

Introduction

PowderRange metal Additive Manufacturing powders from Carpenter Additive are developed with the needs of the busy AM facility in mind.

- ▶ Easy ordering
- ▶ Standard specifications
- ▶ 24-hour shipment
- ▶ Sold in easy-to-handle multiples of 10 kgs
- ▶ Easy repeat orders to optimize inventory management

This leaves you free to concentrate on the design and build of your AM parts, confident that PowderRange metal AM powders from Carpenter Additive will add reliability and consistency to your AM built parts.

Characteristics

PowderRange 155 Stainless Steel is a martensitic precipitation strengthened stainless steel, with exceptional room temperature strength and good mechanical properties up to 300°C (572°F). As a stainless steel it also possesses good corrosion resistance.

PowderRange 155 is an alternative stainless-steel powder to PowderRange 174 for those wishing to achieve similar final properties to 174 but without the requirement for argon atomization. PowderRange 155 is precipitation hardenable, and once precipitation hardened, has superior tensile strength and hardness to PowderRange 174, however it sacrifices ductility.

Applications

Widely used throughout multiple industries including aerospace, petrochemical and food processing. Any application where high strength and or corrosion resistance is required at room-intermediate temperatures.



For worldwide contact details please visit www.carpenteradditive.com

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Chemical composition

Element		Minimum wt%	Maximum wt%
C	Carbon		0.04
Cr	Chromium	14.0	14.6
Cu	Copper	3.5	4.0
Fe	Iron	Balance	
Mn	Manganese		0.3
Ni	Nickel	2.8	4.5
Nb	Niobium	0.20	0.40
N	Nitrogen		0.10
O	Oxygen		0.030
P	Phosphorus		0.03
Si	Silicon		0.7
S	Sulphur		0.03

Particle size distribution – CT PowderRange 155 F

Size	Value	Method
-15 µm	5 Volume %	Laser Size Diffraction
+45 µm	3 Weight %	Sieve Analysis
D10	18-24 µm	Laser Size Diffraction
D50	32.5-34.4 µm	Laser Size Diffraction

Mechanical properties (indicative only)

Property		As built	After Heat Treatment
Tensile Strength [1]	Horizontal Direction (XY)	1150 - 1250 MPa 166.8- 181.3 ksi	1350 - 1550 MPa 195.8- 224.8 ksi
	Vertical Direction (Z)	1150 - 1250 MPa 166.8- 181.3 ksi	1350 - 1550 MPa 195.8- 224.8 ksi
Yield Strength [1]	Horizontal Direction (XY)	950 - 1100 MPa 137.8- 159.5 ksi	1250 - 1450 GPa 181.4- 210.4 Msi
	Vertical Direction (Z)	865 - 560 MPa 125.5- 81.2 ksi	1250 - 1450 GPa 181.4- 210.4 Msi
Elongation [1]	Horizontal Direction (XY)	13 - 21 %	12 - 18 %
	Vertical Direction (Z)	10 - 18 %	12 - 18 %
Hardness [2]			40 - 50 HRC

1. Mechanical testing in accordance with ISO 6892

2. Rockwell C (HRC) hardness measurement in accordance with ISO 6508

Range of mechanical properties encompasses expected values across multiple machine platforms



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Similar materials

Company	Alternative Title
LPW	LPW 155 Stainless Steel
UNS	S15500
Other Generic Names	1.4540; 15-5 PH
3D Systems	N/A
Concept Laser	N/A
EOS	PH1
Realizer	N/A
Renishaw	N/A
SLM Solutions	1.4540 (15-5PH)
TRUMPF	LPW 155 Stainless Steel

Ordering information

PowderRange 155 F is available from stock and dispatched within 24 hours of receipt of order. Our PowderRange metal AM powders are sold in multiples of 10 kgs giving you the flexibility to order just the volume you need to maintain efficient material stock levels.

All our PowderRange materials are supplied with a full metal powder certification to Carpenter Additive's standard material specification, reporting size distribution, flow, chemistry and morphology.

Code	Description	Unit volumes
CT PowderRange 155 F	Flexible material developed to be suitable for a wide range of powder bed fusion machines and applications	10 kgs

Further information

To make an enquiry, please contact powderrange@carpenteradditive.com. Alternatively, for EU/Row, call +44 (0)1928 240 530 and for USA call +1-412-788-2856. You can visit us at www.carpenteradditive.com.