

# HAYNES<sup>®</sup> 25 alloy

## Creep and Stress-Rupture Strength

HAYNES<sup>®</sup> 25 alloy is a solid-solution-strengthened material which possesses excellent high-temperature strength. It is particularly effective for very long-term applications at temperatures of 1200 to 1800°F (650 to 980°C). It is stronger than nickel-base solid-solution-strengthened alloys, and is the strongest of the cobalt-base materials which still have good fabrication characteristics.

### Solution-Annealed Sheet\*

Temperature		Creep	Approximate Initial Stress to Produce Specified Creep in					
			10 h		100 h		1,000 h	
°F	°C	%	ksi	MPa	ksi	MPa	ksi	MPa
1200	649	0.5	62.0	427	47.5	328	33.5**	231**
		1	71.0	490	54.0	372	39.0**	269**
		R	82.0	565	69.0	476	57.0	393
1300	704	0.5	43.0	296	30.0**	207**	21.0**	145**
		1	49.5	341	35.0	241	23.2**	160**
		R	64.0	441	50.0	345	38.0	262
1400	760	0.5	28.0	193	19.5	134	14.8**	102**
		1	32.0	221	21.5	148	16.2**	112**
		R	47.0**	324**	36.0	248	26.0	179
1500	816	0.5	18.5	128	14.0	97	10.2**	70**
		1	20.2	139	15.5	107	12.3**	85**
		R	34.0**	234**	24.7	170	18.1	125
1600	871	0.5	13.7	94	9.9	68	6.9**	48**
		1	15.2	105	12.0	83	8.9**	61**
		R	24.0**	165**	17.5	121	12.0	83
1700	927	0.5	9.7	67	6.8	47	4.5**	31**
		1	12.0	83	8.8	61	5.6	39
		R	17.3**	119**	11.8	81	7.2	50
1800	982	0.5	6.8	47	4.5	31	2.6	18
		1	8.8	61	5.6	39	3.0	21
		R	11.8**	81**	7.2	50	4.0	28
2000	1093	0.5	2.8	19	1.3	9.0	-	-
		1	3.3	23	1.4	9.7	-	-
		R	4.5	31	2.0	14	-	-

\*Based on limited data

\*\*Significant extrapolation

### Solution-Annealed Bar

Temperature		Approximate Initial Stress to Produce Rupture in					
		10 h		100 h		1,000 h	
°F	°C	ksi	MPa	ksi	MPa	ksi	MPa
1350	732	42.5	293	36.5	252	30.3	209

1400	760	39.2	270	31.5	217	24.1	166
1500	816	30.0	207	22.0	152	17.0	117
1600	871	23.0	159	16.5	114	12.0	83
1700	927	17.0	117	12.0	83	8.4	58
1800	982	11.5	79	7.5	52	5.0	34

### Comparative Rupture Strength, Sheet

