

# HAYNES<sup>®</sup> 282<sup>®</sup> alloy

## Thermal Stability

### Comparative Thermal Stability Data of Gamma-Prime Strengthened Alloys (Sheet)

Room Temperature Tensile Data – Exposed\* at 1200°F (649°C) for 1,000 hours

Alloy	0.2% Yield Strength		Ultimate Tensile Strength		Elongation
	ksi	MPa	ksi	MPa	
-					%
263	113.6	783	166.6	1149	21.3
<b>282<sup>®</sup></b>	<b>112.9</b>	<b>778</b>	<b>172.8</b>	<b>1191</b>	<b>25.8</b>
Waspaloy	136.5	941	196.2	1353	22.6
R-41	141.9	979	189.4	1306	8.9

Room Temperature Tensile Data – Exposed\* at 1400°F (760°C) for 1,000 hours

Alloy	0.2% Yield Strength		Ultimate Tensile Strength		Elongation
	ksi	MPa	ksi	MPa	
-					%
263	92.7	639	160.3	1105	32.4
<b>282<sup>®</sup></b>	<b>104.1</b>	<b>718</b>	<b>170.5</b>	<b>1176</b>	<b>22.8</b>
Waspaloy	112.9	779	182.4	1258	24.0
R-41	167.0	1151	197.2	1359	1.9

Room Temperature Tensile Data – Exposed\* at 1500°F (816°C) for 1,000 hours

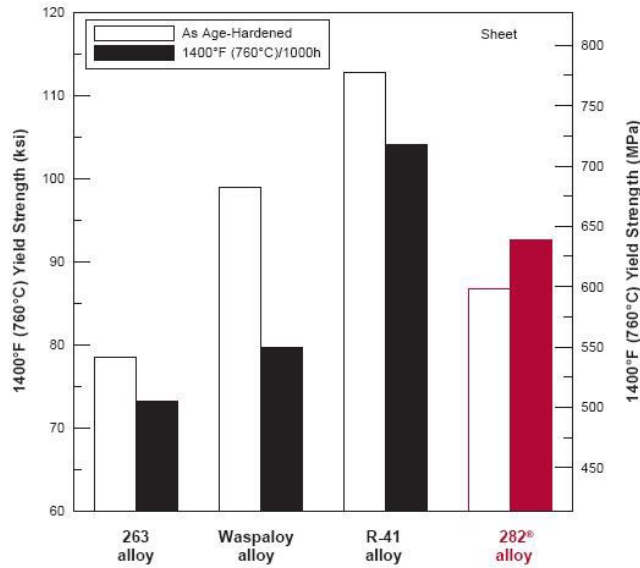
Alloy	0.2% Yield Strength		Ultimate Tensile Strength		Elongation
	ksi	MPa	ksi	MPa	
-					%
263	71.4	492	144.0	993	34.7
<b>282<sup>®</sup></b>	<b>91.9</b>	<b>634</b>	<b>159.8</b>	<b>1102</b>	<b>22.3</b>
Waspaloy	103.5	714	170.1	1173	22.8
R-41	137.9	951	177.5	1224	1.8

Room Temperature Tensile Data – Exposed\* at 1600°F (871°C) for 1,000 hours

Alloy	0.2% Yield Strength		Ultimate Tensile Strength		Elongation
	ksi	MPa	ksi	MPa	
-					%
263	55.0	379	125.2	863	40.9
<b>282<sup>®</sup></b>	<b>72.9</b>	<b>505</b>	<b>141.4</b>	<b>975</b>	<b>24.2</b>
Waspaloy	84.6	584	149.3	1030	18.1
R-41	103.8	715	148.0	1021	2.6

\*Thermal exposure was applied to samples in the age-hardened condition (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)/16h/AC, R-41 alloy: 1650°F (899°C)/4h/AC, 282<sup>®</sup> alloy: 1850°F (1010°C)/2h/AC + 1450°F (788°C)/8h/AC)

### Effect of Thermal Exposure on Yield Strength (At the Exposure Temperature)



**Room Temperature Properties of HAYNES® 282® Plate after Thermal Exposure\***

Exposure Temperature		Duration	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation	Reduction of Area
°F	°C		ksi	MPa	ksi	MPa		
1200	649	0	102	705	167	1152	30	33
		100	116	798	181	1247	27	31
		1,000	118	814	181	1248	26	29
		4,000	120	830	182	1255	26	29
		8,000	119	819	183	1264	24	27
		16,000	118	816	183	1260	23	25
1400	760	0	102	705	167	1152	30	33
		100	110	759	177	1223	27	30
		1,000	108	742	178	1226	26	29
		4,000	103	707	175	1205	21	22
		8,000	100	690	173	1191	20	21
		16,000	96	658	168	1161	20	19
1600	871	0	102	705	167	1152	30	33
		100	90	618	162	1114	31	36
		1,000	77	533	155	1065	30	30
		4,000	71	487	148	1022	32	31
		8,000	69	473	146	1006	32	31
		16,000	66	452	142	978	33	32

\*Thermal exposure was applied to the samples in the age-hardened condition (1850°F(1010°C)/2h/AC+1450°F(788°C)/8h/AC)