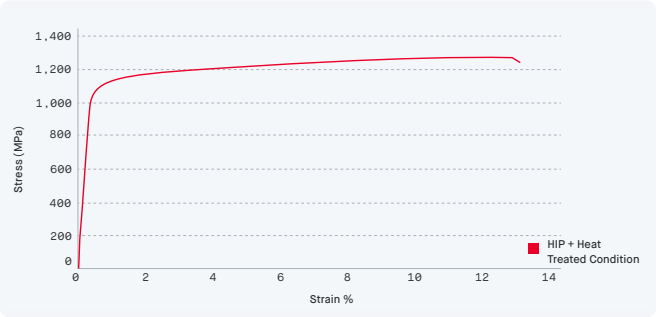
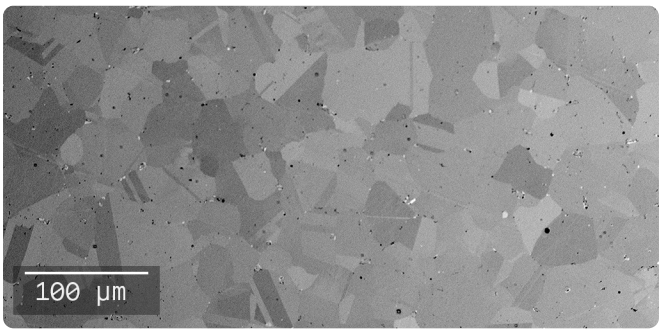
[Material Data Sheet]

IN718
Nickel Alloy
PureSinter Furnace





COMPOSITION %

Fe	Balance
C	0.08 (max)
Cr	17 – 21
Ni	50 – 55
Mo	2.8 – 3.3
Nb	4.75 – 5.5
Ti	0.65 – 1.15
Al	0.2 – 0.8
Co	1 (max)
Mn	0.35 (max)
Si	0.35 (max)
Cu	0.3 (max)
O	0.06 (max)
N	0.02 (max)
P	0.015 (max)
S	0.015 (max)

MECHANICAL PROPERTIES IN DESKTOP METAL PURESINTER FURNACE

	Standard	Shop System HIP, heat treated, room temperature tested	AMS 5917 HIP, heat treated, room temperature tested
Ultimate tensile strength (MPa)	ASTM E8/E8M	1270 ± 11	1041
0.2% Yield strength (MPa)	ASTM E8/E8M	1080 ± 13	1034
Elongation at break (%)	ASTM E8/E8M	12.8 ± 1.4	6
Reduction in area (%)	ASTM E8/E8M	13.9 ± 1.6	8
Young's modulus (GPa)	ASTM E111	205	-
Hardness (HRC)	ASTM E18	43.1 ± 0.7	33-34
Density (g/cc)	ASTM B311	8.229 ± 0.002	8.0
ASTM Grain Size	ASTM E112	6.5	5 or finer

ATTRIBUTES & APPLICATIONS

High temperature strength	Corrosion resistance
Creep resistance	Gas turbine applications
Oxidation resistance	Rocket applications

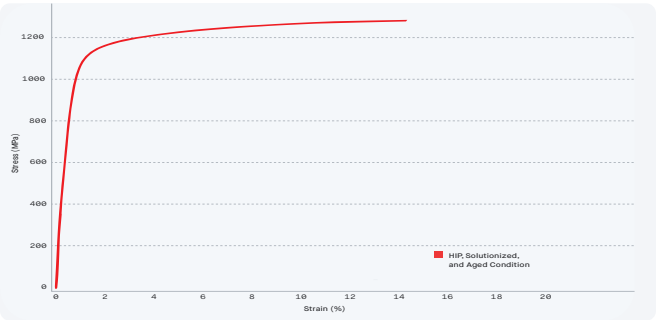
OTHER STANDARD DESIGNATIONS

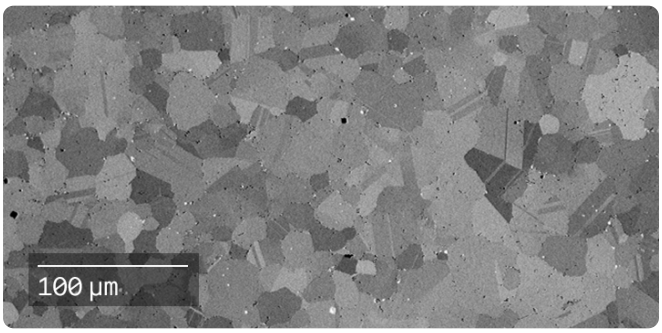
UNS07718	AMS 5664
AMS 5662	DIN NiCr19Fe19NbMo3

1. Mechanical properties measured on X-direction bars +/- 1 standard deviation
2. Hot Isostatic Pressing process: 1163C +/- 14C, 240min +/- 60 min, 1017 +/- 17 bar
3. Precipitation heat treatment according to AMS5917
4. Listed designations are for reference purposes only. Composition and mechanical properties may vary
5. End-use material performance is impacted (+/-) by certain factors including but not limited to part geometry and design, application and evaluation conditions, etc

[Material Data Sheet]

IN718
Nickel Alloy





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Mn	0.35 (max)
Si	0.35 (max)
Cu	0.3 (max)
P	0.015 (max)
S	0.015 (max)

MECHANICAL PROPERTIES [1]

	Standard	Shop System[2] HIP, heat treated[4], room temperature tested	AMS 5917 HIP, heat treated, room temperature tested	Shop System[3] HIP, heat treated, elevated temperature tested[5]	AMS 5917 HIP, heat treated, elevated temperature tested[5]
Ultimate tensile strength (MPa)	ASTM E8/E21	1267 ± 25	1241	1051 ± 6	931
0.2% Yield strength (MPa)	ASTM E8/E21	1055 ± 22	1034	908 ± 9	827
Elongation at break (%)	ASTM E8/E21	11.2 ± 3	6	16 ± 3	6
Reduction in area (%)	ASTM E8/E21	13.7 ± 2	8	19 ± 3	6
Young's modulus (GPa)	ASTM E111	187	-		
Hardness (HRC)	ASTM E18	43 ± 1	34		
Density (g/cc)	ASTM B311	8.2	8.0		
ASTM Grain Size	ASTM E112	6-7	5		

ATTRIBUTES & APPLICATIONS

High temperature strength	Corrosion resistance
Creep resistance	Gas turbine applications
Oxidation resistance	Rocket applications

OTHER STANDARD DESIGNATIONS [6]

UNS07718	AMS 5664
AMS 5662	DIN NiCr19Fe19NbMo3

1. Mechanical properties noted represent mean values +/- 1 standard deviation across X & Y orientations.
2. Sintered in an Elnik MIM 3000 series metal hot zone furnace and tested in the as printed surface condition.
3. Sintered in an Elnik MIM 3000 series metal hot zone furnace and tested in the machined surface condition.
4. HIP at 2125°F and 14.75 ksi for 240 minutes. Heat treated per AMS 5662.
5. Tested at 1200°F per ASTM E21.
6. Listed designations are for reference purposes only. Composition and mechanical properties may vary.

End-use material performance is impacted (+/-) by certain factors including but not limited to part geometry and design, application and evaluation conditions, etc.