

HASTELLOY[®] C-22HS[®] alloy

Weld Mechanical Properties

C-22HS[®] alloy Room Temperature Transverse Weld Tensile Test Results, As-Welded Condition

Test	0.2% Yield Strength (ksi)	Ultimate Tensile Strength (ksi)	Elong. (%)	RA (%)	Failure Location
GTAW - 0.125 in (3.2 mm) sheet, autogenous w/ cover pass					
A	66.2	115.3	31.5	-	Weld Metal
B	64.6	119.2	41	-	Weld Metal
C	65.3	113.3	30.3	-	Weld Metal
Avg.	65.4	115.9	34.3	-	-
GTAW - 0.5 in (12.7 mm) plate, w/ 0.125 in (3.2 mm) dia. filler metal					
A	67.9	115.8	45.6	51.3	Weld Metal
B	68.3	114.9	44.1	62.6	Weld Metal
C	66.4	113.4	42.3	54.8	Weld Metal
Avg.	67.5	114.7	44	56.2	-
GMAW - 0.5 in (12.7 mm) plate, w/ 0.045 in (1.1 mm) dia. filler metal					
A	64.3	114.2	46.2	48	Weld Metal
B	63.3	113.7	46	43.1	Weld Metal
C	64.8	113.8	46.4	47	Weld Metal
Avg.	64.1	113.9	46.2	46	-
GMAW - 1.0 in (25.4 mm) plate, w/ 0.045 in (1.1 mm) dia. filler metal					
A	63.3	113.4	40.4	49.8	Weld Metal
B	63.3	111.9	38.8	55.9	Weld Metal
C	62	114	38.9	53.2	Weld Metal
Avg.	62.9	113.1	39.4	53	-

C-22HS[®] alloy Room Temperature All-Weld-Metal Tensile Test Results, As-Welded Condition

Heat	Sample	0.2% Yield Strength (ksi)	Ultimate Tensile Strength (ksi)	Elong. (%)	RA (%)
1	GTAW Longitudinal	66.4	102.7	39.2	49.1
	GMAW Longitudinal	66	105	53.1	53
2	GMAW Longitudinal	64.8	106.1	48.4	59.7
		65.6	106.9	50.7	56.2
	GMAW Transverse	63.1	103.5	46.8	62.7
		62.7	104.6	54.6	63.9
3	GMAW Longitudinal	71.2	112	49.6	56.3
		62.9	106.7	47.9	53.4
	GMAW Transverse	65	105.2	45.9	58.3
		64.9	105.9	50.5	57.5

**C-22HS Alloy Weld Metal Charpy V-Notch Impact Test Results,
As-Welded Condition**

Test Temperature	Impact Energy (ft-lb)			
	Test 1	Test 2	Test 3	Avg.
GTAW - 0.5 in (12.7 mm) plate, w/ 0.125 in (3.2 mm) dia. filler metal				
RT	154.2	166.2*	178.6*	166.3
-320°F (-196°C)	127.4	131.6	120.1	126.3
GMAW - 0.5 in (12.7 mm) plate, w/ 0.045 in (1.1 mm) dia. filler metal				
RT	143.7	147	143.9	145.2
-320°F (-196°C)	117.3	109.8	122.2	116.4
GMAW – 1.0 in (25.4 mm) plate, w/ 0.045 in (1.1 mm) dia. filler metal				
RT	129.9	163.4*	149.5	147.6
-320°F (-196°C)	118.4	122.8	126.6	122.6

*Test sample did not break