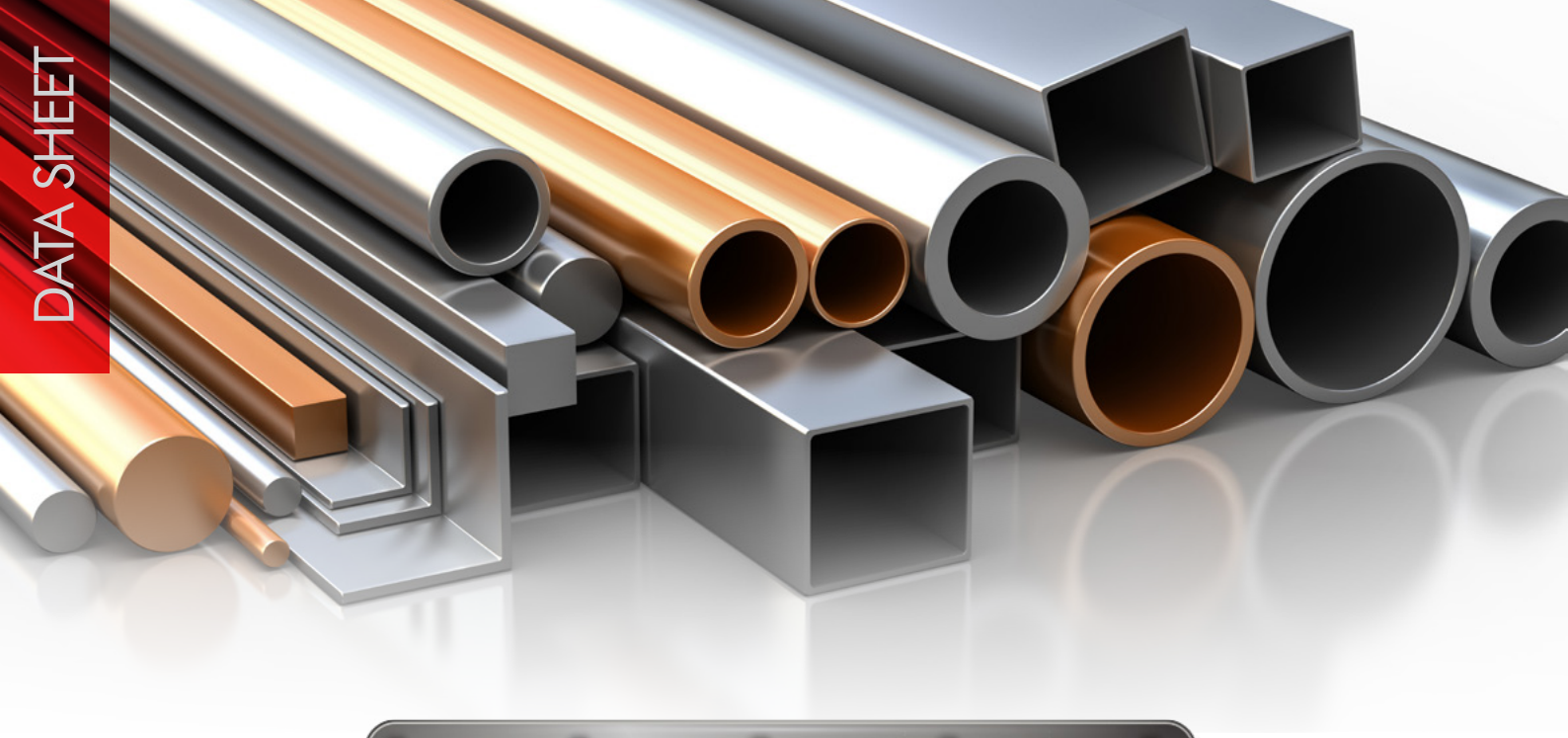
DATA SHEET



S. S. AL-6XN®

UNS No - N08367

AL-6XN is a super austenitic stainless steel with extraordinary resistance to chloride pitting, crevice corrosion and stress corrosion cracking. AL-6XN is a 6 Moly alloy that was produced for and is utilized as a part of highly aggressive environments. It has a high nickel (24%), nitrogen, molybdenum (6.3%) and chromium contents that give it magnificent resistance to chloride stress corrosion cracking, chloride pitting, and unique corrosion resistance. Stainless Steel AL-6XN is basically utilized for its enhanced pitting and crevice corrosion resistance in chlorides. It is a weldable and formable stainless steel. Due to its nitrogen content, AL-6XN has greater tensile strength than regular austenitic stainless steel, while retaining high flexibility and effective strength.

Applications

- Reverse osmosis desalination equipment and pumps
- FGD Scrubbers
- Chemical process tanks and pipelines
- Seawater heat exchangers
- Tall oil distillation columns and packing
- Offshore oil and gas production equipment
- Pulp bleaching plant washers, vats, press rolls and pipelines

Characteristics

- Excellent resistance to pitting and crevice corrosion in chloride solutions
- Practical immunity to stress corrosion in NaCl environments
- High Strength and toughness

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Machining
AL-6XN is quite ductile in the annealed condition, but it works hardens more quickly and requires more power to cut than do the plain carbon steels. Chips are stringy as well as tough. Approximate speeds for turning and milling are 70 sfm, and for drilling 50 sfm. Machine tools are not flexible and used to no more than 75% of their rated capacity. Both work piece as well as tools is not flexible; tool overhang should be minimized. Tools, fast speed steel or cemented carbide, should be sharp, and reground at predetermined intervals. Turning operations require chip curlers or breakers. The feed rate should be sufficient to ensure that the tool cutting edge is getting under the previous cut in this way staying away from work-hardened areas. This is vital. With heavy cuts slow speeds are usually required. Lubricants for example, sulfur-chlorinated petroleum oil, are recommended. Such lubricants may be thinned with paraffin oil for finish cuts at higher speeds. The tool should not expeditiously on the work piece as this will work harden the material and result in early tool dulling or breakage. All traces of cutting fluid must be separate from prior to welding, annealing, or utilized in corrosive service.

Forming
This material can be formed by utilizing every common technique, however, because of its high strength; higher forces will be required to deform it. Tubes can be bent to a minimum radius slightly less than 1.5 times the tube diameter. Material should be either stress or completely annealed after forming to re-accomplish maximum corrosion and mechanical properties.

Welding
All techniques except oxyacetylene welding have been effectively utilized with this alloy. While a filler metal of type 316 stainless may be adequate for some applications, it is preferable to employ a higher alloy for example 625, or C-276 for maximum performance.

Forging
Soak material at 2200-2250 F (1204-1232 C), complete by reheating to 2050-2150 F (1120-1180 C) and cooling rapidly to room temperature.

Cold Working
This material work hardens quickly and requires regular stress relief annealing to effectively be formed.

Annealing
Soak material altogether at 2050-2150 F (1120-1180 C) followed by water quench. Slow cooling will cause the formation of harmful second phases.

Hardening
This alloy does not give any response to hardening by heat treatment.

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Chemical Properties

C	N	Si	P	S	Cr	Mn	Fe	Ni	Cu	Mo
0.030 max	0.18-0.25	1.0 max	0.040 max	0.030 max	20.0-22.0	2.0 max	Remainder	23.50 - 25.50	0.75 max	6.0 - 7.0

Mechanical Properties

Tensile Strength (ksi)	0.2% Yield Strength (ksi)	Elongation% in 2 inches
104	46	30

Physical Properties

Properties	Units	Temperature in °C
Density	8.06 g/cm^3	Room
Specific Heat	0.11 Kcal/kg.C	22°
Melting Range	1321-1400 °C	-
Modulus of Elasticity	193KN/mm^2	20°
Electrical Resistivity	89 µΩ.cm	Room
Coefficient of Expansion	15.3 µm/m °C	20-100°
Thermal Conductivity	11.6 W/m-°K	20°

ASTM Specifications

Pipe Welded	Tube Welded	Sheet / Plate	Bar	Fitting
B 675, A 312	B 676, A 249	B 688, A 240	B 691, A 479	B 462, A 182

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	-