



Cobalt Chrome

Description: Cobalt Chrome is a fine powder mixture superalloy characterized by having excellent mechanical properties (strength, hardness, etc.), corrosion resistance, and temperature resistance. Such alloys are commonly used in biomedical applications such as dental and medical implants and also for high-temperature engineering applications such as aero engines.

Applications:

- Part-building applications, such as functional metal prototypes, small series products, individualized products, or spare parts
- High-temperature and high-stress aerospace components
- Surgical devices
- Medical implants

Chromium (Cr) = 26.50 – 30%	Silicon (Si) = max 1.00%	Carbon (C) = 0.08 – 0.15%
Phosphorous (P) = max 0.02%	Manganese (Mn) = max 1.00%	Nickel (Ni) = max 1.00%
Molybdenum (Mo) = 5.00 – 7.00%	Iron (Fe) = max 0.75%	Sulfur (S) = max 0.01%
Tungsten (W) = max 0.20%	Nitrogen (N) = max 0.25%	Cobalt = Balance
Boron (B) = max 0.01%	Titanium (Ti) = max 0.10%	
Aluminum (Al) = max 0.10%	Oxygen (O) = max 0.04%	

Stress Relief: Stress relieve at 1922°F +/- 25° for 2 hours +/- 15 minutes in vacuum.

Heat Treatment (HT): Solution heat treat at 2175°F +/- 25° for 1 hour +/- 15 minutes in vacuum. Follow by rapid argon gas cooling in a protective atmosphere.

Hot Isostatic Pressing (HIP): (OPTIONAL)

3DMT MATERIAL RESULTS					
Horizontal	ASTM 1537 (Min Requirement)	Typical Wrought	MLS (as built)	MLS (stress relief)	MLS (HIP and HT)
0.02% Yield (ksi)	75	85 - 104	160.6	131.7	92.4
Ultimate Tensile (ksi)	130	150 - 190	198.7	190.3	165.5
Elongation (%)	20	25 - 32	8.6	7.6	23.9
Hardness (HRC)	25	30 - 36	37.8	41.5	31.2

The data above is general information that may vary from machine to machine and supplier to supplier.