

HAYNES[®] 718 alloy

Fabrication

HAYNES[®] 718 alloy has very good forming and welding characteristics. It may be hot-worked at temperatures in the range of about 1700-2100°F (925-1150°C) provided the entire piece is soaked for a time sufficient to bring it uniformly to temperature. Initial breakdown is normally performed at the higher end of the range, while finishing is usually done at the lower temperatures to afford grain refinement.

As a consequence of its good ductility, 718 alloy is also readily formed by cold-working. All hot- or cold-worked parts should normally be annealed at 1700 to 1850°F (925 to 1010°C) and cooled by air cool or faster rate before aging in order to develop the best balance of properties.

Tensile Properties of Solution-annealed 718 at Room Temperature

Form	Ultimate Tensile Strength		Yield Strength		Elongation
	ksi	MPa	ksi	MPa	%
Sheet	126.3	871	60.7	419	46.7
Plate	124.3	857	57.3	395	49.0

Cold-work Hardness

% Cold-work	Average Hardness HRB/ C
0	92.4 HRB
10	27.2 HRC
20	33.6 HRC
30	36.9 HRC
40	38.3 HRC
50	39.2 HRC

HRB= Hardness Rockwell "B"

HRC= Hardness Rockwell "C"

Hardness and Grain Size

Form	Hardness, HRB	Typical ASTM Grain Size
Sheet	94	6 - 8
Plate	93	5 - 8

All samples tested in solution-annealed condition