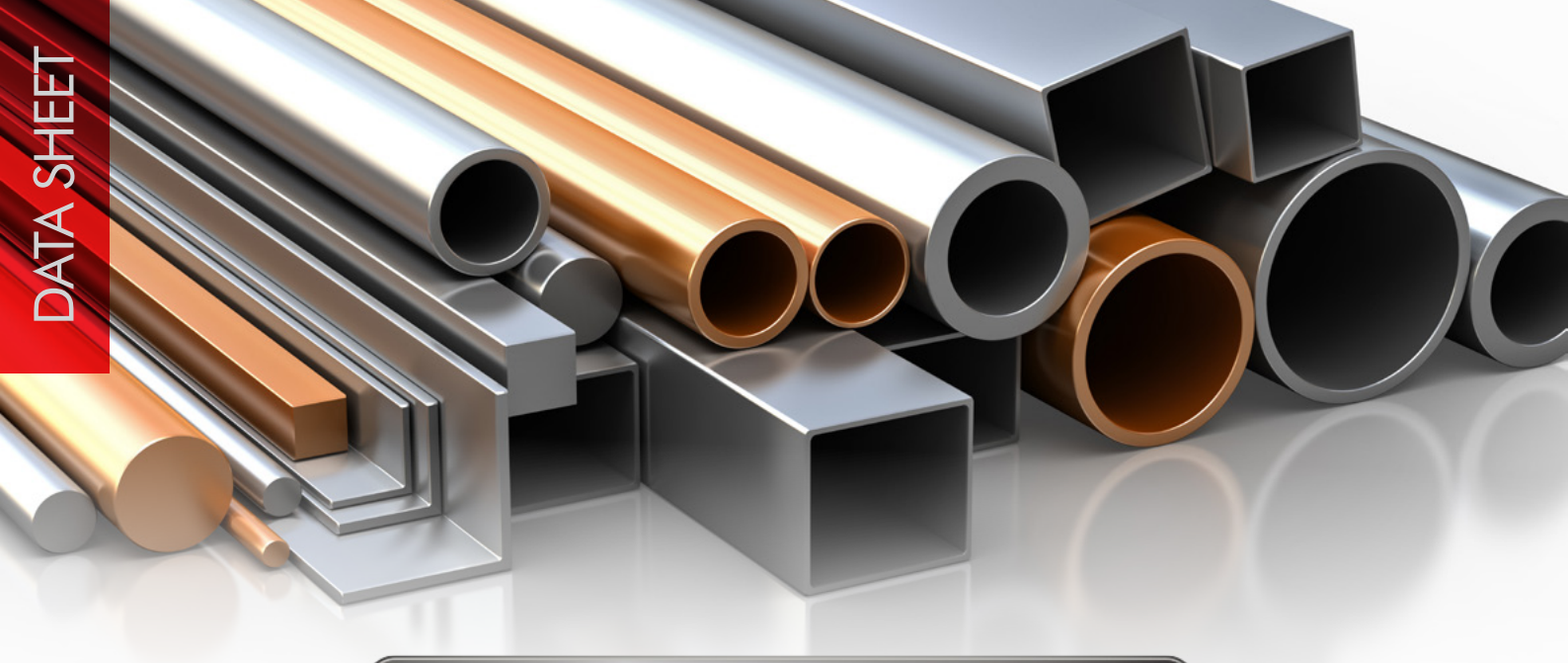
DATA SHEET



S. S. 439

UNS No - S43035

Grade 439 is a Ferritic stainless steel that beats Type 409 in both corrosion resistance and oxidation resistance. Grade 439 gives special attention to chemical composition joined with special processing give this alloy optimum formability that is reproducible, heat after heat and coil after coil. When producing difficult-to-form exhaust system components it provides special advantages. Oxidation and corrosion resistance are superior to Type 409 makes 439 Stainless Steel attractive for various automotive exhaust applications. This grade utilized in 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 required.

Applications

Stainless steel grade 439 is connected to some areas that require oxidation and corrosion resistance. It is additionally generally utilized in catering equipment.

Characteristics

- Excellent resistance to chloride stress corrosion cracking
- Good general corrosion resistance, especially in fresh waters and mildly oxidizing environments
- Weldability
- Long term cost advantages
- High thermal conductivity coefficient
- Low thermal expansion coefficient
- Good continuous and cyclic oxidation resistance

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Corrosion Resistance
439 Stainless Steel displays better corrosion resistance in synthetic muffler condensate than Type 409.

Welding
The Ferritic class of stainless steels is usually considered to be weldable by the common fusion and resistance techniques. To avoid brittle weld fractures during fabrication by minimizing discontinuities, maintaining low weld heat input, and occasionally warming the part somewhat before forming special consideration is required. This specific alloy is normally considered to have similar weldability to the most common alloy of the stainless class, Type 409. The main difference is the lower carbon content. When weld filler is required, AWS E/ER 439 is usually specified, butW18Cb is recommended for elevate temperature utility and E/ER 308L will develop better ductility if it will be utilized in ambient temperature conditions. Type 439 is well known for reference literature and more information can be obtained in this way.

Hot Working
Uniform heating of the steel in the scope of 950°C to 1050°C is needed. The completed temperature should be beneath 750°C. Extended holding times above 1000°C ought to be avoided as excessive grain growth may occur and ductility may be detrimentally affected. All hot-working operations ought to be followed by annealing, pickling and passivating to restore the mechanical properties and corrosion resistance.

Cold Working
439 have good formability qualities with helpful mechanical properties. Its good ductility permits it to be promptly formed by bending and deep drawing. 439 don't experience huge work hardening when cold formed.

Annealing
Annealing is accomplished by heating within range of 760°C and 830°C for 90 minutes per 25mm followed by air quenching.

Chemical Properties

C	N	Si	P	S	Cr	Mn	Ni	Al	Fe	Ti
0.07 max	0.04 max	1.0 Max	0.04 Max	0.03 Max	17.0- 19.0	1.0 Max	0.5 Max	0.15 Max	Reminder	[0.20+4(C+N)]-1.10

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Mechanical Properties

Tensile Strength (ksi)	0.2% Yield Strength (ksi)	Elongation% in 2 inches
70	44	35

Physical Properties

Properties	Units	Temperature in °C
Density	7.6 g/cm^3	Room
Specific Heat	0.11 Kcal/kg.C	22°
Melting Point	1505°C	-
Modulus of Elasticity	210 KN/mm^2	20°
Electrical Resistivity	63 µΩ.cm	Room
Coefficient of Expansion	10.2 µm/m °C	20-100°
Thermal Conductivity	24.2 W/m-°K	20°

ASTM Specifications

Sheet / Plate	Pipe / Tube (SMLS)	Bar
A 240, A 480	A 803, A 268	A 479

Availability

MANUFACTURING	RAW MATERIALS
Fasteners	Pipes
Custom Machining	Tubes
Custom Fabrication	Bars
Piping / Spools	Sheets
Stamped Parts	Plates
B/W Fittings	
S/W Fittings	-
Flanges	-
Compression Fittings	-