

## HP Alloys Alloy 718, 10% Cold Worked, Aged

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

### Material Notes:

10% Cold Worked, Aged applies to tensile and/or hardness; other properties are typical of this alloy. Data provided by High Performance Alloys, Inc., Allvac, Inco Alloys International, and Haynes International.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_HP-Alloys-Alloy-718-10-Cold-Worked-Aged.php](http://www.lookpolymers.com/polymer_HP-Alloys-Alloy-718-10-Cold-Worked-Aged.php)

Physical Properties	Metric	English	Comments
Density	8.20 g/cc	0.296 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	1482 MPa	214900 psi	
Tensile Strength, Yield	1379 MPa	200000 psi	
Elongation at Break	17 %	17 %	
Reduction of Area	41 %	41 %	
Modulus of Elasticity	200 GPa	29000 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	12.9 $\mu\text{m}/\text{m}\cdot\text{C}^\circ$	7.17 $\mu\text{in}/\text{in}\cdot\text{F}^\circ$	
	@Temperature 20.0 - 100 $^\circ\text{C}$	@Temperature 68.0 - 212 $^\circ\text{F}$	
	13.5 $\mu\text{m}/\text{m}\cdot\text{C}^\circ$	7.50 $\mu\text{in}/\text{in}\cdot\text{F}^\circ$	
	@Temperature 25.0 - 200 $^\circ\text{C}$	@Temperature 77.0 - 392 $^\circ\text{F}$	
	14.3 $\mu\text{m}/\text{m}\cdot\text{C}^\circ$	7.94 $\mu\text{in}/\text{in}\cdot\text{F}^\circ$	
	@Temperature 25.0 - 500 $^\circ\text{C}$	@Temperature 77.0 - 932 $^\circ\text{F}$	
	17.2 $\mu\text{m}/\text{m}\cdot\text{C}^\circ$	9.56 $\mu\text{in}/\text{in}\cdot\text{F}^\circ$	
	@Temperature 25.0 - 900 $^\circ\text{C}$	@Temperature 77.0 - 1650 $^\circ\text{F}$	
Specific Heat Capacity	0.435 J/g- $^\circ\text{C}$	0.104 BTU/lb- $^\circ\text{F}$	
Thermal Conductivity	11.4 W/m-K	79.1 BTU-in/hr-ft <sup>2</sup> - $^\circ\text{F}$	
Melting Point	1260 - 1336 $^\circ\text{C}$	2300 - 2437 $^\circ\text{F}$	

<b>Solidus Thermal Properties</b>	<b>1260 °C Metric</b>	<b>2300 °F English</b>	<b>Comments</b>
Liquidus	1336 °C	2437 °F	

<b>Component Elements Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Aluminum, Al	0.20 - 0.80 %	0.20 - 0.80 %	
Boron, B	<= 0.0060 %	<= 0.0060 %	
Carbon, C	<= 0.080 %	<= 0.080 %	
Chromium, Cr	17 - 21 %	17 - 21 %	
Cobalt, Co	<= 1.0 %	<= 1.0 %	
Copper, Cu	<= 0.30 %	<= 0.30 %	
Iron, Fe	17 %	17 %	
Manganese, Mn	<= 0.35 %	<= 0.35 %	
Molybdenum, Mo	2.8 - 3.3 %	2.8 - 3.3 %	
Nickel, Ni	50 - 55 %	50 - 55 %	
Niobium, Nb (Columbium, Cb)	4.75 - 5.5 %	4.75 - 5.5 %	
Phosphorous, P	<= 0.015 %	<= 0.015 %	
Silicon, Si	<= 0.35 %	<= 0.35 %	
Sulfur, S	<= 0.015 %	<= 0.015 %	
Titanium, Ti	0.65 - 1.15 %	0.65 - 1.15 %	

<b>Electrical Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>
Electrical Resistivity	0.000123 ohm-cm	0.000123 ohm-cm	
Magnetic Permeability	1.0011	1.0011	at 200 oersted (15.9 kA/m)
Curie Temperature	-112 °C	-170 °F	

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