

Maraging Steel MS1



Material description

MS1 is the M300 equivalent of maraging steels. The strength is imparted by martensite ageing (hence the name) which is optimised after heat treatment. Its uses range from injection moulding tool inserts through die casting tooling to F1 engine substrate components where ultra-high strength is required.

Physical properties¹

Density (based on 8.19 g/cm ³ theoretical density)	> 99.75%
Pore size	< 100 µm
Porosity rate	< 0.25%
Hardness	min. 550 HV

Mechanical properties

	Stress Relieved ²
Tensile strength Horizontal (XY) Vertical (Z)	2050 MPa ± 100 MPa 2050 MPa ± 100 MPa
Proof strength (Rp 0.2%) Horizontal (XY) Vertical (Z)	1990 MPa ± 100 MPa 1990 MPa ± 100 MPa
Modulus of elasticity Horizontal (XY) Vertical (Z)	180 ± 20 GPa 180 ± 20 GPa
Elongation at break Horizontal (XY) Vertical (Z)	4 ± 2% 4 ± 2%

¹ All data gathered using ASTM E8M flat un-machined specimens that were wire EDM to profile with cross section of 2mmx6mm at the gauge section.

² Heat treated in air/argon at 490°C for 6 hours. Please contact us for bespoke heat treatment to achieve different mechanical properties.

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Chemical properties

Material composition wt%	Ni	17.00-19.00	C	0.70 max	Cu	0.50 max
	Cr	0.50 max	Ti	0.60-0.80	S/P	0.01 max each
	Mo	4.50-5.30	Al	0.05-0.15	Mn/Si	0.1 max each
	Fe	Balance	Co	8.5-9.5		

Material Properties	Applications	Finishes	Industries
<ul style="list-style-type: none"> • Corrosion Resistant • Wear Resistant • Ultra-high Strength 	<ul style="list-style-type: none"> • Prototyping • Engineering • Turbomachinery • Die Casting Tools • Injection Moulding 	<ul style="list-style-type: none"> • Machined • Spark eroded • Welded • Micro shot-peened • Polished • Coated 	<ul style="list-style-type: none"> • Automotive • Motorsport • Aerospace