

S136

Tool Steel Powder for Additive Manufacturing 90/45 µm, Plasma Rotating Electrode Process (PREP) Designed for LMD

Chemical composition equivalent to DIN 1.2083

DESCRIPTION

S136 is a plasma rotating electrode process (PREP) powder, engineered for additive manufacturing (AM). This premium stainless tool steel powder is ideal for creating small to medium-sized inserts and cores, offering a combination of corrosion resistance, wear resistance, excellent polishability, good machinability, and stability during hardening.

The powder reduces mold maintenance needs by ensuring that core and cavity surfaces retain their original finish over long operational periods. Compared to non-stainless mold steel, S136 helps lower production costs by keeping cooling channels rust-free, which supports consistent cooling and cycle times.

This versatile stainless tool steel powder is an excellent choice where rust is unacceptable and high hygiene standards are essential, such as in the medical and optical industries, as well as for producing high-quality transparent parts.

KEY PROPERTIES

- Excellent corrosion resistance
- Excellent polishability
- Good wear resistance
- Good machinability

POWDER CHEMICAL COMPOSITION

Element	Min. (wt%)	Max. (wt%)
Fe	Bal.	Bal.
Cr	12.0	14.0
Mn	-	1.0
Si	-	1.0
V	0.1	0.5
С	0.36	0.45
Р	-	0.03
S	-	0.03

APPLICATIONS

- Blow molding
- Compression molding
- Injection molding
- Food processing

SEM IMAGE



POWDER PROPERTIES (ISO 4490, ISO 3923-1)

Particle Size	Hall Flow	Apparent Density
Distribution (µm)	(s/50g)	(g/cm³)
45 — 90	15.2	4.4

MICROGRAPHS





Polished Surface

Microstructure

PHYSICAL PROPERTIES (ISO 3369)

MELTING POINT

HARDNESS (ISO 6507-1)

Average Defect Percentage (%)	Density (g/cm³)	Celsius (°C) Fahrenheit (°F)	HV _{0.5}	HRC	
< 0.10	> 7.80	1450 - 1510 2642 - 2750	588	53	

MECHANICAL PROPERTIES (ISO 6892-1)

Condition	Orientation	Ultimate Tensile Strength (MPa)	0.2% Yield Strength (MPa)	Elongation at Break (%)
As-Built	Horizontal	1440 ± 29	1191 ± 19	3 ± 0
	Vertical	1733 ± 73	945 ± 3	3 ± 1
Heat-Treated*	Horizontal	1740 ± 10	1340 ± 25	8 ± 1
	Vertical	1840 ± 16	1260 ± 16	7 ± 0

*Dual tempering at 250 °C for 2 hours, air-cooled to room temperature.

PROCESS INFORMATION:

The properties reported in this Technical Data Sheet are applicable to Makino AM powders tested and distributed by Makino and processed on Makino LMD machine utilizing parameters in accordance with relevant operating guidelines (inclusive of setup conditions and maintenance). The properties are obtained by following recommended protocols. Further information regarding the methods used by Makino can be provided upon inquiry.

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CONTACT US:

Our Safety Datasheet (SDS) is available upon request. For more information or support please contact Makino at sales-am@makino.com.sg or visit www.makino.com.sg

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