

DIRECT METAL LASER SINTERING

COBALT CHROME

PRODUCT SPECIFICATIONS



PRODUCT DESCRIPTION

Cobalt-Chrome material is used in our DMLS process. It is a superalloy comprised primarily of cobalt and chromium, and is known for its high strength-to-weight ratio, excellent creep and corrosion resistance.

Parts build in coCr are according to ASTM F75.

APPLICATIONS

Cobalt-Chrome is an excellent choice for use in aerospace engine applications. It's low nickel content gives this metal excellent biocompatibility, making it a strong candidate for use in dental and orthopedic applications as well.



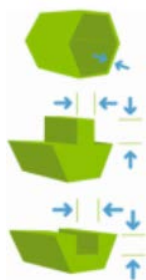
KEY PRODUCT BENEFITS

- High strength
- Creep and corrosion resistance
- Excellent biocompatibility

CHEMICAL COMPOSITION:

Cobalt (balance)
Chromium (27 - 30 wt.%)
Molybdenum (5 - 7 wt.%)
Nickel (<0.5wt.%)
Iron (< 0.75 wt.%)
Carbon (<0.35 wt.%)
Silicon (<1.00 wt.%)
Manganese (<1.00 wt.%)
Tungsten (<0.20 wt.%)
Phosphorous (<0.020 wt.%)
Sulfur (<0.010 wt.%)
Nitrogen (<0.25 wt.%)
Aluminum (<0.10 wt.%)
Titanium (<0.10 wt.%)
Boron (<0.010 wt.%)

GEOMETRICAL LIMITS:



Min Wall Thickness 1.00mm -
Min Feature Size 1.00mm

Min embossed details 0.5mm high and wide
and 0.8mm for readable text and clear images

Min engraved details 0.5mm deep and 0.6mm wide.
1.0mm wide for readable text and clear images

PROPERTIES

STANDARD	TENSILE STRENGTH MPA	YIELD STRENGTH 0.2% MPA	ELONGATION %	HARDNESS	DENSITY
ASTM F75	1080 MPa +/- 50MPa	600 MPa +/- 50MPa	20 +/- 2 %	30 +/- 2 HRC	~ 99,95%

RESOLUTION

	LAYER THICKNESS	BUILD ENVELOPE	MIN. FEATURE SIZE
Fine resolution	0,02 mm	100x100x100mm	0,5 mm

SURFACE

	0°	45° BOTTOM	45° TOP	90°
Fine resolution	Ra 8 µm Rz 30 µm	Ra 17 µm Rz 80 µm	Ra 5,7 µm Rz 29 µm	Ra 7,8 µm Rz 25 µm



Fine Resolution 20µm

TOLERANCES

Typically, for well-designed parts, with a designated build direction, tolerances of +/- 0.1 mm to +/- 0.2 mm + 0.005 mm/mm are expected and achieved. Certain geometries may cause distortions due to internal stress which may lead to higher deviations.