439 provides good formability. Olsen Cup heights of 0.490″ are obtainable, flat bends of 180° are possible with material up to 0.080″ thick. The Limiting Draw Ratio (LDR) for this alloy is 2.13.

WELDING

Type 439 is generally considered to be weldable by the common fusion and resistance techniques. It has weldability comparable to Type 409 stainless steel.

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CHEMICAL COMPOSITION

Element	Type 439
Carbon	0.030 max.
Manganese	1.00 max.
Sulfur	0.030 max.
Phosphorus	0.040 max.
Silicon	1.00 max.
Chromium	17.0 - 19.0
Nickel	0.50 max.
Nitrogen	0.030 max.
Aluminum	0.15 max.
Titanium	[0.20+4x(C+N)] min. - 0.75 max.

MECHANICAL PROPERTIES

Type	**Yield Strength 0.2% offset** (KSI)	**Tensile Strength** (KSI)	**% Elongation** (2” Gauge Length)
439 Ann	30 min.	60 min.	22 min.

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PHYSICAL PROPERTIES

Density (lb./in^2) @ RT		0.278
Modulus of Elasticity in Tension (psi x 10^6)		29.0
Specific Heat (BTU/o F/lb.)	32 to 212 oF	0.11
Thermal Conductivity (BTU/hr/ft^2/ft)	212 oF	168.0
Mean Coefficient of Thermal Expansion (in. x 10^-6 per o F)	32 to 212 oF	5.6
	32 to 500 oF	6.4
	32 to 900 oF	6.9
Electrical Resistivity (micro ohms - cm)	at 70 oF	63.0
Oxidation Resistance - Continuous Service (oF)		1700