

ALLOY DESCRIPTION

The most common automotive forging alloy. Excellent all around alloy.

TYPICAL MECHANICAL PROPERTIES

Temper	Gage Length		Tensile (.500" Dia. Specimen)					Hardness	Shear		Fatigue		Modulus	
			Ultimate		Yield		Elongation /4D	Brinell 500kg 10 mm	Ultimate Shearing Strength		Endurance Limit - R.R. Moore Type		Modulus of Elasticity	
	mm.	in.	KSI	MPa	KSI	MPa	%		KSI	MPa	KSI	MPa	KSI x 10 ³	Gpa
T6	<102	<4	38		35		7	80	30	207	14	97	10	68.9

COMPARATIVE CHARACTERISTICS

Temper	Corrosion Resistance		Cold Workability ³	Machinability ³	Anodize Response ³	Brazeability ⁴	Weldability ⁴			
	General ¹	Stress ²					Gas	Arc	Spot	
T4										
T6	B	A	C	C	A	A	A	A	A	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.

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APPLICABLE SPECIFICATIONS

Cold Finished	Extruded

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	0.35	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	2.70 Mg/m ³
Melting Range		1080 °F - 1205 °F	580 °C - 650 °C
Specific Heat (212 °F/100 °C)		BTU/lb. - °F	J/kg - °K
Coefficient of Thermal Expansion	Linear 68 °F-212 °F 20 °C-100 °C	micro in./in.-°F	micro m/m -°K
	Volumetric 68 °F/20 °C	x 10 ⁻⁵ in. ³ /in. ³ -°F	x 10 ⁻⁶ m ³ /m ³ -°K
Thermal Conductivity (68 °F/20 °C)	T4	89 BTU/ft. - hr. - °F	154 W/m - °K
	T6	96.5 BTU/ft. - hr. - °F	167 W/m - °K
Electrical Conductivity (68 °F/20 °C)	Equal Volume	T4	40% IACS
		T6	43% IACS
	Equal Weight	T4	% IACS
		T6	% IACS