



GE+ CoCrMo Powder Data Sheet (PDS)

CoCrMo is a cobalt-based, solid-solution strengthened alloy with excellent strength, ductility and oxidation capabilities under high temperatures. It is a non-magnetic Cobalt Chromium Molybdenum alloy that can be used for manufacturing functional components in the biomedical, aerospace and high-performance engineering sectors.

27
Co

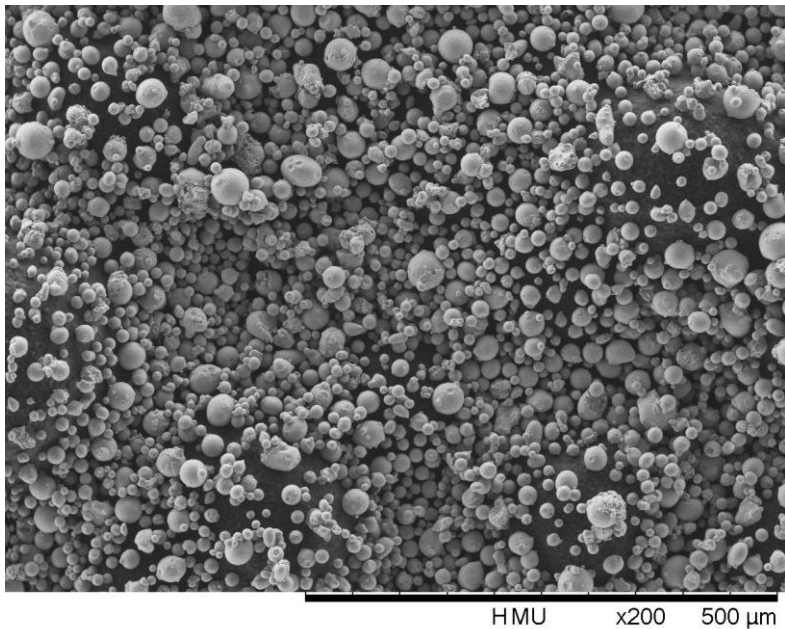
Values and images herein are typical only*1. Consult GE Additive for details

POWDER CHEMISTRY

Element	Indicative value (wt%)
Co	Bal.
Cr	27.0 - 30.0
Mo	5.0 - 7.0
C	Max. 0.35
Ni	Max. 0.50
Fe	Max. 0.75
Mn, Si	Max. 1.0
Al, Ti	Max. 0.1
W	Max. 0.2
P	Max. 0.02
S, B	Max. 0.01
Others	Max. 0.25

Chemical composition per ASTM F75, UNS R30075

Morphology



POWDER CHARACTERISTICS

Density (g/cm³)

- Apparent : Min. 4.0
- Tap : Min. 4.8
- True : Min. 8.3

Flow (s/50g)

- Hall flowmeter: Max. 22

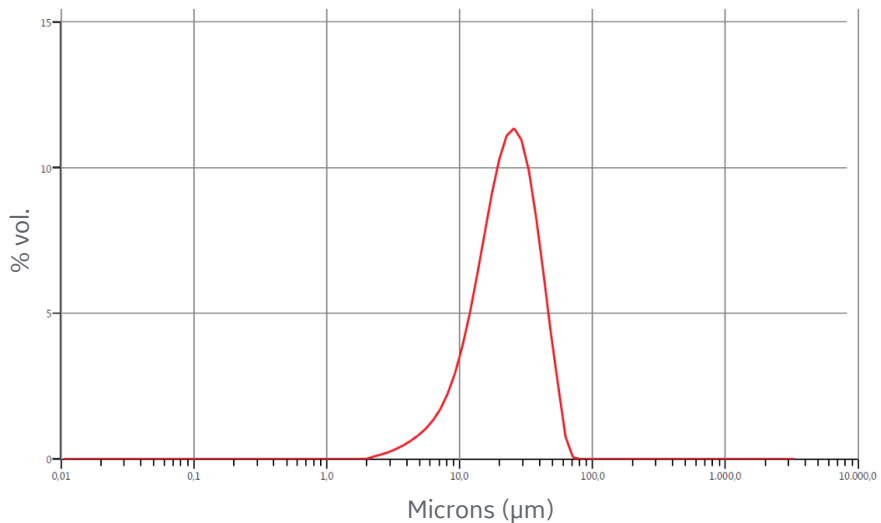
PSD: Particle size distribution

- Size : 10-45 μm
- Sieve & Sub-sieve analysis:
 - < 10 μm : Max. 5%
 - < 45 μm : Min. 95%

Morphology

- Moderate sphericity
- Controlled Fines content

PSD Curve





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Alloy Applications

It is widely employed in the manufacture of orthopedic devices, but also very well known in the AM world due to its large high reliability and regulated use in the GE Aviation LEAP Fuel Nozzle (picture below)*2. It is biocompatible and has superior mechanical & thermal properties including: high elastic modulus, tensile strength & temperature resistance in addition to superior wear & corrosion resistance.

- Recommended mesh size for sieving: 63 µm

Machine compatibility (MDS)*3

Powder safety / handling (SDS)

Quick Powder handling reference guide

- Non-reactive powder (not flammable)
- Avoid direct contact/ inhalation: potential health effects
- Wear protective equipment when handling



Generic Typical Alloy Properties & Standards*4

Physical (Electromagnetic, Mechanical)

- Magnetism: ~1 (H/m - µ magnetic permeability)
- Density : 8.3 g/cm³
- UTS: 660 – 1280 MPa
- YS: 450 – 840 MPa
- Elongation: 8 – 35 %
- Electrical conductivity: 80 - 90 µohm-cm
- Hardness (HRC): 25 – 35

Thermal (Room T° to >= 600°C)

- Conductivity: 12 – 25 W/mK
- Coeff. Thermal Expansion (CTE): 13 – 15 µm/m · K
- Melting Point: 1350 – 1430 °C

Chemical

- Corrosion Resistance*5 : excellent

Common Standards (References)

ASTM F75, ASTM F799, ASTM F1537, ISO 5832-4/12





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GE+ Powders: **FOR THE READY**

You can't build anything out of just anything

Powders that fit your processes and applications. Carefully developed & tested to seamlessly fit into the entire GE Additive ecosystem. Combined with our proven parameters, they competitively offer performance, quality and safety when used in our machines.

Why GE Additive?

GE offers a unique Additive one-stop shop: you can source and consult on powders, parameters, machines, peripherals, applications and even financing, all under one roof. Our commitment to the additive industry includes an outstanding number of material scientists, engineers, and characterization experts across GE, plus an extended pool of industry experts across the globe via universities, research centers and key customers/suppliers. We continue to innovate by understanding, developing, and differentiating new powdered materials to help move the additive industry forward. We offer over 20 years of experience in additive manufacturing cumulated from our GE experience. At GE+, we help you build your company's additive future, made out of the right powder.

GE+ Powders Advantages

Quality Engineered Products

- Meeting industry standard chemical composition
- Rigorously sourced, tested & certified:
 - only GE audited & qualified suppliers used (Performance, Quality & Risk assessed)
 - each powder lot is GE certified for conformance to GE specific sourcing technical & quality specs
 - assured powder repeatability by enforcing stringent manufacturing controls (reference : AMS 7002)
 - GE Incoming inspection + Internal and external capacity for extra testing
 - Controlled packaging requirements
- Proven & optimized usage within GE+ machines for various applications (depending on parameters and post treatment used - see MDS)
 - ensuring you have the best performance from our machine & powders in your specific application

Supply Chain

- Revision controlled standard product procurement specifications offered upon request
- Customer standard price list & long term agreements available
- GE 360° supply chain handling:
 - Control of all sourcing & distribution aspects (Legal, Contracts, Imports, REACH registration, CMRT, etc)
 - Stock inventory + worldwide access to various distribution points for fast turn around deliveries
 - GE volume agreements – customers not forced to engage with several vendors individually
 - Export control know-how to ease deliveries in most countries
 - Multi source for single products when possible - enhanced supply security

EHS + Serviceability

- Powders controlled and tested to assure safe operation, handling & end use in machines up to end applications
- SDS are controlled and offered in multiple languages and country-specific formats
- GE Machine & Equipment Service warranties include de-facto usage of GE+ powders

1. All specified figures approximate: reflect the current level of test/data/knowledge & Dependent on manufacturing process variations. Information not binding or certified.

2. The approval is application- or domain-specific and it must be assured by the consumer/user. Approval or certification of powders by GE Additive is typically not offered

*NOTES 3. Existing Machine Parameter sets, including mechanical, thermal, etc properties tests

4. Indicative Values only from literature for alloy within same chemical limits and various manufacturing techniques & Heat treatments (e.g. wrought, casting, MIM, etc)

5. Ref: MIL-STD-889 (Dissimilar Metals), several literature reference (Biomedical & Aerospace applications of CoCr alloys)