TUBE AND PIPE
TECHNICAL DATA

3003

ALFINITI

ALLOY DESCRIPTION

One of the non-heat treatable manganese alloys. Typically used for condensers, evaporators, and transfer tubing in automotive, residential, and light commercial climate control systems. Good corrosion resitance, formability, and welding/brazeability

TYPICAL MECHANICAL PROPERTIES

Temper	Tensile (.0625" Dia. Specimen)					Hardness	Shear		Fatigue		Modulus	
	Ultimate		Yield		Elongation /4D	Brinnell 500kg 10 mm	Ultimate Shearing Strength		Endurance Limit - R.R. Moore Type		Modulus of Elasticity	
	KSI	MPa	KSI	MPa	%		KSI	MPa	KSI	MPa	KSI x 10^3	Gpa
O	16	110	6	40	30	28	11	75	7	50	10.0	69
H14	22	152	21	145	16	40	14	96	9	62	10.0	69

COMPARATIVE CHARACTERISTICS

Temper	Corrosion Resistance		Cold Workability[3]	Machinability[3]	Anodize Response[3]	Brazeability[4]	Weldability[4]			Formability
	General[1]	Stress[2]					Gas	Arc	Spot	
O	A	A	A	E	A	A	A	A	B	A
H14	A	A	A	D	A	A	A	A	A	A

1 Ratings A through E are relative ratings in decreasing order of merit, based on exposures to sodium chloride solution by intermittent spraying or immersion. Alloys with A and B ratings can be used in industrial and seacoast atmospheres without protection. Alloys with C, D and E ratings generally should be protected at least on faying surfaces.

2 Stress-corrosion cracking ratings are based on service experience and laboratory tests of specimens exposed to the 3.5% sodium chloride alternate immersion test.

A= No known instance of failure in service or in laboratory tests.
B= No known instance of failure in service; limited failures in laboratory tests of short transverse specimens.
C= Service failures with sustained tension stress acting in short transverse direction relative to grain structure; limited failures in laboratory tests of long transverse specimens.
D= Limited service failures with sustained longitudinal or long transverse.

3 Ratings A through D for Workability (cold), A through E for Machinability and A through C for Anodize Response, are relative ratings in decreasing order of merit.

4 Ratings A through D for Weldability and Brazeability are relative ratings defined as follows:

A= Generally weldable by all commercial procedures and methods.
B= Weldable with special techniques or for specific applications that justify preliminary trials or testing to develop welding procedure and weld performance.
C= Limited weldability because of crack sensitivity or loss in resistance to corrosion and mechanical properties.
D= No commonly used welding methods have been developed.

APPLICABLE SPECIFICATIONS

Cold Drawn	Extruded
ASTM B210	ASTM B221
ASTM B234	ASTM B241
AMS 4065/ AMS 4067	
AMS-T-700/2	

CHEMICAL COMPOSITION LIMITS

									Others	
Weight %	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Each	Total
Minimum	..	..	0.05	1	..	..	..	..	..	..
Maximum	0.6	0.70	0.20	1.50	..	..	0.10	..	0.05	0.15

TYPICAL PHYSICAL PROPERTIES

Characteristic			English	Metric
Nominal Density (68 °F/20 °C) *English: lbs./in.^{3} Metric: g/cm^3*			0.099	2.73
Melting Range			1190 °F - 1210 °F	640 °C – 655 °C
Coefficient of Thermal Expansion *English: micro in./in.-°F Metric: micro m/m - °K*	Linear 68 °F-212 °F 20 °C-100 °C		12.9	23.2
Thermal Conductivity (68 °F/20 °C) *English: BTU-in/ft2hr°F Metric: W/m x K*		O	1340	193
Electrical Conductivity (68 °F/20 °C) *English: %IACS @ 68°F Metric: MS/M @ 20°C*	Equal Volume	O Temper	50	29
		H14	163	92
	Equal Weight	O Temper	50	29
		H14	163	92