

HASTELLOY[®] X alloy

Tensile Properties

Tensile Data, Plate

Test Temperature		0.2% Yield Strength		Ultimate Tensile Strength		Elongation
°F	°C	ksi	MPa	ksi	MPa	%
70	21	49.3	340	110.2	760	48.9
1000	538	32.5	224	87.6	604	60.2
1200	649	30.7	212	80.9	558	63.5
1400	760	31.6	218	61.0	421	74.5
1600	871	27.4	189	37.0	255	98.1
1800	982	13.6	94	20.0	138	98.1
2000	1093	6.5	45	10.4	72	95.3

Tensile Data, Sheet

Test Temperature		0.2% Yield Strength		Ultimate Tensile Strength		Elongation
°F	°C	ksi	MPa	ksi	MPa	%
70	21	54.5	376	113.5	783	46.5
1000	538	36.7	253	91.0	628	53.6
1200	649	34.9	241	84.2	580	65.5
1400	760	33.8	233	61.6	424	95.6
1600	871	28.0	193	36.5	251	117.9
1800	982	12.8	88	18.9	130	81.5
2000	1093	6.2	43	9.5	65	50.6

Average Effect of Cryogenic Temperatures on Tensile Properties

Form	Condition	Test Temperature		0.2% Yield Strength		Ultimate Tensile Strength		Elongation
		°F	°C	ksi	MPa	ksi	MPa	%
-	-	-	-	-	-	-	-	-
Plate	Heat-treated at 2150°F(1177°C), Rapid Cooled	-311	-196	-	-	150.2	1036	46
		-108	-78	-	-	118.8	819	51
		72	22	47.0	324	104.5	721	46

All Weld Metal

Test Temperature		0.2% Yield Strength		Ultimate Tensile Strength		Elongation	
°F	°C	ksi	MPa	ksi	MPa	%	
RT	RT	66.4	458	98.6	680	28	in 1 inch
600	316	52.1	359	80.4	554	27	in 1.125 inches
1000	538	49.2	339	76.3	526	28	in 1.125 inches
1500	816	38.2	263	56.7	391	45	in 1.125 inches

RT= Room Temperature

Average Aged Tensile Data, Room Temperature*

Form	Aging Temperature		Aging Time	0.2% Yield Strength		Ultimate Tensile Strength		Elongation
	°F	°C		h	ksi	MPa	ksi	
-	SHT	SHT	-	55.2	381	114.3	788	57
Sheet 0.125 in. (3.2mm) thick	1200	649	1000	61.0	421	125.0	862	35
			4000	76.2	525	143.8	991	19
			8000	78.6	542	147.9	1020	19
			16000	78.1	538	148.0	1020	15
	1400	760	1000	65.3	450	137.0	945	23
			4000	64.3	443	134.6	928	18
			8000	61.3	423	131.0	903	19
			16000	59.3	409	126.1	869	17
	1600	871	1000	53.2	369	123.0	848	26
			4000	49.3	340	117.9	813	29
			8000	48.2	332	115.0	793	30
			16000	46.1	318	111.1	766	29
Plate 1/2 in. (12.7mm) thick	SHT	SHT	-	49.5	341	109.9	758	47
	1200	649	1000	56.5	390	121.4	837	33
			4000	73.4	506	142.5	983	18
			8000	73.0	503	143.6	990	18
	1400	760	1000	56.9	392	129.4	892	23
			4000	56.9	392	129.9	896	21
			8000	56.3	388	129.2	891	20
	1600	871	1000	47.6	328	119.0	820	31
			4000	44.9	310	116.7	805	28
			8000	43.9	303	113.7	784	26
			16000	42.7	394	109.0	752	26

*Test data for each form are from a single heat. SHT=Solution heat-treated (not aged).