ALLOY WASPALOY® 5706

AMS 5704 (Capable of) / AMS 5706 / AMS 5707 (Capable of) / UNS N07001

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Waspaloy® Bar – AMS 5706 is a precipitation-hardening, austenitic nickel-based superalloy developed for demanding elevated-temperature applications. The alloy delivers an exceptional combination of high strength, corrosion resistance, and thermal stability, making it well suited for service at temperatures up to 1,600°F (871°C). Waspaloy® 5706 has a long history of use in gas turbine engines, where components are subjected to extreme mechanical stress and prolonged heat exposure. It is commonly specified for highly stressed parts in the turbine section of jet engines, including blades, vanes, rings, and discs, where consistent performance and reliability are critical.

Products & Sizes
Bar
0.375" - 2.000"

Waspaloy® 5706 Chemical Composition

	Element	Min	Max
Ni	Nickel	-	58.00
Cr	Chromium	-	19.00
Co	Cobalt	-	13.00
Mo	Molybdenum	-	4.0
Ti	Titanium	-	3.00
Al	Aluminum	-	1.50

Industry Standards

- PWA LCS
- GE Aircraft Engine (GT193)
- GE Aviation S-SPEC-35 AeDMS S-400
- RR SABRe Edition 2
- DFARS Compliant
- EN 2.4654
- Line marked >.500 inch diameter
- Predominantly produced by VIM-VAR melt method. Solution treated, centerless ground or rough turned

Industry Applications

- Aerospace Fasteners
- Compressor Discs
- Shafts
- Spacers
- Turbine Cases

Physical Properties

Property	Value
Density	0.296 lb/in^3, (8.19 g/cm^3)

Non-magnetic

Maintains high strength, toughness, and excellent rupture properties to 1400ºF (760°C). This alloy has good resistance to oxidation and sulfidation to 1600ºF (871°C) due to its high chromium content. Waspaloy® Bar - AMS 5706 displays excellent resistance to corrosion by combustion products encountered in gas turbines and aircraft jet engines at temperatures up to 1600ºF (871ºC). Intergranular oxidation occurs at temperatures above 1600ºF (871ºC). This alloy has excellent resistance to stress corrosion cracking and adequate hot corrosion resistance.

Mechanical Properties

Waspaloy® AMS 5706 bar is difficult to machine, even in the solution treated condition. Rigid set-up, plenty of power, sharp tools and positive cuts are important. Use of carbide or ceramic tools is required.

Hardness

Hardness of stock is typically 230 BHN. Supplied in the solution treated condition - 1825-1900ºF (996-1038°C) for 1 hour. Waspaloy® Bar - AMS 5706 exhibits best machinability in this condition. After machining, parts are normally stabilized at 1550ºF (843°C) for 4 hours, air cooled, followed by precipitation aging at 1400ºF (760°C) for 16 hours, air cooled. The hardness of this alloy in the fully heat-treated condition ranges from 34 to 44 Rockwell C.

Machinability

Rating: 12% of B-1112

Typical stock removal rate: 30-50 surface feet/minute with carbide tooling.