Magnesium-alloy Mg-AZ91-SiC

Magnesium alloy Mg-AZ91-SiC is a high strength, high modulus Magnesium alloy with Silicon-Carbide reinforcement. The processing route is via modified squeeze casting. The particle size is 3-5µm. Because of the small particle size the properties are controlled by the matrix alloy. Mg-AZ91-SiC shows high strength and an elastic modulus tailor made to the limit of the specific elastic modulus of 40 GPa/Density.

General properties
- High strength
- High modulus

Comparison with alloy AMC-225, AZ91

Advantages: - Higher strength, AZ91
- Lower density, AMC-225
- Higher modulus, AZ91
- Same ductility, AMC-225

Disadvantages: - Same machining difficulties than AMC-225

Chemical Composition: Mg-AZ91+50% SiC (3-5µm)

Mechanical properties

<table>
<thead>
<tr>
<th></th>
<th>UTS (MPa)</th>
<th>YS (MPa)</th>
<th>Elong. (%)</th>
<th>E-Modulus (GPa)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mg-AZ91-SiC</td>
<td>503</td>
<td>426</td>
<td>1.4</td>
<td>102</td>
</tr>
</tbody>
</table>

Physical data
Density: 2.59 g/cm³
CTE: 16x10^-6

Applications
- Structural parts
- Automotive application
- Replacement of AMC-225, AZ91, A2017
- Uprights, Brackets

Delivery form
- Billets