

# HASTELLOY<sup>®</sup> S alloy

## Tensile Data

Form	Test Temperature		0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation
	°F	°C	ksi	MPa	ksi	MPa	
Sheet 0.045 to 0.063 in (1.1 to 1.6 mm) thick	RT	RT	64.5	444	129.8	844	49
	1000	538	49.1	338	112.3	773	50
	1200	649	46.7	322	104.5	720	56
	1400	760	45.1	311	84.1	574	70
	1600	871	31.6	218	48.6	341	47
	1800	982	16.0	110	28.0	193	46
	2000	1093	7.6	52	15.9	110	75
	RT <sup>a</sup>	RT <sup>a</sup>	55.6	383	123.1	849	55
Plate 3/8 to 1-in (9.5 to 25.4 mm) thick	200	93	52.9	365	118.0	814	60
	400	204	48.0	331	114.4	789	59
	600	316	42.2	291	109.7	756	63
	800	427	43.1	297	108.9	751	62
	1000	538	41.0	283	105.9	727	61
	1200	649	39.8	274	99.1	683	59
	1400	760	39.3	271	79.3	547	69
	1600	871	33.8	233	52.7	363	57
	1800	982	19.6	135	33.0	228	62
	2000	1093	8.8	61	17.0	117	69

a-Based pm 34 tests. At other temperatures, the number of tests varied from 7-23.

RT=Room Temperature

**Average Aged Tensile Data, Room Temperature\***

Form	Aging Temperature		Aging Time	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation
	°F	°C		h	ksi	MPa	ksi	
Sheet 0.057 in (1.45 mm) thick	Solution-annealed		-	128.6	887	63.0	434	58
	1000	538	1000	178.6	1231	109.2	753	45
			4000	181.7	1253	107.5	741	41
			8000	185.1	1276	119.1	821	41
			16000	186.8	1288	120.5	831	38
	1200	649	1000	133.4	920	69.3	478	56
			4000	130.3	898	66.3	457	52
			8000	132.5	914	65.9	454	54
			16000	133.1	918	68.4	472	50
	1400	760	1000	133.3	919	66.6	459	54
			4000	132.2	910	64.9	447	51
			8000	131.1	904	65.3	450	54
			16000	128.3	885	62.6	432	52
Plate ½ in (12.7 mm) thick	Solution Heat-Treated		-	125.3	864	52.9	365	54
	800	427	1000	125.7	867	55.9	385	60
			4000	126.9	875	55.5	383	60
			8000	126.7	874	56.6	390	55
			16000	128.0	883	57.9	399	56
	1000	538	1000	144.4	996	71.5	493	46
			4000	175.0	1207	102.5	707	44
			8000	180.8	1247	108.2	746	38
			16000	182.5	1258	108.9	751	39
	1200	649	1000	125.1	863	56.6	390	57
			4000	125.8	867	56.4	389	54
			8000	127.2	877	57.0	393	50
			16000	127.9	882	59.3	409	49
	1400	760	1000	126.0	869	53.7	370	55
			4000	127.4	878	54.1	373	52
			8000	127.5	879	53.5	369	46
			16000	127.5	879	53.9	372	47
	1600	871	1000	125.8	867	50.8	350	58
			4000	125.2	863	50.7	350	56
			8000	123.5	852	51.3	354	53
16000			123.3	850	50.5	348	56	

\*Test Data for each form are from a single heat.

**Average Welded and Aged Tensile Data, Room Temperature\***

Form	Aging Temperature		Aging Time	0.2% Offset Yield Strength		Ultimate Tensile Strength		Elongation
	°F	°C		h	ksi	Mpa	ksi	
Gas Tungsten arc Welded Plate ½ in (12.7mm) Thick	Solution-annealed		-	59.8	412	112.4	775	62
			1000	63.3	436	121.7	839	33
			4000	60.4	416	122.8	847	32
	1200	649	8000	62.2	429	119.1	821	26
			16000	63.6	439	155.6	1073	25
All Weld Metal**	Solution-annealed		-	66.6	459	105.1	725	55
			1300**	98.4	678	139.8	964	24
	1000	538	4000**	107.6	742	145.6	1004	26
			1000	60.7	419	102.5	707	24
			4000	52.9	365	110.3	760	25
	1200	649	8000	61.7	425	102.3	705	20
			16000	66.4	458	110.3	760	21

\*Test data for each form are from a single heat

\*\*Gas tungsten arc welded