

Haynes 242[®] alloy, after 1000 hours exposure at 650[°]C (1200[°]F)

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

Material Notes:

Age-hardenable, high ductility in the aged condition, lower thermal expansion than most alloys, very good oxidation resistance up to 815[°]C, excellent low cycle fatigue properties, very good thermal stability, and resistance to high-temperature fluorine and fluoride environments. Applications include seal rings, containment rings, duct segments, casings, fasteners, rocket nozzles, pumps, hydrofluoric acid vapor containing processes, fluoroelastomer process equipment such as extrusion screws. Data provided by the manufacturer, Haynes International, Inc.

Order this product through the following link:

http://www.lookpolymers.com/polymer_Haynes-242-alloy-after-1000-hours-exposure-at-650C-1200F.php

Physical Properties	Metric	English	Comments
Density	9.05 g/cc	0.327 lb/in ³	at RT

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	257	257	Converted from Vickers hardness
Hardness, Knoop	286	286	Converted from Vickers hardness
Hardness, Rockwell C	19	19	Converted from Vickers hardness
Hardness, Vickers	78.0	78.0	
	@Temperature 870 [°] C	@Temperature 1600 [°] F	
	140	140	
	@Temperature 760 [°] C	@Temperature 1400 [°] F	
	218	218	
	@Temperature 650 [°] C	@Temperature 1200 [°] F	
	263	263	
	@Temperature 540 [°] C	@Temperature 1000 [°] F	
	271	271	
	@Temperature 425 [°] C	@Temperature 797 [°] F	
Tensile Strength, Ultimate	1340 MPa	194000 psi	
Tensile Strength, Yield	820 MPa	119000 psi	
	@Strain 0.200 %	@Strain 0.200 %	

Elongation of Break Mechanical Properties	28 % Metric	28 % English	to 50 mm Comments
Reduction of Area	38 %	38 %	
Modulus of Elasticity	229 GPa	33200 ksi	RT
	152 GPa	22000 ksi	
	@Temperature 1000 Â°C	@Temperature 1830 Â°F	
	163 GPa	23600 ksi	
	@Temperature 900 Â°C	@Temperature 1650 Â°F	
	172 GPa	24900 ksi	
	@Temperature 800 Â°C	@Temperature 1470 Â°F	
	185 GPa	26800 ksi	
	@Temperature 700 Â°C	@Temperature 1290 Â°F	
	193 GPa	28000 ksi	
	@Temperature 600 Â°C	@Temperature 1110 Â°F	
	199 GPa	28900 ksi	
	@Temperature 500 Â°C	@Temperature 932 Â°F	
	206 GPa	29900 ksi	
	@Temperature 400 Â°C	@Temperature 752 Â°F	
	213 GPa	30900 ksi	
	@Temperature 300 Â°C	@Temperature 572 Â°F	
	219 GPa	31800 ksi	
	@Temperature 200 Â°C	@Temperature 392 Â°F	
	225 GPa	32600 ksi	
	@Temperature 100 Â°C	@Temperature 212 Â°F	
Charpy Impact	56.0 J	41.3 ft-lb	

Thermal Properties	Metric	English	Comments
CTE, linear	10.8 Âµm/m-Â°C	6.00 Âµin/in-Â°F	
	@Temperature 25.0 - 100 Â°C	@Temperature 77.0 - 212 Â°F	

Thermal Properties	11.3 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$ Metric	6.28 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$ English	Comments
	@Temperature 25.0 - 200 $\text{Å}^\circ\text{C}$	@Temperature 77.0 - 392 $\text{Å}^\circ\text{F}$	
	11.6 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	6.44 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 25.0 - 300 $\text{Å}^\circ\text{C}$	@Temperature 77.0 - 572 $\text{Å}^\circ\text{F}$	
	11.9 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	6.61 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 25.0 - 400 $\text{Å}^\circ\text{C}$	@Temperature 77.0 - 752 $\text{Å}^\circ\text{F}$	
	12.2 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	6.78 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 25.0 - 500 $\text{Å}^\circ\text{C}$	@Temperature 77.0 - 932 $\text{Å}^\circ\text{F}$	
	12.3 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	6.83 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 25.0 - 600 $\text{Å}^\circ\text{C}$	@Temperature 77.0 - 1110 $\text{Å}^\circ\text{F}$	
	12.4 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	6.89 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 25.0 - 650 $\text{Å}^\circ\text{C}$	@Temperature 77.0 - 1200 $\text{Å}^\circ\text{F}$	
	13.0 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	7.22 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 25.0 - 700 $\text{Å}^\circ\text{C}$	@Temperature 77.0 - 1290 $\text{Å}^\circ\text{F}$	
	13.7 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	7.61 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 25.0 - 750 $\text{Å}^\circ\text{C}$	@Temperature 77.0 - 1380 $\text{Å}^\circ\text{F}$	
	14.0 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	7.78 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 25.0 - 800 $\text{Å}^\circ\text{C}$	@Temperature 77.0 - 1470 $\text{Å}^\circ\text{F}$	
	14.5 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	8.06 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 25.0 - 900 $\text{Å}^\circ\text{C}$	@Temperature 77.0 - 1650 $\text{Å}^\circ\text{F}$	
	15.0 $\mu\text{m}/\text{m}\cdot\text{Å}^\circ\text{C}$	8.33 $\mu\text{in}/\text{in}\cdot\text{Å}^\circ\text{F}$	
	@Temperature 25.0 - 1000 $\text{Å}^\circ\text{C}$	@Temperature 77.0 - 1830 $\text{Å}^\circ\text{F}$	
Specific Heat Capacity	0.386 J/g- $\text{Å}^\circ\text{C}$	0.0923 BTU/lb- $\text{Å}^\circ\text{F}$	RT
	0.405 J/g- $\text{Å}^\circ\text{C}$	0.0968 BTU/lb- $\text{Å}^\circ\text{F}$	
	@Temperature 100 $\text{Å}^\circ\text{C}$	@Temperature 212 $\text{Å}^\circ\text{F}$	
	0.419 J/g- $\text{Å}^\circ\text{C}$	0.100 BTU/lb- $\text{Å}^\circ\text{F}$	

Thermal Properties	Metric	English	Comments
	@Temperature 200 Â°C	@Temperature 392 Â°F	
	0.431 J/g-Â°C	0.103 BTU/lb-Â°F	
	@Temperature 300 Â°C	@Temperature 572 Â°F	
	0.439 J/g-Â°C	0.105 BTU/lb-Â°F	
	@Temperature 400 Â°C	@Temperature 752 Â°F	
	0.451 J/g-Â°C	0.108 BTU/lb-Â°F	
	@Temperature 500 Â°C	@Temperature 932 Â°F	
	0.470 J/g-Â°C	0.112 BTU/lb-Â°F	
	@Temperature 600 Â°C	@Temperature 1110 Â°F	
	0.595 J/g-Â°C	0.142 BTU/lb-Â°F	
	@Temperature 700 Â°C	@Temperature 1290 Â°F	
	0.605 J/g-Â°C	0.145 BTU/lb-Â°F	
	@Temperature 800 Â°C	@Temperature 1470 Â°F	
	0.610 J/g-Â°C	0.146 BTU/lb-Â°F	
	@Temperature 900 Â°C	@Temperature 1650 Â°F	
	0.627 J/g-Â°C	0.150 BTU/lb-Â°F	
	@Temperature 1000 Â°C	@Temperature 1830 Â°F	
Thermal Conductivity	11.3 W/m-K	78.4 BTU-in/hr-ftÂ²-Â°F	RT
	12.6 W/m-K	87.4 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 100 Â°C	@Temperature 212 Â°F	
	14.2 W/m-K	98.5 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 200 Â°C	@Temperature 392 Â°F	
	15.9 W/m-K	110 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 300 Â°C	@Temperature 572 Â°F	
	17.5 W/m-K	121 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 400 Â°C	@Temperature 752 Â°F	
	19.2 W/m-K	133 BTU-in/hr-ftÂ²-Â°F	

Thermal Properties	@Temperature 500 Â°C Metric	@Temperature 932 Â°F English	Comments
	20.9 W/m-K	145 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 600 Â°C	@Temperature 1110 Â°F	
	22.5 W/m-K	156 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 700 Â°C	@Temperature 1290 Â°F	
	24.2 W/m-K	168 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 800 Â°C	@Temperature 1470 Â°F	
	25.8 W/m-K	179 BTU-in/hr-ftÂ²-Â°F	
	@Temperature 900 Â°C	@Temperature 1650 Â°F	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.000122 ohm-cm	0.000122 ohm-cm	RT
	0.0001234 ohm-cm	0.0001234 ohm-cm	
	@Temperature 100 Â°C	@Temperature 212 Â°F	
	0.0001251 ohm-cm	0.0001251 ohm-cm	
	@Temperature 200 Â°C	@Temperature 392 Â°F	
	0.0001267 ohm-cm	0.0001267 ohm-cm	
	@Temperature 300 Â°C	@Temperature 572 Â°F	
	0.0001276 ohm-cm	0.0001276 ohm-cm	
	@Temperature 1000 Â°C	@Temperature 1830 Â°F	
	0.000128 ohm-cm	0.000128 ohm-cm	
	@Temperature 400 Â°C	@Temperature 752 Â°F	
	0.0001295 ohm-cm	0.0001295 ohm-cm	
	@Temperature 500 Â°C	@Temperature 932 Â°F	
	0.0001298 ohm-cm	0.0001298 ohm-cm	
	@Temperature 900 Â°C	@Temperature 1650 Â°F	
	0.0001306 ohm-cm	0.0001306 ohm-cm	
	@Temperature 600 Â°C	@Temperature 1110 Â°F	

Electrical Properties	0.000132 ohm-cm Metric	0.000132 ohm-cm English	Comments
	@Temperature 700 Å°C	@Temperature 1290 Å°F	
	0.0001324 ohm-cm	0.0001324 ohm-cm	
	@Temperature 800 Å°C	@Temperature 1470 Å°F	

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