

Material Specification

Maraging Steel 1.2709

Building Success
Layer by Layer™



Application: 1.2709 is a pre-alloyed ultra high strength steel. Its composition corresponds to US classification 18% Ni Maraging 300, European 1.2709 and German X3NiCoMoTi 18-9-5. This kind of steel is characterised by having very good mechanical properties, and being easily heat-treatable using a simple thermal age-hardening process to obtain excellent hardness and strength.

Ideal for many tooling applications such as tools for injection moulding, die casting of light metal alloys, punching, extrusion, it is also good for high performance industrial and engineering parts, for example aerospace and motor racing applications.

- Typical applications:**
- Heavy duty injection moulds and inserts for moulding all standard thermoplastics using standard injection parameters, with achievable tool life of up to millions of parts.
 - Die casting moulds for small series in light alloys.
 - Parts requiring particularly high strength and hardness.

Physical and Chemical Properties:		
Relative Density with Standard Parameters		approx. 100% (8.0-8.1 g/cm ³)
Material composition	Fe balance Ni 17-19 wt% Co 8.5-9.5 wt% Mo 4.5-5.2 wt%	Ti 0.6-0.8 wt% Al 0.05-0.15 wt% Cr, Cu each ≤ 0.5 wt% C ≤ 0.03 wt% Mn, Si each ≤ 0.1 wt% P, S each < 0.01 wt%
Mechanical Properties:		
		After standard heat treatment cycle MS_M300_B
Tensile Strength	- horizontal direction (XY) - vertical direction (Z)	typ. 2050 ± 100 MPa typ. 2050 ± 100 MPa
Yield strength (Rp 0.2%)	- horizontal direction (XY) - vertical direction (Z)	typ. 1990 ± 100 MPa typ. 1990 ± 100 MPa
Elongation at break	- horizontal direction (XY) - vertical direction (Z)	typ. 4 ± 2% typ. 4 ± 2%
Modulus of elasticity	- horizontal direction (XY) - vertical direction (Z)	typ. 180 ± 20 GPa typ. 180 ± 20 GPa
Hardness		typ. 50-56 HRC
Ductility (Notched Charpy impact test)		typ. 11 ± 4 J
Thermal Properties:		
Thermal conductivity		typ. 20 ± 1 W/m°C
Specific heat capacity		typ. 450 ± 20 J/kg°C
Maximum operating temperature		approx. 400°C

For further technical information or to obtain a quotation for your parts, please contact us on +44 (0)1635 580284 or email your 3D CAD data to enquiries@3trpd.co.uk

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