

MaragingSteel MSI : High performance steel for series tooling

EOS MaragingSteel MSI is a martensite-hardenable steel. Its chemical composition corresponds to US classification 18% Ni Maraging 300, European 1.2709 and German X3NiCoMoTi 18-9-5. This kind of steel is characterized by having excellent strength combined with high toughness. The parts are easily machinable after the building process and can be easily post-hardened to more than 50 HRC. They also have excellent polishability.

Properties and Applications

- Easily machinable; age hardenable up to approx. 54 HRC; Good thermal conductivity.
- Series injection moulding, also for high volume production; other tooling applications, e.g. aluminium die casting; high performance parts, e.g. for aerospace applications

Mechanical properties

	As built	After heat treatment
Ultimate tensile strength	1100 MPa ± 100 MPa 160 ksi ± 15 ksi	1950 MPa ± 100 MPa 280 ksi ± 15 ksi
Yield strength (Rp 0.2 %)	1000 MPa ± 100 MPa 145 ksi ± 15 ksi	1900 MPa ± 100 MPa 275 ksi ± 15 ksi
Elongation at break	8 ± 3 %	4 ± 1 %
Young's modulus	160 GPa ± 20 GPa 23.6 ± 3 Msi	180 GPa ± 20 GPa 26.5 ± 3 Msi
Hardness	33-37 HRC	50-54 HRC

Physical properties

	As built	After heat treatment
Relative density	approx. 100 %	approx. 100 %
Density	8.0 - 8.1 g/cm ³ 0.289 - 0.293 lb/in ³	8.0 - 8.1 g/cm ³ 0.289 - 0.293 lb/in ³
Thermal conductivity	15 ± 0.8 W/m °C 105 ± 6 Btu/(h ft ² °F/in)	20 ± 1 W/m °C 139 ± 7 Btu/(h ft ² °F/in)
Specific heat capacity	450 ± 20 J/kg °C 0.108 ± 0.005 Btu/(lb °F)	450 ± 20 J/kg °C 0.108 ± 0.005 Btu/(lb °F)



NOTE: EOS GmbH e-Manufacturing Solutions
Detailed specifications may be found at <http://www.eos.info/en/products/materials.html>