

Magnesium

The Lightest Structural Metal

Extruded Magnesium Material Technology

Source:

<https://www.luxfermeltechnologies.com/lightweight-extruded-magnesium/>

Luxfer MEL Technologies unique range of lightweight extruded magnesium products enable; lighter, stronger, safer and higher performance designs. Luxfer MEL Technologies is a world leader in the development and supply of high quality extruded products. These lightweight alloys are used as forging feedstock, as base material from which to machine components or as custom shapes to integrate directly into a component. Luxfer MEL Technologies operates two dedicated presses to supply a full range of extruded magnesium alloys and we continue to develop new alloys for future applications.

Advantages of Magnesium



- Low Density

With a density of 1.8 g/cm³, by volume magnesium is 30% lighter than aluminium and 75% lighter than steel making it the lightest structural metal.

- Versatile

Lightweight magnesium alloys can be shaped into plate by rolling and extruded into both solid and hollow profiles. These can be further shaped using forging, pressing, bending or simply machining from solid.

- EMI/RFI Shielding

Has inherent screening properties, useful for electronic enclosures and has good thermal conductivity for heat dissipation.



- Vibration Damping

Magnesium alloys have excellent vibration damping properties.

- Corrosion Resistance

Modern alloys have good corrosion resistance. For more severe environments there are a range of surface passivation and top coat treatments commercially available.



- High Strength

Alloys are available that have comparable properties with other structural metals – with the added advantage of superior performance at elevated temperatures (good creep resistance and tensile strength).

- High Specific Stiffness

For bars with equivalent weight and width, magnesium is 18 times stiffer than steel and double that of aluminium. In practice it is not always possible to increase section thickness to these extents. But with only small increases in cross section it is now possible to redesign parts that offer 20-25% weight savings over aluminium equivalents and 65-70% weight savings when substituting steel designs.



- Highly Machinable

Magnesium alloys are the easiest of all structural metals to machine. Advantages include:

- Low power consumption (45% less than aluminium)
- Fast machining rate (55%)
- Excellent surface finish
- Reduced tool wear
- Well broken chips

