Specifications

AMS. 356.0: 4217, 4260, 4261, 4284, 4285, 4286, A356.0: 4218
Former ASTM. 356.0, SG70A; A356.0, SG70B
SAE. 356.0: J452, 323
UNS number. 356.0: A03560. A356.0: A13560
A356.0: MIL-C-21180 (Class 12)
Foreign. ISO:AlSi7Mg

Chemical Composition

Composition limits. 356.0: 0.25 Cu max, 0.20 to 0.45 Mg, 0.35 Mn max, 6.5 to 7.5 Si, 0.6 Fe max,
0.35 Zn max, 0.25 Ti max, 0.05 other (each) max, 0.15 others (total) max, bal Al. A356.0: 0.20 Cu
max, 0.25 to 0.45 Mg, 0.10 Mn max, 6.5 to 7.5 Si, 0.20 Fe max, 0.10 Zn max, 0.20 Ti max, 0.05
other (each) max, 0.15 others (total) max, bal Al.
Consequence of exceeding impurity limits. High copper or nickel decreases ductility and
resistance to corrosion. High iron decreases strength and ductility.

Applications

Typical uses. 356.0 aircraft pump parts, automotive transmission cases, aircraft fittings and
control parts, water-cooled cylinder blocks. Other applications where excellent castability and
good weldability, pressure tightness, and good resistance to corrosion are required. A356.0:
aircraft structures and engine controls, nuclear energy installations, and other applications where
high-strength permanent mold or investment castings are required.

Mechanical Properties

0.2%. Proof Stress (N/mm²) 185
Tensile stress (N/mm_) 230
Elongation (%) 2
Impact -
Brinell Hardness 75
Endurance Limit 56
Modulus of Elasticity 71
Shear strength 120

Properties in excess of those quoted can be obtained with Strontium additions e.g.- Elongation 5%
Mass Characteristics

Density. 2.685 g/cm³ (0.097 lb/in³) at 20°C (68°F)

Thermal Properties

Liquidus temperature. 615°C (1135°F)
Solidus temperature. 555°C (1035°F)
Coefficient of linear thermal expansion.

<table>
<thead>
<tr>
<th>Temperature range</th>
<th>Temperature range</th>
<th>Average coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>°F</td>
<td>p.m/mK</td>
</tr>
<tr>
<td>20-100</td>
<td>68-212</td>
<td>21.5</td>
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<tr>
<td>20-200</td>
<td>68-392</td>
<td>22.5</td>
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<tr>
<td>20-300</td>
<td>68-572</td>
<td>23.5</td>
</tr>
</tbody>
</table>

Specific heat. 963 J/kg . K (0.230 Btu/lb.ºF) at 100°C (212º)
Latent heat of fusion. 389kJ/kg
Thermal conductivity. At 25 ºC (77ºF)

Minimum mechanical properties for alloy A356.0-T61 castings

<table>
<thead>
<tr>
<th>Class</th>
<th>Tensile strength (MPa)</th>
<th>Tensile strength (Ksi)</th>
<th>Tensile yield strength (MPa)</th>
<th>Tensile yield strength (Ksi)</th>
<th>Compressive yield strength (MPa)</th>
<th>Compressive yield strength (Ksi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>260</td>
<td>38</td>
<td>195</td>
<td>28</td>
<td>5</td>
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<tr>
<td>2</td>
<td>275</td>
<td>40</td>
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<td>45</td>
<td>235</td>
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<tr>
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<tr>
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<tr>
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<td>32</td>
<td>150</td>
<td>22</td>
<td>2</td>
<td>150</td>
</tr>
</tbody>
</table>

(a) Classes 1, 2, and 3 (levels of properties) obtainable only at designated areas of casting; classes 10, 11 and 12 may be specified at any location in casting. (b) Specified in MIL-A-21180. (C) 0.2% offset. (d) in 4d, where d is diameter of reduced section of tensile-test specimen. (e) Design values; not specified