

SHP MAG 400 Ultimate

Product Datasheet

A magnesium alloy offering the ultimate in high strength to weight ratio performance

SHP MAG 400 Ultimate is a high-strength magnesium alloy used in the manufacture of motorsport components.

Used effectively in temperatures up to 300°C (572° F), SHP MAG 400 Ultimate is a magnesium-based alloy containing alloying elements of Gadolinium, Yttrium, Zinc and Zirconium. Apart from the material's weight-reducing capabilities, MAG 400 is a high strength alloy offering good mechanical properties with excellent corrosion resistance.

EXPLORE THE DESIGN POSSIBILITIES

Racing car designers are continually looking for a competitive edge. Magnesium offers impressive characteristics to get you at the front of the grid. It is 36% lighter per volume than aluminium and has the highest strength to weight ratio of all structural materials. With good castability and high specific strength, SHP MAG 400 Ultimate is a magnesium alloy product that gives you design options to boost overall performance.

Characteristics

- High strength alloy
- Good corrosion resistance
- Good mechanical properties
- The lightest alloying element available today
- Excellent performance under high temperatures and demanding operating stresses

About Smiths High Performance

Smiths High Performance is a leading stockholder and supplier of high-performance engineering materials to the global motorsport sector. We are supply partners in a range of specialist motorsport markets including Formula 1, Formula E, NASCAR, MOTO GP, WEC & WRC.

Further technical data available on the reverse of this Datasheet



Availability

Round, flat and square bar, tube, plate and forgings

Applications

- Racing car and sports car chassis
- Racing car hydraulics
- Drive trains
- Transmission systems
- Automotive components
- Racing bike chassis

Chemical Composition (extruded)

| Weight = % | | Mg | Gd | Y | Zr | Fe | Cu | Ni | Zn | Other |
|------------|-----|-----|-----|-----|------|------|-------|-----|-----|-------|
| Min | Rem | 8.5 | 3.5 | 0.4 | | | | 1.0 | | 0.3 |
| Max | Rem | 9.5 | 4.5 | 0.7 | 0.01 | 0.02 | 0.005 | 1.5 | 0.3 | |

Mechanical Properties (extruded)

| | Rm in MPa (≥MPa) | Rp 0.2 (≥MPa) | Elongation. A5 % (≥%) |
|------------------|------------------|---------------|-----------------------|
| MAG 400 Ultimate | 400 | 350 | 5 |

Minimum Guaranteed Mechanical Properties for SHP MAG 400 Ultimate (extruded products)

| | Round Bar (mm) | Flat Bar (mm) | Rm in MPa (≥MPa) | Rp 0.2 MPa (≥MPa) | Elongation A5 % (≥%) |
|-----------------|-------------------|-----------------------------|------------------|-------------------|----------------------|
| MAG400 Ultimate | 120 180 205 | 220*40 220*90 220*110 | 400 | 350 | 5 |

Related Industrial Applications

SHP MAG 400 Ultimate lends itself well to the following industry applications:

- Aircraft engines
- Helicopter transmissions
- Missile fuselage
- Military structures
- Space Rockets
- High strength to weight ratio applications

...where performance matters...

When you purchase high performance materials from **Smiths High Performance**, you will be joining some of the biggest and best global engineering companies. We are a Tier 1 supply chain partner to the world's leading motorsport companies. Our unique business structure and ethos allows us to offer services which are otherwise unavailable in this market sector.