

Technical Specification:

Maximum plastic part dimensions (mm)	850 (L) - 850 (W) - 850 (H)
Maximum insert dimensions (mm)	240 (L) - 240 (W) - 340 (H)
Insert Alloy Material	Maraging Steel 300
Density (g/cm ³)	8.1
Melting Point (°C)	1413
Coefficient of thermal expansion (K ⁻¹)	10.3 10 ⁻⁶

Material Description:

Maraging steels form a class of iron alloys. This group of materials has a martensitic crystal structure and is strengthened via aging using our in-house developed methods, hence the name 'maraging'. These ultra-low carbon alloys have very high strength and hardness properties derived from precipitation of intermetallic compounds rather than carbon content.

Nickel is the main alloying element, with cobalt, molybdenum, and titanium as secondary intermetallic alloying metals.

Maraging steel 300 is also commonly referred to as 1.2709.

Material properties:

- High strength
- High hardness
- High fatigue strength
- Good machinability

Mechanical properties of QTool inserts:

Note 1 Tested at ambient temperature to ASTM E8. Machined prior to testing. Values based on a sample size of 6.

Note 2 Tested to ASTM E384-11, after polishing.

Description	QTool insert	Standard deviation ($\pm 1\sigma$)
Tensile strength (UTS) (See note 1)		
Horizontal direction (XY)	1816 MPa	6 MPa
Vertical direction (Z)	1797 MPa	9 MPa
Yield strength (see note 1)		
Horizontal direction (XY)	1758 MPa	20 MPa
Vertical direction (Z)	1740 MPa	20 MPa
Elongation at break (see note 1)		
Horizontal direction (XY)	5.5%	1%
Vertical direction (Z)	7%	1%
Modulus of elasticity (see note 1)		
Horizontal direction (XY)	174 GPa	8 GPa
Vertical direction (Z)	179 GPa	11 GPa
Hardness (Vickers) (see note 2)		
Horizontal direction (XY)	544 HV0.5	7 HV0.5
Vertical direction (Z)	545 HV0.5	8 HV0.5

Density of additively manufactured maraging steel 300 is typically 99.8%, measured optically on a 10 mm x 10 mm x 10 mm sample at 75x magnification.