

DELSCROME

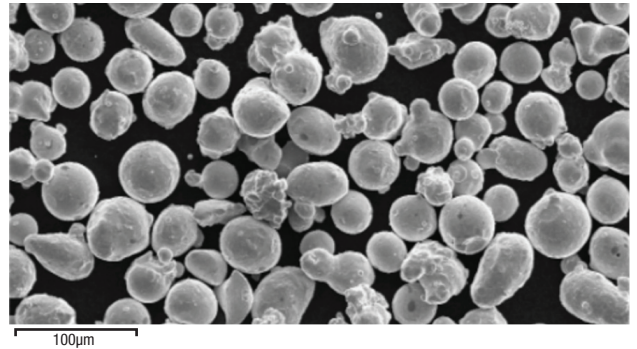
DELCROME 17-4 AM™

Nominal Composition

Alloy	Fe	Cr	Ni	Cu	Nb+Ta	SI	Mn	All Others
Delcrome 17-4PH AM	Bal	16	4	4	0.3	Max 1.0	Max 1.0	<1.0

Powder Characteristics

Alloy	Scott Density (g/cc)	Tap Density (g/cc)	Hall Flow (s, 50g)	Melting Range (C)
Delcrome 17-4PH AM	4.2	4.5	15	1400-1500



Product Description

The iron-based Delcrome alloys have been developed as wear- and corrosion-resistant family of alloys analogous to many stainless steels. When compared to our Stellite™ alloys, their wear and corrosion resistance is relatively low.

Our Delcrome 17-4AM powder is a common martensitic precipitation hardened stainless steel which has been qualified for printing on I-PBF type 3D platforms. Delcrome 17-4AM is analogous to UNS S17400 type materials which are used across a variety of industries. This material is commonly used in applications which require high strength and hardness with good corrosion resistance.

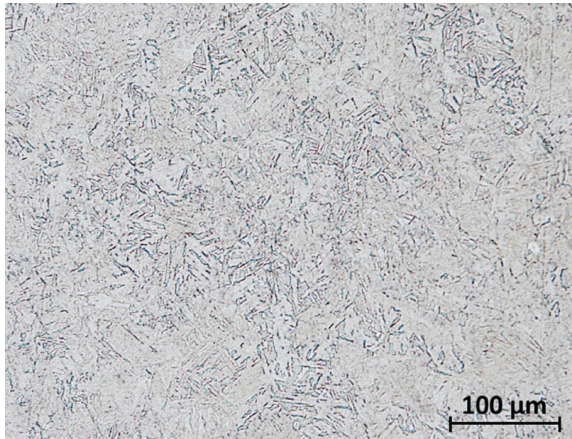
Wear & Corrosion Resistance

Delcrome 17-4AM is a chromium-nickel-copper precipitation hardening martensitic stainless steel which provides good strength, hardness and moderate corrosion resistance at temperatures up to 600°F.

With the appropriate heat treatment, Delcrome 17-4AM can be hardened as high as around 45HRC and generally possess a higher tensile and yield strength when compared to other common stainless steels like 316. It generally has moderate corrosion resistance in most environments and it is typically compared to 304 type stainless.



DELROME 17-4 AM™



Micrograph of Delcrome 17-4AM After Heat Treatment.

Physical Properties

Delcrome 17-4AM	
Hardness (HRC)*	40-48
Density (g/cc)	7.8
Porosity (%)	<0.1
Thermal Conductivity (W/mC) Room Temperature, As Printed	17
Specific Heat (J/gC) Room Temperature, As Printed	0.6
Coeff. of Thermal Expansion 0-200°C, As Printed	12

* Solution annealed @ 1904°F with Ar quench; Aged at 900°F with Ar quench

Nominal Tensile Properties at Room Temperature

		UTS		Yield Stress (.2%)			Elastic Modulus	
		ksi	MPa	ksi	MPa	A (%)	Psi x 10 ⁶	GPa
Delcrome 17-4PH AM As Printed	Horizontal	160	1100	95	660	27	28	190
	Vertical	155	1070	90	600	30	26	180
Delcrome 17-4 Post HT*	Horizontal	205	1425	180	1260	21	28	190
	Vertical	205	1410	180	1250	22	27	185

* Solution annealed @ 1904°F with Ar quench; Aged at 900°F with Ar quench

Corrosion Resistance

Reagent	Temp	As Printed	HT*
5% HCl	100°F	N	N
10% H ₂ SO ₄	150°F	N	N
10% HNO ₃	150°F	E	E
10% NaCl	100°F	E	E

E = Excellent, Less than 10mdd (2mpy), N = Not Recommended, >250mdd (50mpy)

* Solution annealed @ 1904°F with Ar quench; Aged at 900°F with Ar quench

Wear and Erosion Resistance

		As Printed	Post HT*
Wear Volume Loss (mm ³)	ASTM G65 @2000revs	160	200
Erosion Rate (mm ³ /kg)	ASTM G76 Modified G76**	28 9	23 9

* Solution annealed @ 1904°F with Ar quench; Aged at 900°F with Ar quench

** Slurry erosion test utilizing Silica sand at 1000psi

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