Haynes® Multimet® alloy, 25.4-50.8 mm forged bar, 1185°C heat treatment, water quenched, tested at RT

Subcategory: Iron Base; Metal; Superalloy

Key Words: AMS 5794, UNS R30155, AMS 5532, AMS 5768, AMS 5769, AMS 5795

Component	Wt. %	Component	Wt. %	Component	Wt. %
C	0.08 - 0.16	Fe	33	Ni	19 - 21
Cb + Ta	0.75 - 1.25	Mn	1 - 2	Si	Max 1
Co	18.5 - 21	Mo	2.5 - 3.5	W	2 - 3
Cr	20 - 22.5	N	0.1 - 0.2		

Material Notes:

Iron (Fe) content to balance. Recommended for use in applications involving high stress at temperatures up to 816°C (1500°F), and moderate stresses up to 1093°C (2000°F). Excellent oxidation resistance, good ductility, and is readily fabricated. Current applications include aircraft, including tailpipes and tailcones, afterburner parts, exhaust manifolds, combustion chambers, turbine blades, buckets and nozzles. Excellent service for high temperature bolts.

Data provided by the manufacturer, Haynes International, Inc.

Physical Properties	Metric	English	Comments
Density	8.2 g/cc	0.296 lb/in³	at 22°C (71.6°F)

Mechanical Properties

Hardness, Brinell	159	159	Converted from Rockwell B hardness.
Hardness, Knoop	176	176	Converted from Rockwell B hardness.
Hardness, Rockwell B	92	92	
Hardness, Vickers	201	201	Converted from Rockwell B hardness.
Tensile Strength, Ultimate	765 MPa	111000 psi	
Tensile Strength, Yield	384 MPa	55700 psi	at 0.2% offset

Elongation at Break	55 %	55 %	in 25.4 mm
Poisson's Ratio	0.298	0.298	RT
Poisson's Ratio	0.319	0.319	-78°C
Poissons Ratio at Elevated Temperature	0.315	0.315	426°C
Poissons Ratio at Elevated Temperature	0.325	0.325	650°C
Poissons Ratio at Elevated Temperature	0.339	0.339	816°C

Electrical Properties

Electrical Resistivity	9.3e-005 ohm-cm	9.3e-005 ohm-cm	22°C (71.6°F)

Thermal Properties

CTE, linear 250°C	15.3 µm/m-°C	8.5 µin/in-°F	23-300°C (73.4-570°F)
CTE, linear 250°C	15.6 µm/m-°C	8.67 µin/in-°F	23-400°C (73.4-750°F)
CTE, linear 500°C	16 µm/m-°C	8.89 µin/in-°F	23-500°C (73.4-930°F)
CTE, linear 500°C	16.7 µm/m-°C	9.28 µin/in-°F	23-600°C (73.4-1110°F)
CTE, linear 500°C	17.2 µm/m-°C	9.56 µin/in-°F	23-700°C (73.4-1290°F)
CTE, linear 500°C	17.5 µm/m-°C	9.72 µin/in-°F	23-800°C (73.4-1470°F)
CTE, linear 500°C	17.8 µm/m-°C	9.89 µin/in-°F	23-900°C (73.4-1650°F)
CTE, linear 1000°C	17.8 µm/m-°C	9.89 µin/in-°F	23-1000°C (73.4-1830°F)
CTE, linear 1000°C	18.4 µm/m-°C	10.2 µin/in-°F	23-1100°C (73.4-2010°F)
Specific Heat Capacity	0.435 J/g-°C	0.104 BTU/lb-°F	21-100°C (69.8-212°F)
Thermal Conductivity at Elevated Temperature	15.9 W/m-K	110 BTU-in/hr-ft²-°F	300°C (570°F)
Thermal Conductivity at Elevated Temperature	17.3 W/m-K	120 BTU-in/hr-ft²-°F	400°C (750°F)
Thermal Conductivity at Elevated Temperature	18.6 W/m-K	129 BTU-in/hr-ft²-°F	500°C (930°F)
Thermal Conductivity at Elevated Temperature	20 W/m-K	139 BTU-in/hr-ft²-°F	600°C (1110°F)
Thermal Conductivity at Elevated Temperature	20 W/m-K	139 BTU-in/hr-ft²-°F	200°C (390°F)
Melting Point	1288 - 1354 °C	2350 - 2470 °F	
Solidus	1288 °C	2350 °F	
Liquidus	1354 °C	2470 °F	

Optical Properties

Emissivity (0-1)	0.88	0.88	at 1090°C (1995°F) (oxidized)

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.