

BLDRMETAL® L-40

METAL POWDERS FOR LASER POWDER BED FUSION 3D PRINTING



DESCRIPTION

Laser Powder Bed Fusion (LPBF) is one of the premier metal 3D printing technologies. It features density levels over 99% and among the highest available feature resolution in metals.

One major drawback to using this technology for many applications has been a lack of hard metals that are easily printable without cracking. Formetrix has solved this challenge with a new class of steel powders that combine high hardness and toughness and are printable at room temperature using standard commercial equipment.

BLDRMETAL® L-40 KEY FEATURES

- Case Hardening: Up to 74 HRC
- High Core Properties:
 - Hard: >50 HRC
 - Ductile: >10% Elongation
 - Tough: 65J (v-notch, as built)
- Easy to Print (RT to 200°C)

APPLICATIONS

- Tools, dies and fixtures
- Valves
- Gears

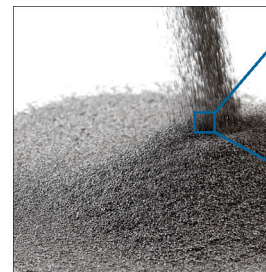
MECHANICAL PROPERTIES WHEN PRINTED USING LASER POWDER BED FUSION

PROPERTY	BLDRMETAL™ L-40		
	AS-BUILT	HEAT TREATED CORE	HEAT TREATED CASE
Hardness*, Rockwell HRC	46	51	66-74
Tensile Strength**, MPa	1500	1650	
Yield Strength**, MPa	1300	1350	
Elongation **, %	14+	10	
Charpy V-notch***, J	65		

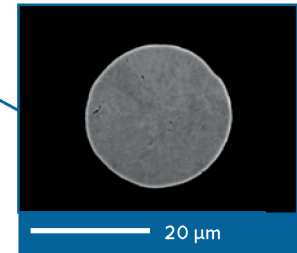
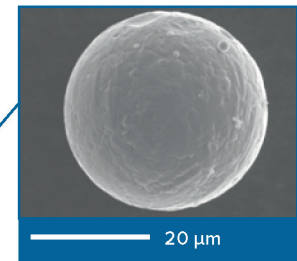
*ASTM E384

**ASTM E8-E8m -16a

***ASTM E23-16b



SEM Images of BLDRmetal™ L-40



THERMAL PROPERTIES WHEN PRINTED USING LASER POWDER BED FUSION

PROPERTY	BLDRMETAL™ L-40
Thermal Expansion Coefficient* , ppm/OC @ 200C	11.2
Thermal Conductivity ** , W/m.K @ 250C / 2000C / 5000C	17.3 / 21.1 / 23.6
Specific Heat ** , J/Kg.K @ 250C / 2000C / 5000C	442 / 525 / 642

*ASTM E228

**ASTM E1461-13

POWDER CHEMISTRY

ELEMENT	BLDRMETAL™ L-40 WEIGHT %
Iron (Fe)	Balance
Chromium (Cr)	>10.5%
Nickel (Ni)	<5%
Molybdenum (Mo)	<5%
Copper (Cu)	<1%
Niobium (Nb)	<1%
Carbon (C)	<1%
Nitrogen (N)	<1%

POWDER PROPERTIES

MATERIAL	BLDRMETAL™ L-40
Melt Point , OC	1506
Density , g/cm ³	7.78
Morphology	Spherical
Size Range , µm	-53/+15

STANDARD PACKAGING

10 lb (4.5 kg)	40 lb (18.1 kg)	Custom quantities upon request
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