WE54 Magnesium alloy is a casting alloy which maintains its mechanical properties at high temperature (up to 300°C). WE54 offers a high performance product for engineers who require weight reduction without compromising performance. The machinability of WE54 is excellent and the alloy offers similar corrosion resistance to aluminium casting alloys under salt spray conditions. WE54 is used commonly in Aerospace, Defence and Motorsport applications as a high performance, weight reducing material.

**Typical Applications**
- Missiles
- Power systems
- Aircraft engines
- Motorsport
- Electrical equipment
- Engine casings
- High performance applications
- Gearbox casings

**Key features**
- High strength
- Heat treatable
- Good castability
- Increased levels of Yttrium for improved corrosion resistance
- Excellent properties retention

**Availability**
- Bar

**Corrosion resistance**
- Excellent

**Weldability**
WE43 can be welded using tungsten arc inert gas process. A filler rod of similar composition should be used.

**Chemical Composition (weight %)**

<table>
<thead>
<tr>
<th></th>
<th>Mg</th>
<th>Y</th>
<th>Zr</th>
<th>Nd</th>
<th>Heavy Rare earths *</th>
</tr>
</thead>
<tbody>
<tr>
<td>min</td>
<td>Bal</td>
<td>4.75</td>
<td>0.4</td>
<td>1.50</td>
<td>1</td>
</tr>
<tr>
<td>max</td>
<td>Bal</td>
<td>5.50</td>
<td>2.00</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

*Heavy rare earth fraction contains mainly Yb, Er, Dy, and Gd

**Mechanical Properties (at ambient temperature)**

- 0.2% Proof Stress: 205 MPa
- Tensile Strength: 280 MPa
- Elongation: 4%
- Ultimate Stress: 150 MPa

**Physical Properties**

<table>
<thead>
<tr>
<th>Density</th>
<th>Metric</th>
<th>Imperial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting Point</td>
<td>1.8 g/cm³</td>
<td>0.06516/in³</td>
</tr>
<tr>
<td></td>
<td>545 - 640°C</td>
<td>1013 - 1184°F</td>
</tr>
</tbody>
</table>

**Technical Assistance**

Our knowledgeable staff backed up by our resident team of qualified metallurgists and engineers, will be pleased to assist further on any technical topic.

**Contact Information**

- www.smithmetal.com
- sales@smithmetal.com

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