

HAYNES[®] 282[®] alloy

Physical Properties

Physical Property*	British Units		Metric Units	
Density (Solution Annealed)	0.299 lb/in ³		8.27 g/cm ³	
Density (Age-Hardened)	0.300 lb/in ³		8.29 g/cm ³	
Melting Range	2370-2510°F		1300-1375°C	
Gamma-Prime Solvus	1827°F		997°C	
Specific Heat	RT	0.104 Btu/lb.°F	RT	436 J/Kg.°C
	200°F	0.110 Btu/lb.°F	100°C	463 J/Kg.°C
	300°F	0.114 Btu/lb.°F	200°C	494 J/Kg.°C
	400°F	0.118 Btu/lb.°F	300°C	522 J/Kg.°C
	500°F	0.122 Btu/lb.°F	400°C	544 J/Kg.°C
	600°F	0.125 Btu/lb.°F	500°C	563 J/Kg.°C
	700°F	0.128 Btu/lb.°F	600°C	581 J/Kg.°C
	800°F	0.131 Btu/lb.°F	700°C	594 J/Kg.°C
	900°F	0.134 Btu/lb.°F	800°C	650 J/Kg.°C
	1000°F	0.136 Btu/lb.°F	900°C	668 J/Kg.°C
	1100°F	0.138 Btu/lb.°F	1000°C	676 J/Kg.°C
	1200°F	0.140 Btu/lb.°F	-	-
	1300°F	0.142 Btu/lb.°F	-	-
	1400°F	0.150 Btu/lb.°F	-	-
	1500°F	0.156 Btu/lb.°F	-	-
	1600°F	0.158 Btu/lb.°F	-	-
	1700°F	0.160 Btu/lb.°F	-	-
1800°F	0.161 Btu/lb.°F	-	-	
Thermal Conductivity	RT	72 Btu-in/ft ² -hr.°F	RT	10.3 W/m.°C
	200°F	82 Btu-in/ft ² -hr.°F	100°C	12.0 W/m.°C
	300°F	90 Btu-in/ft ² -hr.°F	200°C	14.1 W/m.°C
	400°F	99 Btu-in/ft ² -hr.°F	300°C	16.3 W/m.°C
	500°F	107 Btu-in/ft ² -hr.°F	400°C	18.5 W/m.°C
	600°F	116 Btu-in/ft ² -hr.°F	500°C	20.5 W/m.°C
	700°F	124 Btu-in/ft ² -hr.°F	600°C	22.6 W/m.°C
	800°F	132 Btu-in/ft ² -hr.°F	700°C	24.8 W/m.°C
	900°F	140 Btu-in/ft ² -hr.°F	800°C	26.1 W/m.°C
	1000°F	148 Btu-in/ft ² -hr.°F	900°C	27.3 W/m.°C
	1100°F	156 Btu-in/ft ² -hr.°F	1000°C	28.9 W/m.°C
	1200°F	164 Btu-in/ft ² -hr.°F	-	-
	1300°F	173 Btu-in/ft ² -hr.°F	-	-
	1400°F	177 Btu-in/ft ² -hr.°F	-	-
	1500°F	182 Btu-in/ft ² -hr.°F	-	-
	1600°F	187 Btu-in/ft ² -hr.°F	-	-
	1700°F	192 Btu-in/ft ² -hr.°F	-	-
1800°F	199 Btu-in/ft ² -hr.°F	-	-	

Thermal Diffusivity	RT	0.112 ft ² /h	RT	0.0288 cm ² /s
	200°F	0.121 ft ² /h	100°C	0.0315 cm ² /s
	300°F	0.128 ft ² /h	200°C	0.0348 cm ² /s
	400°F	0.135 ft ² /h	300°C	0.0381 cm ² /s
	500°F	0.143 ft ² /h	400°C	0.0413 cm ² /s
	600°F	0.150 ft ² /h	500°C	0.0444 cm ² /s
	700°F	0.156 ft ² /h	600°C	0.0473 cm ² /s
	800°F	0.163 ft ² /h	700°C	0.0509 cm ² /s
	900°F	0.170 ft ² /h	800°C	0.0488 cm ² /s
	1000°F	0.176 ft ² /h	900°C	0.0498 cm ² /s
	1100°F	0.183 ft ² /h	1000°C	0.0521 cm ² /s
	1200°F	0.190 ft ² /h	-	-
	1300°F	0.197 ft ² /h	-	-
	1400°F	0.192 ft ² /h	-	-
	1500°F	0.190 ft ² /h	-	-
	1600°F	0.192 ft ² /h	-	-
	1700°F	0.195 ft ² /h	-	-
	1800°F	0.200 ft ² /h	-	-
Electrical Resistivity	RT	49.7 μohm.in	RT	126.1 μohm.cm
	200°F	50.3 μohm.in	100°C	127.8 μohm.cm
	300°F	50.7 μohm.in	200°C	129.9 μohm.cm
	400°F	51.2 μohm.in	300°C	131.8 μohm.cm
	500°F	51.6 μohm.in	400°C	133.4 μohm.cm
	600°F	52.0 μohm.in	500°C	135.0 μohm.cm
	700°F	52.3 μohm.in	600°C	136.2 μohm.cm
	800°F	52.7 μohm.in	700°C	135.5 μohm.cm
	900°F	53.0 μohm.in	800°C	134.5 μohm.cm
	1000°F	53.5 μohm.in	900°C	132.6 μohm.cm
	1100°F	53.7 μohm.in	1000°C	129.9 μohm.cm
	1200°F	53.4 μohm.in	-	-
	1300°F	53.3 μohm.in	-	-
	1400°F	53.1 μohm.in	-	-
	1500°F	52.9 μohm.in	-	-
	1600°F	52.5 μohm.in	-	-
	1700°F	51.9 μohm.in	-	-
	1800°F	51.3 μohm.in	-	-
Mean Coefficient of	RT	-	RT	-
	200°F	6.7 μin/in.°F	100°C	12.1 μm/m.°C
	300°F	6.8 μin/in.°F	200°C	12.4 μm/m.°C
	400°F	6.9 μin/in.°F	300°C	12.8 μm/m.°C
	500°F	7.0 μin/in.°F	400°C	13.1 μm/m.°C
	600°F	7.1 μin/in.°F	500°C	13.5 μm/m.°C
	700°F	7.2 μin/in.°F	600°C	13.7 μm/m.°C
	800°F	7.3 μin/in.°F	700°C	14.2 μm/m.°C
	900°F	7.5 μin/in.°F	800°C	14.9 μm/m.°C

Thermal Expansion	1000°F	7.5 $\mu\text{in/in.}^\circ\text{F}$	900°C	15.9 $\mu\text{m/m.}^\circ\text{C}$
	1100°F	7.6 $\mu\text{in/in.}^\circ\text{F}$	1000°C	16.9 $\mu\text{m/m.}^\circ\text{C}$
	1200°F	7.8 $\mu\text{in/in.}^\circ\text{F}$	-	-
	1300°F	7.9 $\mu\text{in/in.}^\circ\text{F}$	-	-
	1400°F	8.1 $\mu\text{in/in.}^\circ\text{F}$	-	-
	1500°F	8.4 $\mu\text{in/in.}^\circ\text{F}$	-	-
	1600°F	8.7 $\mu\text{in/in.}^\circ\text{F}$	-	-
	1700°F	9.0 $\mu\text{in/in.}^\circ\text{F}$	-	-
	1800°F	9.3 $\mu\text{in/in.}^\circ\text{F}$	-	-
Dynamic Modulus of Elasticity	RT	31.5 x 10 ⁶ psi	RT	217 GPa
	200°F	31.0 x 10 ⁶ psi	100°C	213 GPa
	300°F	30.6 x 10 ⁶ psi	200°C	209 GPa
	400°F	30.2 x 10 ⁶ psi	300°C	202 GPa
	500°F	29.7 x 10 ⁶ psi	400°C	196 GPa
	600°F	29.2 x 10 ⁶ psi	500°C	190 GPa
	700°F	28.7 x 10 ⁶ psi	600°C	183 GPa
	800°F	28.2 x 10 ⁶ psi	700°C	175 GPa
	900°F	27.7 x 10 ⁶ psi	800°C	166 GPa
	1000°F	27.2 x 10 ⁶ psi	900°C	154 GPa
	1100°F	26.6 x 10 ⁶ psi	1000°C	140 GPa
	1200°F	26.0 x 10 ⁶ psi	-	-
	1300°F	25.4 x 10 ⁶ psi	-	-
	1400°F	24.7 x 10 ⁶ psi	-	-
	1500°F	23.8 x 10 ⁶ psi	-	-
	1600°F	22.9 x 10 ⁶ psi	-	-
	1700°F	21.7 x 10 ⁶ psi	-	-
1800°F	20.6 x 10 ⁶ psi	-	-	
Dynamic Shear Modulus	RT	11.9 x 10 ⁶ psi	RT	82 GPa
	200°F	11.7 x 10 ⁶ psi	100°C	80 GPa
	300°F	11.5 x 10 ⁶ psi	200°C	78 GPa
	400°F	11.3 x 10 ⁶ psi	300°C	76 GPa
	500°F	11.1 x 10 ⁶ psi	400°C	73 GPa
	600°F	10.9 x 10 ⁶ psi	500°C	71 GPa
	700°F	10.7 x 10 ⁶ psi	600°C	68 GPa
	800°F	10.6 x 10 ⁶ psi	700°C	65 GPa
	900°F	10.4 x 10 ⁶ psi	800°C	61 GPa
	1000°F	10.1 x 10 ⁶ psi	900°C	57 GPa
	1100°F	9.9 x 10 ⁶ psi	1000°C	51 GPa
	1200°F	9.7 x 10 ⁶ psi	-	-
	1300°F	9.4 x 10 ⁶ psi	-	-
	1400°F	9.1 x 10 ⁶ psi	-	-
	1500°F	8.8 x 10 ⁶ psi	-	-
	1600°F	8.4 x 10 ⁶ psi	-	-
	1700°F	8.0 x 10 ⁶ psi	-	-
1800°F	7.6 x 10 ⁶ psi	-	-	

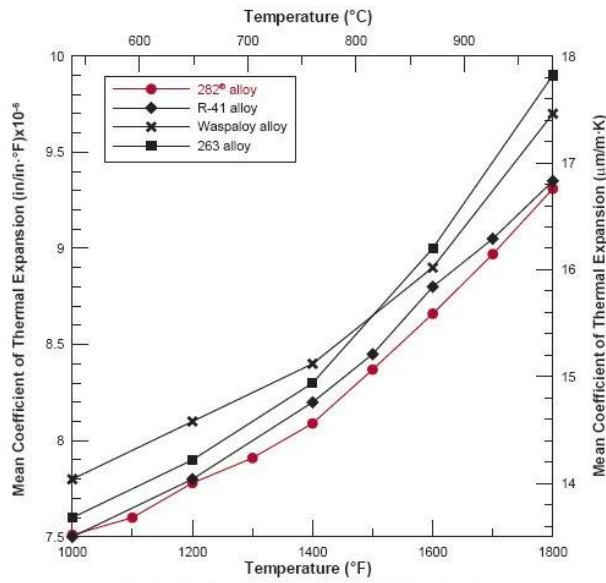
Poisson's Ratio

RT	0.319	RT	0.319
200°F	0.325	100°C	0.326
300°F	0.330	200°C	0.335
400°F	0.335	300°C	0.335
500°F	0.335	400°C	0.337
600°F	0.335	500°C	0.341
700°F	0.337	600°C	0.346
800°F	0.338	700°C	0.352
900°F	0.340	800°C	0.355
1000°F	0.342	900°C	0.357
1100°F	0.346	1000°C	0.363
1200°F	0.350	-	-
1300°F	0.353	-	-
1400°F	0.355	-	-
1500°F	0.355	-	-
1600°F	0.355	-	-
1700°F	0.359	-	-
1800°F	0.363	-	-

*Age-hardened 1850°F/2h/AC + 1450°F/8h/AC

RT= Room Temperature

Coefficient of Thermal Expansion of Gamma-Prime Strengthened Alloys* (Sheet)



*Age-hardened (263 alloy: 1472°F (800°C)/8h/AC, Waspaloy alloy: 1825°F (996°C)/2h/AC + 1550°F (843°C)/4h/AC + 1400°F (760°C)/1h/AC, R-41 alloy: 1650°F (899°C)/4h/AC, 282° alloy: 1850°F (1010°C)/2h/AC + 1450°F (788°C)/8h/AC)