# SHP MAG 400 Ultimate

Product Datasheet

#### Revision: SHP/MAG-400/07/2018



...where performance matters

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.



#### 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

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

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# 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 Ultinate (extruded products)

	Round Bar	Flat Bar	Rm in MPa	Rp 0.2 MPa	Elongation A5 %
	(mm)	(mm)	(≥MPa)	(≥MPa)	(≥%)
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
- Missile fuselage
- Space Rockets
- Helicopter transmissions
  Military structures
  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.

#### www.smithshp.com



Unit 3, Juno Place Stratton Business Park Biggleswade SG18 8XP Tel: +44 (0)1767 604 708



info@smithshp.com

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