

ALLOY DESCRIPTION

Alloy 6005 is a magnesium alloy typically used in welded structures, pressure vessels and bulk carrier applications. 6005 has good corrosion resistance and good weldability.

MINIMUM MECHANICAL PROPERTIES

Temper	Tensile (.500" Dia. Specimen)					Hardness Rockwell "E" 100kg 1/16" Ball	Shear		Fatigue*	
	Ultimate		Yield		Elongation/4D %		Ultimate Shearing Strength		Endurance Limit – R.R. Moore Type	
	KSI	MPa	KSI	MPa			KSI	MPa	KSI	MPa
T5	38	260	35	240	10	-	-	-	-	-

COMPARATIVE CHARACTERISTICS

Temper	Corrosion Resistance		Cold Workability ³	Machinability ³	Anodize Response ³	Brazeability ⁴	Weldability ⁴		
	General ¹	Stress ²					Gas	Arc	Spot
T5	-	-	-	-	-	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 applied stress.
- 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 procedures 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

	Extruded
	ASTM B221, B807

CHEMICAL COMPOSITION LIMITS

Weight %	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Sn	Bi	Others	
											Each	Total
Minimum	0.60	-	-	-	0.40	-	-	-	-	-	-	-
Maximum	0.90	0.35	0.10	0.10	0.60	0.10	0.10	0.10	-	-	0.05	0.15

TYPICAL PHYSICAL PROPERTIES

Characteristic		English	Metric
Nominal Density (68 °F/20 °C)		0.097 lbs./in. ³	2.69 Mg/m ³
Melting Range		1125 °F - 1210 °F	605 °C – 655 °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	23.6 micro m/m-°K
	Volumetric 68 °F/20 °C	- ⁵ in. ³ /in. ³ -°F	- m ³ /m ³ -°K
Thermal Conductivity (68 °F/20 °C)		108 BTU/ft. – hr. - °F	188 W/m - °K
Electrical Conductivity (68 °F/20 °C)	Equal Volume		28% IACS
	Equal Weight		93% IACS