

ALLOY DESCRIPTION

This alloy offers combined benefits of excellent corrosion resistance and good machinability. It has good welding characteristics; however, formability is poor in the T8 and T9 tempers. Anodize response is similar to 6061. This alloy can often be substituted for 6061 when increased machine productivity is desired.

TYPICAL MECHANICAL PROPERTIES

Temper	Tensile (.500" Dia. Specimen)					Hardness Brinell 500kg 10 mm	Shear		Fatigue*		Modulus	
	Ultimate		Yield		Elongation/4D %		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
T6, T651	45	310	40	276	17	95	30	207	14	97	10.0	68.3
T8	51	352	49	338	15	-	-	-	-	-	10.0	68.3
T9	58	400	55	379	10	120	35	241	13	90	10.0	68.3

*5 x 10E8 cycles of reversed stress

COMPARATIVE CHARACTERISTICS

Temper	Corrosion Resistance		Cold Workability ³	Machinability ³	Anodize Response ³	Brazeability ⁴	Weldability ⁴		
	General ¹	Stress ²					Gas	Arc	Spot
T6, T651	B	A	C	B	A	B	B	B	A
T8	B	A	D	B	A	B	B	B	A
T9	B	A	D	B	A	B	B	B	A

- 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.
- 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
- 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.
- 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 Finished	Extruded
ASTM B211	ASTM B221
AMS-QQ-A-225/10	

CHEMICAL COMPOSITION LIMITS

Weight %	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others	
									Each	Total
Minimum	0.40	-	0.15	-	0.8	0.04	-	-	-	-
Maximum	0.8	0.7	0.40	0.15	1.2	0.14	0.25	0.15	0.05	0.15

TYPICAL PHYSICAL PROPERTIES

Characteristic		English	Metric
Nominal Density (68 °F/20 °C)		0.098 lbs./in. ³	2.71 Mg/m ³
Melting Range		1078 °F - 1204 °F	582 °C - 652 °C
Specific Heat (212 °F/100 °C)		-	-
Coefficient of Thermal Expansion	Linear 68 °F-212 °F 20 °C-100 °C	13.0 micro in./in.-°F	23.4 micro m/m-°K
	Volumetric 68 °F/20 °C	3.78 x 10 ⁻⁵ in. ³ /in. ³ -°F	68 x 10 ⁻⁶ m ³ /m ³ -°K
Thermal Conductivity (68 °F/20 °C)	T9	99.1 BTU/ft. - hr. - °F	172 W/m - °K
Electrical Conductivity (68 °F/20 °C)	Equal Volume	T9	44% IACS
	Equal Weight	T9	145% IACS