



GE Additive

13

Al

22	24	26	27	28	29
Ti	Cr	Fe	Co	Ni	Cu

ARCAM EBM Spectra H CoCr

ARCAM EBM Spectra H V1.2 with EBM Control 6.2

Data in this material datasheet represents material built with 50µm layer thickness and in a vacuum atmosphere on a ARCAM EBM Spectra H V1.2 with EBM Control 6.2 and Process Theme 6.2 configuration. Values listed are typical.



Cobalt Chromium

Parts are fabricated from cobalt chrome alloys like ASTM F75 or F3213 CoCr when excellent resistance to high temperatures, corrosion and wear are critical. It is an appropriate selection where nickel-free components are required, such as in orthopedic and dental applications due to the hardness and bio-compatibility necessary for long-term performance. Cobalt chrome alloys are used in additive manufacturing to print parts that often benefit from hot isostatic pressing (HIP), which combines high temperatures and pressures to induce a complex diffusion process that strengthens grain structures, producing fully dense metal parts

ARCAM EBM Spectra H V1.2 CoCr

The parameters for the Spectra H V1.2 are developed based on the processes developed from previous iterations and information from other machines. The current process has a layer thickness parameter of 50µm and demonstrates properties that meet ASTM F3213 and F75 standards.

Thousands of developmental hours and testing have resulted in a parameter with increased productivity and mechanical properties, delivering the best of both worlds.



ARCAM EBM Spectra H V1.2

With appropriate approval* CoCr can be used for aerospace and orthopedic applications.

Data in this material datasheet represents material built with 50µm layer thickness in a vacuum atmosphere on an ARCAM EBM Spectra H V1.2. Values listed are typical.

POWDER CHEMISTRY

CoCr powder chemical composition according to ASTM F3213 and F75 with a powder size distribution of 45-105µm. For more information on CoCr powder, visit <https://www.advancedpowders.com/contact>.

MACHINE CONFIGURATION

- ARCAM EBM Spectra H V1.2
- EBM Control Version 6.2
- Vacuum
- Stainless Steel Start Plate and Recoater

AVAILABLE PARAMETERS

- Process Theme 6.2 – 50µm

THERMAL STATES

1. As-Built
2. Hot Isostatic Pressed (HIP)
 - a. 1200°C for 4hrs @ 1000bar, cooled to below 425°C

PRODUCTIVITY

Build Rate	13-22.4 cm ³ /hr
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PHYSICAL DATA

Thermal States	Hardness	Porosity	Density
	HV10	%	%
As -Built	442.0	0.05	99.95
HIP	318.3	0.02	99.98

Plane	Surface Roughness Ra (µm)	Surface Roughness Rz (µm)
XZ	18.2	93.4
YZ	16.1	82.2

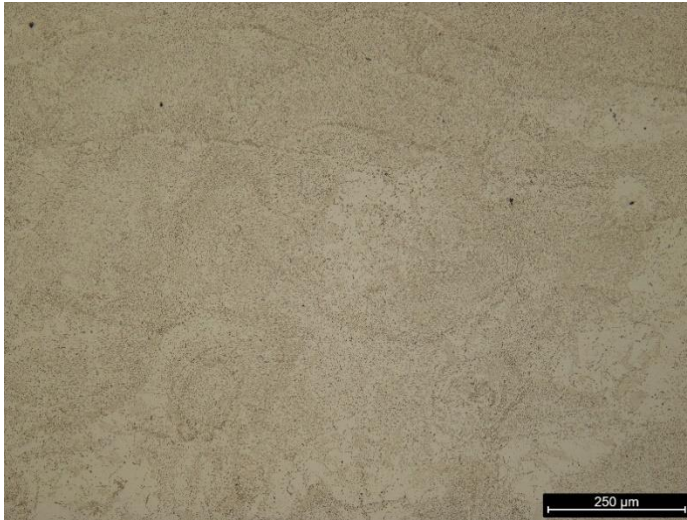
TENSILE DATA

Tensile Testing according to ASTM E8

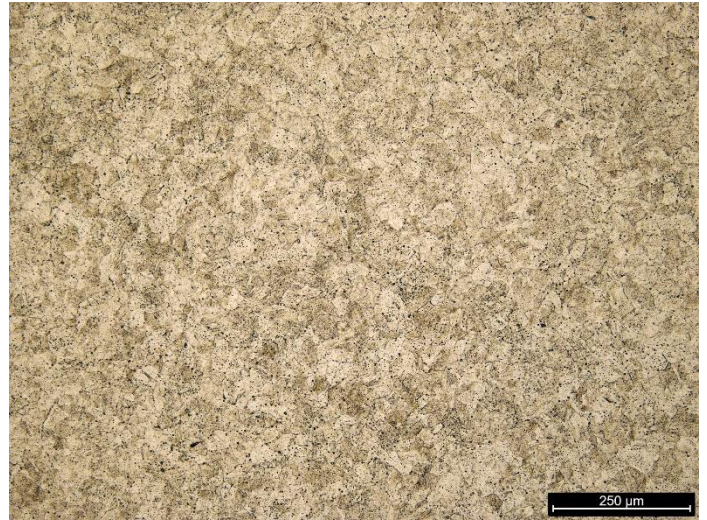
Test Temperature: RT	Yield Strength (MPa)		Ultimate Tensile Strength (GPa)		Elongation (%)		Reduction of Area (%)	
	H	V	H	V	H	V	H	V
HIP	544	524	1033	945	25.5	14.7	21.0	14.2

H: HORIZONTAL (XY) orientation
V: VERTICAL (Z) orientation

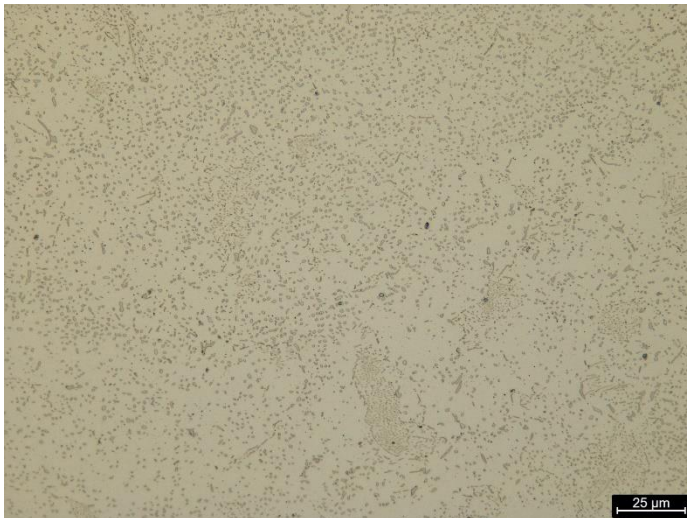
*All of the figures contained herein are approximate only. The figures provided are dependent on a number of factors, including but not limited to, process and machine parameters, and the approval is brand specific and/or application specific. The information provided on this material data sheet is illustrative only and cannot be relied on as binding.



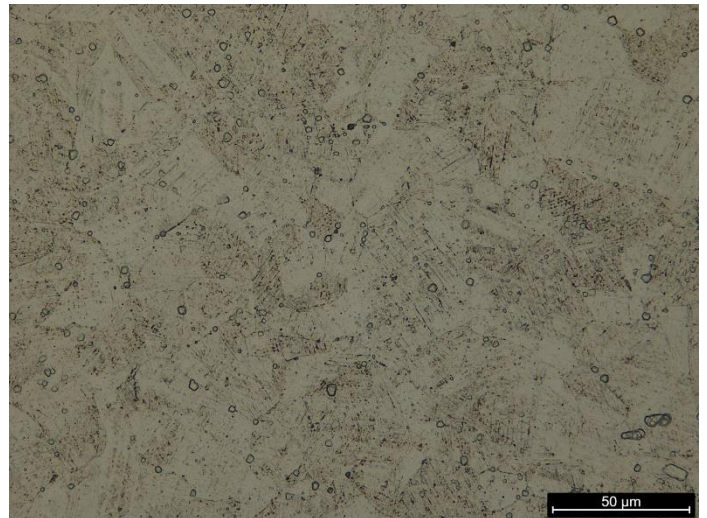
As-Built in the XY Plane



HIP in the XY Plane



As-Built in the XY Plane



HIP in the XY Plane