


Aluminum 356.0-F, Sand Cast

Material Notes: Data points with the AA note have been provided by the Aluminum Association, Inc. and are NOT FOR DESIGN.

Composition Notes:

If iron exceeds 0.45%, manganese content shall not be less than one-half iron content.
Composition information provided by the Aluminum Association and is not for design.

Key Words: Aluminium 356.0-F; UNS A03560; ISO 3522 and R2147 AISi7Mg; AA356.0-F

| Physical Properties | Metric | English | Comments |
|---|-------------------|------------------------------------|--|
| Density | 2.68 g/cc | 0.0968 lb/in ³ | |
| Mechanical Properties | Metric | English | Comments |
| Hardness, Brinell | 40 - 70 | 40 - 70 | AA; Typical; 500 g load; 10 mm ball |
| Hardness, Knoop | 78 | 78 | Estimated from Brinell Hardness. |
| Tensile Strength, Ultimate | >= 131 MPa | >= 19000 psi | AA |
| Elongation at Break | >= 2.0 % | >= 2.0 % | AA; in 2 in. (50 mm) or 4D |
| Modulus of Elasticity | 72.4 GPa | 10500 ksi | In Tension; elastic modulus in compression is typically about 2% higher for aluminum alloys. |
| Poissons Ratio | 0.33 | 0.33 | |
| Machinability | 50 % | 50 % | 0-100 Scale (100=best) |
| Shear Modulus | 27.2 GPa | 3950 ksi | |
| Shear Strength | 83.0 MPa | 12000 psi | Calculated |
| Electrical Properties | Metric | English | Comments |
| Electrical Resistivity | 0.00000400 ohm-cm | 0.00000400 ohm-cm | |
| Thermal Properties | Metric | English | Comments |
| Heat of Fusion | 389 J/g | 167 BTU/lb | |
| CTE, linear  | 21.4 µm/m-°C | 11.9 µin/in-°F | @Temperature 20.0 - 100 °C @Temperature 68.0 - 212 °F |
| | 23.2 µm/m-°C | 12.9 µin/in-°F | @Temperature 20.0 - 300 °C @Temperature 68.0 - 572 °F |
| Specific Heat Capacity | 0.963 J/g-°C | 0.230 BTU/lb-°F | |
| Thermal Conductivity | 167 W/m-K | 1160 BTU-in/hr-ft ² -°F | |
| Melting Point | 557 - 613 °C | 1030 - 1140 °F | |
| Solidus | 557 °C | 1030 °F | |

Liquidus 613 °C 1140 °F

| Processing Properties | Metric | English | Comments |
|------------------------------|----------------|----------------|--|
| Melt Temperature | 677 - 816 °C | 1250 - 1500 °F | |
| Solution Temperature | 535 - 540.6 °C | 995 - 1005 °F | hold at temperature for 12 hr; cool in water at 150 to 212°F |
| Casting Temperature | 677 - 788 °C | 1250 - 1450 °F | |

| Component Elements Properties | Metric | English | Comments |
|--------------------------------------|---------------|----------------|-----------------|
| Aluminum, Al | 90.1 - 93.3 % | 90.1 - 93.3 % | As remainder |
| Copper, Cu | <= 0.25 % | <= 0.25 % | |
| Iron, Fe | <= 0.60 % | <= 0.60 % | |
| Magnesium, Mg | 0.20 - 0.45 % | 0.20 - 0.45 % | |
| Manganese, Mn | <= 0.35 % | <= 0.35 % | |
| Other, each | <= 0.050 % | <= 0.050 % | |
| Other, total | <= 0.15 % | <= 0.15 % | |
| Silicon, Si | 6.5 - 7.5 % | 6.5 - 7.5 % | |
| Titanium, Ti | <= 0.25 % | <= 0.25 % | |
| Zinc, Zn | <= 0.35 % | <= 0.35 % | |