Aluminum alloys

Category:
High strength, low density

Aluminum-Silicon alloy Al-MD20

Aluminum alloy Al-MD20 is a new high strength low density Aluminum-Silicon alloy processed via spray forming. Al-MD20 is featured with high strength, low density, high modulus and excellent elevated temperature resistance.

General properties

• High strength
• Higher modulus than standard alloys
• Lower density than standard alloys
• Lower density than standard alloys
• High fatigue strength at elevated temperatures

Comparison with Standard alloys A4032, A2017

Advantages:
- 8% higher stiffness, A4032
- 14% higher stiffness, A2017
- 11% higher strength, A4032
- Same strength, A2017
- 5% lower density, A4032
- 9% lower density, A2017
- Higher fatigue at high temp.

Disadvantages:
- Lower ductility

Chemical Composition: Al-Cu-Si-Mg

Mechanical properties

<table>
<thead>
<tr>
<th></th>
<th>UTS MPa</th>
<th>YS MPa</th>
<th>Elong. %</th>
<th>Modulus GPa</th>
</tr>
</thead>
<tbody>
<tr>
<td>AI-MD4</td>
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</tr>
<tr>
<td>Rt</td>
<td>420</td>
<td>390</td>
<td>0.3</td>
<td>84</td>
</tr>
<tr>
<td>100°C</td>
<td>350</td>
<td>330</td>
<td>1.0</td>
<td>77</td>
</tr>
<tr>
<td>200°C</td>
<td>275</td>
<td>260</td>
<td>1.7</td>
<td>70</td>
</tr>
</tbody>
</table>

Physical data

Density: 2.53 g/cm³
CTE: 18x10-6
Thermal conductivity: 120 W/mK

Applications

- Pistons
- Structural parts
- Brake Calipers
- Automotive Engine parts

Delivery form

- Bars
- Billets up to 120 mm dia.
- Plates