Haynes® Waspaloy™ alloy, sheet, tested at 650°C (1200°F)

Subcategory: Metal; Nickel Base; Superalloy

Key Words: AMS 5544

Component	Wt. %	Component	Wt. %	Component	Wt. %
Al	1.5	Cr	19	Ni	56
B	0.006	Fe	Max 2	Si	Max 0.15
C	0.08	Mn	Max 0.1	Ti	3
Co	13.5	Mo	4.3	Zr	0.05

Material Notes:

Nickel content to balance. Age-hardenable superalloy with very good strength at temperatures up 980°C (1800°F), can be cold-formed in the annealed condition, may also be hot formed at 1040°C (1900°F) and above, good resistance to gas turbine combustion gas environments at temperatures up to 870°C (1600°F). Widely used as a wrought material for forged and fabricated gas turbine and aerospace components.

Data provided by the manufacturer, Haynes International, Inc.

Physical Properties	Metric	English	Comments
Density	8.2 g/cc	0.296 lb/in³	at RT

Mechanical Properties

Tensile Strength, Ultimate	1195 MPa	173000 psi	
Tensile Strength, Yield	770 MPa	112000 psi	at 0.2% offset
Elongation at Break	20.8 %	20.8 %	in 51 mm
Modulus of Elasticity	213 GPa	30900 ksi	20°C
Modulus of Elasticity at Elevated Temperature	146 GPa	21200 ksi	1000°C (1830°F)
Modulus of Elasticity at Elevated Temperature	155 GPa	22500 ksi	900°C (1650°F)
Modulus of Elasticity at Elevated Temperature	164 GPa	23800 ksi	800°C (1470°F)

Modulus of Elasticity at Elevated Temperature	172 GPa	24900 ksi	700°C (1290°F)
Modulus of Elasticity at Elevated Temperature	180 GPa	26100 ksi	600°C (1110°F)
Modulus of Elasticity at Elevated Temperature	192 GPa	27800 ksi	400°C (750°F)
Modulus of Elasticity at Elevated Temperature	204 GPa	29600 ksi	200°C (390°F)

Thermal Properties

CTE, linear 500°C	13.9 µm/m-°C	7.72 µin/in-°F	20-500°C (68-930°F)
CTE, linear 1000°C	14.3 µm/m-°C	7.94 µin/in-°F	20-600°C (68-1110°F)
CTE, linear 1000°C	14.8 µm/m-°C	8.22 µin/in-°F	20-700°C (68-1290°F)
CTE, linear 1000°C	15.4 µm/m-°C	8.56 µin/in-°F	20-800°C (68-1470°F)
CTE, linear 1000°C	16.4 µm/m-°C	9.11 µin/in-°F	20-900°C (68-1650°F)
CTE, linear 1000°C	17.8 µm/m-°C	9.89 µin/in-°F	20-1000°C (68-1830°F)
Thermal Conductivity at Elevated Temperature	12.6 W/m-K	87.4 BTU-in/hr-ft²-°F	200°C (390°F)
Thermal Conductivity at Elevated Temperature	15.7 W/m-K	109 BTU-in/hr-ft²-°F	400°C (750°F)
Thermal Conductivity at Elevated Temperature	19.1 W/m-K	133 BTU-in/hr-ft²-°F	600°C (1110°F)
Thermal Conductivity at Elevated Temperature	20.9 W/m-K	145 BTU-in/hr-ft²-°F	700°C (1290°F)
Thermal Conductivity at Elevated Temperature	22.7 W/m-K	158 BTU-in/hr-ft²-°F	800°C (1470°F)
Thermal Conductivity at Elevated Temperature	24.5 W/m-K	170 BTU-in/hr-ft²-°F	900°C (1650°F)
Melting Point	1330 - 1360 °C	2430 - 2480 °F	

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your calculations to minimize rounding error.