

Kaiser 6033 T6, T651 Rod & Bar

Category : Metal , Nonferrous Metal , Aluminum Alloy , 6000 Series Aluminum Alloy

Material Notes:

Alloy 6033 is a higher strength version of alloy 6061, approaching properties typically obtainable with 2000 series alloys. The alloy was developed to also offer improved machinability over 6061. The improved machinability allows the user to increase speeds and feeds thus producing more parts in less time. The alloy also has shown very good corrosion resistance and excellent anodize response. 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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Mechanical Properties	Metric	English	Comments
Hardness, Brinell	120	120	500 kg, 10 mm
Tensile Strength, Ultimate	414 MPa @Diameter 12.7 mm	60000 psi @Diameter 0.500 in	
Tensile Strength, Yield	393 MPa @Diameter 12.7 mm	57000 psi @Diameter 0.500 in	
Elongation at Break	13 % @Diameter 12.7 mm	13 % @Diameter 0.500 in	4D
Modulus of Elasticity	67.0 GPa	9720 ksi	
Shear Strength	269 MPa	39000 psi	Ultimate

Component Elements Properties	Metric	English	Comments
Aluminum, Al	93.45 - 97.3 %	93.45 - 97.3 %	As Balance
Bismuth, Bi	0.30 - 1.0 %	0.30 - 1.0 %	

Component Elements Properties	Metric	English	Comments
Copper, Cu	0.40 - 1.0 %	0.40 - 1.0 %	
Iron, Fe	<= 0.50 %	<= 0.50 %	
Magnesium, Mg	0.70 - 1.3 %	0.70 - 1.3 %	
Manganese, Mn	<= 0.050 %	<= 0.050 %	
Other, each	<= 0.050 %	<= 0.050 %	
Other, total	<= 0.15 %	<= 0.15 %	
Silicon, Si	0.80 - 1.3 %	0.80 - 1.3 %	
Titanium, Ti	<= 0.15 %	<= 0.15 %	
Zinc, Zn	0.50 - 1.0 %	0.50 - 1.0 %	

Descriptive Properties	Value	Comments
Anodize Response3	B	
Arc Weldability4	A	
Cold Workability3	C	
Gas Weldability4	A	
General Corrosion Resistance1	B	
Machinability3	B	
Spot Weldability4	A	
Stress Corrosion Resistance2	A	

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