

ALUMINUM-MAGNESIUM 514.0

ANSI AA NUMBER	514.0		
Common Name (Not recommended)	214		
UNS Designation	A05140		
COMPOSITION PERCENT	Min		Max
Silicon (Si)			0.4
Iron (Fe)			0.5
Copper (Cu)			0.2
Manganese (Mn)			0.35
Magnesium (Mg)	3.5		4.5
Chromium (Cr)			
Nickel (Ni)			
Zinc (Zn)			0.15
Titanium (Ti)			0.25
Tin (Sn)			
Beryllium (Be)			
Silver (Ag)			
Other (Total)			0.15
NEAREST APPLICABLE CASTING STANDARDS			
ASTM (B Series)	B26		
AMS			
Federal (QQ-C- Series)	601e		
Military (Mil-C- Series)	21180c		
TYPICAL PROPERTIES	F		
Tensile Strength (ksi)	25		
Yield Strength (.5% extension under load) (ksi)	12		
Elongation (2 inch gauge length) (%)	9		
Compressive Yield Strength (ksi)	12		
Hardness (Brinell) (HB @ 500kg)	50		
Shear Strength (ksi)	20		
Endurance Limit (K ksi)	7		
Modulus of Elasticity (K ksi)	10.3		
Density (lb/cu.in. @ 68F)	.096		
Electrical Conductivity (% IACS @ 68F)	35		
Thermal Conductivity (cal/sec/sq cm/cm/C @ 25C)	0.33		
Coefficient of Thermal Expansion (per F @ 68-212F)	13.4		
Coefficient of Thermal Expansion (per F @ 68-572F)	14.5		
Melting Range (Liquidus-Solidus)(F)	1110-1185		
Resistance to Hot Cracking	F		
Pressure Tightness	P		
Fluidity	F		
Solidification Shrinkage Tendency	P		
Strength at Elevated Temperatures	G		
Corrosion Resistance	E		
Machinability	E		
Polishing	E		
Gas Welding	VG		
Arc Welding	VG		
Brazing	No		
Normally Heat Treated	No		
Anodizing Appearance	Natural Aluminum		
Electroplating	P		
Applications:	Shock resistant applications, brackets, C-clamps, machined parts needing strength, impellers, optical applications.		

Always use the design principles outlined on page two of this information sheet or at our website.

Consult your foundry early in the design process.

St. Paul Brass and Aluminum does not currently pour this alloy, but will consider it if purchased volumes justify the inventory.



St. Paul
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Use Good Design Principles

1. St. Paul Brass and Aluminum Foundry is providing this information on metal characteristics for informational purposes only. Before making a final decision on alloy selection consider the following and all other appropriate design and specification principles. Please note that this is not an exhaustive list.
2. Consult the appropriate specification from an accredited specifying body (ASTM, SAE, Federal or Military) to determine current minimum values of this alloy.
3. Use appropriate design safety factors.
4. Use Failure Modes and Effects Analysis to help identify possible weaknesses in designs and specifications.
5. Use computerized stress analysis tools.
6. Use appropriate certification requirements for your casting suppliers. These may include test bars, chemical certifications, radiography, dye penetrant or other non-destructive testing methods.
7. Test your design to failure in a controlled environment. Then test it to failure in a simulation of its end use.
8. You and you alone are responsible for the suitability of your design and the materials that you select.
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