

625 LCF (Low Cycle Fatigue) is a variant of 625 with the same basic chemistry except for tighter control of the maximum C, Si, and N contents through a vacuum induction melting process. Combined with careful processing, this results in a fine-grained microstructure maximized for formability and fatigue resistance, often resulting in lifespans 100 times that of conventional 625 in applications requiring low cycle fatigue life. Along with superior fatigue resistance, 625 LCF has similar oxidation resistance and corrosion resistance to 625.

**Chemistry**

	Cr	Ni	Mo	Co	Nb	Al	Ti	C	Fe	Mn	Si	P	S	N
Min	20.0	-	8.0	-	3.15	-	-	-	-	-	-	-	-	-
Max	23.0	bal	10.0	1.0	4.15	0.4	0.4	0.03	5.0	0.5	0.15	0.015	0.015	0.02

**Specifications**

- UNS:** N06626
- W. Nr./EN:** 2.4856
- AMS:** 5599, 5879
- NACE:** MRO103, MRO175

**Physical Properties**

<b>Density</b>	0.305 lb/in <sup>3</sup>
<b>Melting Range</b>	2350-2460°F
<b>Poisson Ratio</b>	0.31
<b>Electrical Resistivity</b>	50.8 μΩ • in
<b>Coefficient of Thermal Expansion (68°F - 212°F)</b>	7.1 μin/in • °F
<b>Thermal Conductivity (212°F)</b>	5.3 BTU/(hr•ft•°F)
<b>Modulus of Elasticity (68°F)</b>	29.8 • 10 <sup>6</sup> psi
<b>Modulus of Rigidity (68°F)</b>	11.4 • 10 <sup>6</sup> psi

**Mechanical Properties**

	AMS 5599	AMS 5879
<b>Ultimate Tensile Strength, ksi</b>	120	120
<b>0.2% Yield Strength, ksi</b>	60	60
<b>Elongation, %</b>	30	40

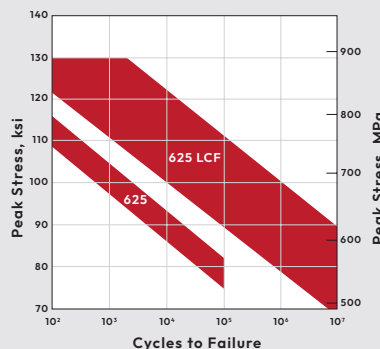
\*Minimum values per specification

**Fatigue Resistance**

Low cycle fatigue occurs when materials are cyclically, loaded typically beyond their yield point, causing deformation within a low number of cycles. 625 LCF is specifically designed to resist these effects and outperforms 625 in resistance to this phenomenon.

**Low-Cycle Fatigue Strength at Temperatures of 900 - 1200°F (480 - 650°C)**

Source: HIGH-PERFORMANCE NICKEL ALLOYS THE ALLOY SPECIALISTS. (n.d.). <https://www.specialmetals.com/documents/nickel-alloy-handbook.pdf>



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**Features**

- Oxidation resistance up to 2000°F
- Excellent formability and weldability
- Superior fatigue resistance over 625
- High resistance to intergranular corrosion
- Good resistance to both oxidizing and reducing atmospheres

**Applications**

- Bellows
- Expansion Joints
- Jet Engine Exhaust Components
- Gas Turbine Engine Ducting
- Heat Shields
- Combustion Liners

