

MATERIAL DATA SHEET

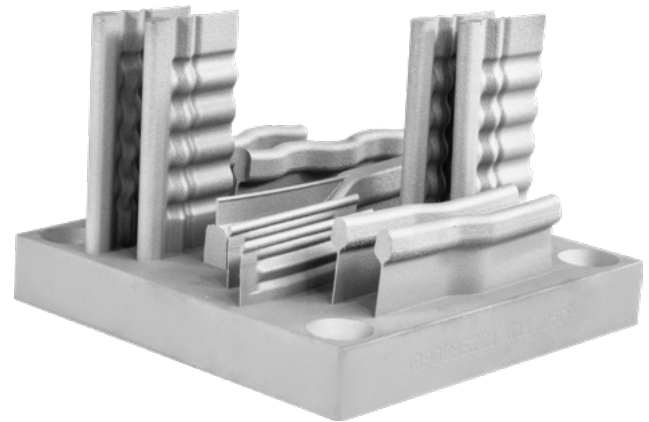
MARAGING STEEL M300

The alloy chemical composition complies with DIN 1.6354

General Material and Process Specification

Maraging steel M300 is a low-carbon tool steel with Ni, Co and Mn as secondary intermetallic alloying elements. This material is easily heat-treatable and offers excellent hardness, strength and wear resistance. Due to its high hardness and wear resistance, it is widely used in automotive and industrial applications. Injection molding and die-cast inserts are some of the major applications.

This data sheet specifies the expected mechanical properties and characteristics of this alloy when manufactured on a FormUp 350 system. All data is based on parts built with AddUp standard 45 µm layer thickness parameters, using fine spherical powder.



Physical Properties	Results
Density (%) ¹	Typical 99.95
Theoretical density (g/cm ³) ²	8.0

¹ Relative density measured using optical microscopy
² Values based on literature

Surface Roughness Ra ^{3,4,5}	As-built	Bead blasted ⁵
Vertical surface	2 to 5	1 to 3

³ Depends on orientation and testing method
⁴ Tested using optical profilometer, cutoff wavelength λc=2.5 mm
⁵ Surface treatment performed with glass blasting medium at 4 bar

Mechanical Properties ⁶	Test Method	Thermal State		
		Stress-relieved ⁷	Heat-treated ⁸	Heat-treated ⁹
Tensile strength (MPa)	EN ISO 6892-1			
Horizontal direction (XY)		1543±80	1451±9	1786±68
Vertical direction (Z)		1439±56	1453±66	1759±99
Yield strength (MPa)	EN ISO 6892-1			
Horizontal direction (XY)		1431±104	1322±27	1712±65
Vertical direction (Z)		1333±64	1332±70	1717±107
Elongation at failure (%)	EN ISO 6892-1			
Horizontal direction (XY)		9±4	12±1	6±1
Vertical direction (Z)		7±4	13±1	6±1
Rockwell hardness (HRBC)	ISO 6508	-	43-46	50-52

⁶ Tested at ambient temperature to ASTM E8. Machined before testing.
⁷ Specimens were stress-relieved at 580°C for 4 hours in inert atmosphere
⁸ Specimens were hardened at 590°C for 4 hours in inert atmosphere and air cooled to ambient temperature
⁹ Specimens were hardened at 480°C for 2 hours in inert atmosphere and air cooled to ambient temperature

Generic Data¹⁰

Thermal and Electrical Properties

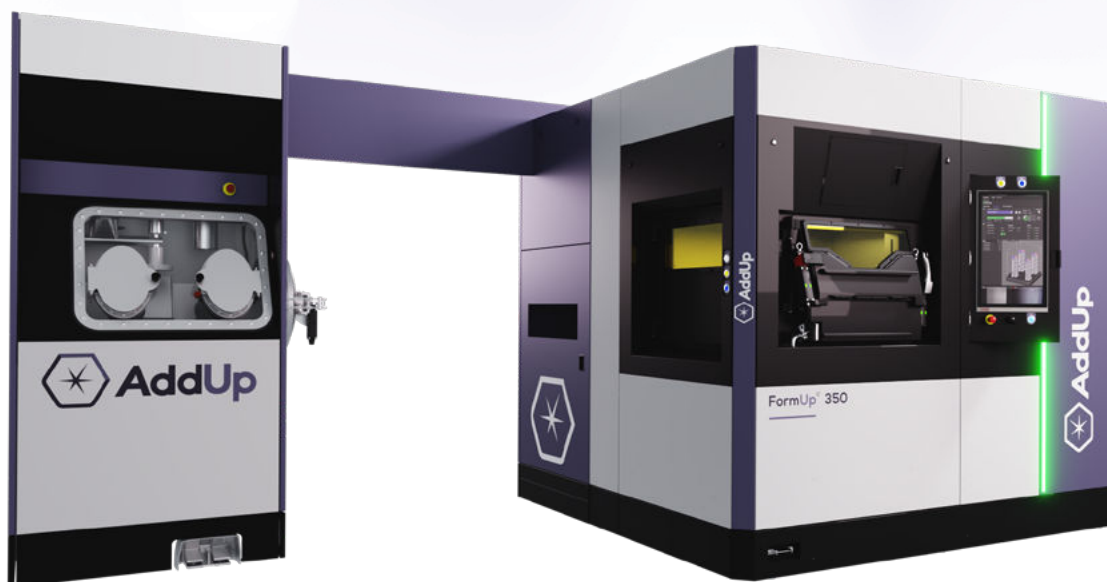
	Results
Thermal conductivity (W/mk) at 25°C	14.2 - 11.5
Electrical Resistivity (Ωm) [x10 ⁻⁶]	0.17 - 0.49
Melting Range (°C)	1430 - 1450
Coefficient of thermal expansion (µm/(m .°C))	10.0 - 11.5

¹⁰ Based on the literature data

Chemical Composition¹¹

Element	Fe	Ni	Co	Mo	Cr	Al	Mn, Si, Ti	P,S
Weight (%)	Balance	17.0-19.0	8.5-9.5	4.5-5.2	≤0.30	0.05-0.15	≤0.10	≤0.01

¹¹ Based on the manufacturer material datasheet



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