

## DirectAlloy™ 174 S Metal Laser Sintering Process (UNS S17400)

DirectAlloy™ 174S is a metal laser sintering process that produces 99.% dense components characterized by high strength and corrosion resistance. DirectAlloy 174S components are processed in an inert argon environment and are suitable for many prototype and production applications where a fully martensitic stainless steel is desirable. Mechanical properties from the DirectAlloy 174S metal laser sintering process yield properties similar to wrought Condition A 17-4PH and can be heat treated to improve strength and hardness with simple heat treat processes such as H900.

DirectAlloy 174S parts can be used for prototype and production medical devices and surgical instruments where passivation is necessary. DirectAlloy 174A parts are suitable for many aerospace, petrochemical, food processing, and general industrial applications. The as built hardness is 28-31 RC scale and increases to 38-42 RC scale after H900 heat treat.

Chemical Composition (wt%)		
Element	Range	
	Minimum	Maximum
C		0.07
Cr	16.00	16.75
Nb+Ta	0.15	0.30
Cu	3.25	4.00
Fe	Balance	Balance
Mn	0.25	0.75
Mo		0.75
Ni	4.50	5.00
P		0.025
Si		0.75
S		0.025



Mechanical properties (min. value) after H900

Tensile Strength, Mpa (Ksi) X,Y Build Direction	Tensile Strength Mpa (Ksi), Z Build Direction	Yield Strength at 0.2% Offset Mpa (Ksi), X,Y Build Direction	Yield Strength at 0.2% Offset Mpa (Ksi), Z Build Direction	Elongation in 5 cm or 4D (%) X, Y Build Direction	Elongation in 5 cm or 4D (%) Z Build Direction
1310	1310	1170	1170	10	10
(190)	(190)	(170)	(170)		