

UDIMET® alloy D-979 (UNS N09979) is an iron-nickel alloy designed for turbine disc applications at temperatures up to 1200°-1400°F (649°-760°C). Hardened by a complex precipitation of intermetallic phases, the alloy combines corrosion resistance with excellent tensile and stress rupture strength.

Physical Constants

Table 2 - Physical Constants

Density, lb/in ³	0.296
g/cm ³	8.19
Melting Range, °F	2225-2530
°C	1220-1390
Coefficient of Expansion, 70-200°F, 10 ⁻⁶ in/in•°F	7.60
21-93°C, µm/m•°C	13.7
Thermal Conductivity, Btu•in/ft ² •h•°F	87
W/m•°C	12.6

Typical Mechanical Properties

Table 3 - 1000-Hour Rupture Strength of Precipitation-Hardened UDIMET alloy D-979

Temperature		Rupture Strength	
°F	°C	ksi	MPa
1200	649	75	515
1300	704	55	380
1400	760	36	250
1500	816	21	145
1600	871	10	69

Table 1 - Limiting Chemical Composition, %

Chromium	14.0-16.0
Molybdenum	3.0-4.5
Tungsten	3.0-4.5
Titanium	2.7-3.3
Aluminum	0.75-1.3
Nickel	42.0-48.0
Carbon	0.08 max.
Silicon	0.75 max.
Manganese	0.75 max.
Boron	0.008-0.016
Iron	Balance*

*Reference to the 'balance' of a composition does not guarantee this is exclusively of the element mentioned but that it predominates and others are present only in minimal quantities.

Available Products and Specifications

UDIMET alloy D-979 is designated UNS N09979 and is available as forging billet and bar.

Major specifications:
AMS 5746

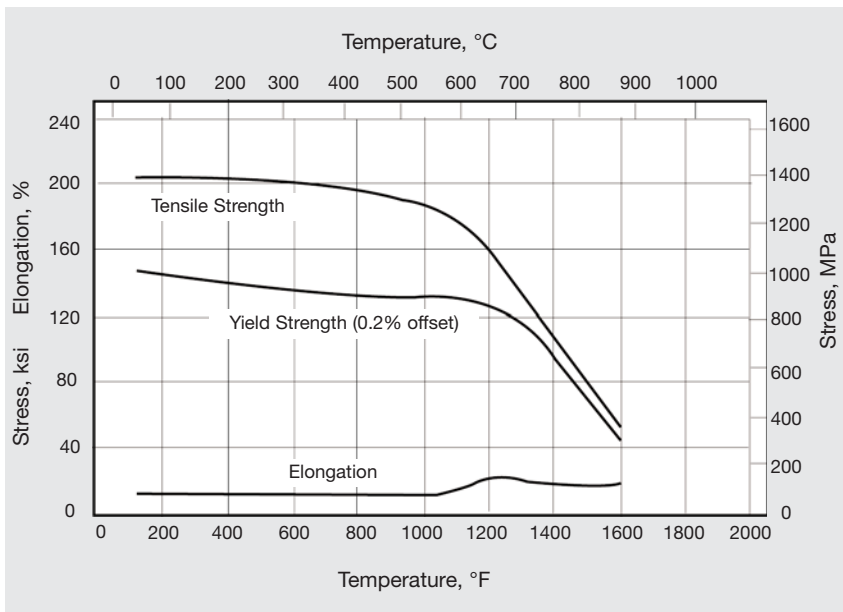


Figure 1. Typical mechanical properties of precipitation-hardened UDIMET alloy D-979

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UDIMET® alloy D-979





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