M300

Material Data Sheet

Material Description

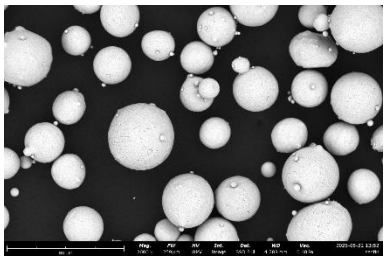
GMP M300 metal powders have been specifically designed and optimised for use in Additive Manufacturing (AM).

GMP M300 metal powders are widely used and successfully proven in AM. Thanks to their low carbon properties when compared to M2 or other high carbon content tool steels, **GMP M300** processes well across the broad spectrum of AM machines and technologies.

GMP M300 is a maraging steel, which is a martensitic tool steel that is strengthened by thermal aging. Often used for tooling, moulds, and high strength components, after heat treatment **GMP M300** delivers excellent mechanical properties particularly excelling in tensile strength and hardness.

Powder Images

Typical microscopy image of **GMP M300 -45+15**



Powders are supplied in a variety of standard and custom sizes.

Part Example

Awaiting part image

Material Properties

- Excellent strength
- High hardness
- High fatigue strength
- High wear resistance
- Good machinability

Typical Applications

- High strength components
- Hardwearing components
- Tooling, moulds and dies

Relevant Sectors

- Automotive
- General engineering
- Industrial

Powder Properties

item no.	GMP M300 -45+15		
PSD	15-45µm	Application	PBF
item no.	GMP M300 -53+20		
PSD	20-53µm	Application	PBF
item no.	GMP M300 -53+15		
PSD	15-53µm	Application	PBF
item no.	GMP M300 -150+45		
PSD	45-150µm	Application	DED
item no.	GMP M300 -106+45		
PSD	45-106µm	Application	EBM
item no.	GMP M300 -300		
PSD	<300µm	Application	HIP
General Properties			
PSD	d10, d50, d90 reported		
Apparent Density	Measured and reported		
Flow	Measured and reported		

Chemical Composition

Fe	65.1 – 68.8
Ni	18.0 – 19.0
Co	8.5 – 9.5
Mo	4.6 – 5.2
Ti	0.6 – 0.8
Al	0.05 – 0.15
Cr	≤0.25
Mn	≤0.10
Si	≤0.10
B	≤0.001
O	≤0.10
N	≤0.10
C	≤0.03
P	≤0.010
S	≤0.010

- wt%

Industry Powder Names

Generic name	Maraging Steel
Generic name	**X3NiCoMoTi 18-9-5**
Colibrium (GE) Additive	M300
SLM Solutions	1.2709
Renishaw	1.2709
EOS	Tool Steel 1.2709

Atomisation Process

- Vacuum inert gas atomisation
- Anti-Satellite technology
- Argon gas atomised

Powder Quality

- Highly Spherical
- Very few satellites
- Excellent flowability

Applicable Specification

- DIN 1.2709

  Other specifications: ASTM 579, AMS 6514, MIL-S 46850, ASTM F3607-22

gmp@globusmetalpowders.com
www.globusmetalpowders.com
+44 (0) 1642 929 130

M300
Material Data Sheet

Mechanical Properties*

		0.2% Yield Strength (MPa)	Tensile Strength (MPa)	Elongation (%)	E-modulus (GPa)	Impact Toughness (J)	Hardness (HRC)
As Built	Horizontal	960±45	1176±9	17.6±0.8	171±7	56.0±10.0	31
	Vertical	785±54	1036±7	16.6±1.7	162±6	46.0±3.0	31
After Heat Treatment	Horizontal	2013±16	2094±7	5.2±0.8	185±7	9.9±0.5	53
	Vertical	1961±21	2052±10	6.2±1.0	179±8	9.1±0.8	53

*typical room temperature data

Physical Properties*

True Density	8.1 g/cm^3
Thermal Conductivity @ 20°C	14.2 W/mK
Thermal Conductivity @ 600°C	21.0 W/mK
Thermal Conductivity @ 1300°C	28.6 W/mK
Melting Point	1413°C
Coefficient of thermal expansion	10.3 10^{-6} K^{-1}

*typical data

Heat Treatment

Information on heat treatment and stress relieving can be provided by our technical experts by contacting: gmp@globusmetalpowders.com

Contact

Globus Metal Powders is committed to providing our global customers with world-beating customer service through direct support, metallurgy and AM experts, and a family of authorised distribution partners.

Globus Metal Powders offers a diverse range of metal powders and alloys for Additive Manufacturing (AM) and Hot Isostatic Pressing (PM-HIP), along with next generation alloy development maximising the potential benefits and solutions that AM and PM-HIP can deliver.

Our core range of metal powders includes steel, stainless steel, nickel, cobalt and bespoke alloys.

Globus Metal Powders Ltd
Eston Road
Middlesbrough
TS6 6US
United Kingdom

Further information available at www.globusmetalpowders.com