

**TEST EQUIPMENT FOR TESTING STEEL PLATES FOR PRESSURE VESSELS USED AT MODERATE & LOW TEMPERATURE IN ACCORDANCE TO IS 2041**

ISS Clause No	Test Requirement	TEST METHOD	Test Equipment	Range	Least Count	Calibration Required Yes/No	Remarks
6.2	Material Grain Size (Fine) determination						Fine grain size in the material can be considered having met if the ladle analysis show Al content of 0.02 percent minimum
7.1	Chemical composition						
	Carbon	As given in IS 228 or other established instrumental/chemical method	Carbon – sulphur (Strohlein's type) apparatus- complete set (consisting of glass parts wooden stand, combustion furnace, thyristor control panel, oxygen cylinder, sulphur cup, combustion boats etc.			Self Calibrating Type	Method as specified in relevant ISO Standard can also be used for chemical analysis
	Mn						
	Si						
	S						
	P						
	Al						
	Cu						
	Cr						
	Mo						
	Ni						
	V						
	W						
	Ti						
Nb							
N							
9	Freedom from Defects	Visual Inspection					
9.3.1	Line discontinuities	Visual Inspection	Vernier Calliper	0-150 mm	0.02	Yes	

			Scale	0-300 mm	0.5 mm		
10, 10.1, 10.2	Dimensions & Tolerances	IS/ISO 7452	Vernier Calliper, Tape, Weigh Bridge			Yes	
12.1	Tensile Test	As given IS 1608	Universal Tensile Testing Machine (UTM) with multiple scales: Arrangement for testing at elevated temperatures	0 to 100 MT 0-500 deg cel	1 Kg 1 deg cel	Yes	
			Extensometer		0.01mm	Yes	
12.2	Bend Test	As given in IS 1599	Bending Mandrels, Bending Fixtures etc	As per Plate thickness		NA	
12.3	Charpy Impact Test	As given in IS 1757	Impact Testing Machine	0-100 Joules	2 Joule	Yes	
			Deep Freezer with Temperature Indicator & Controller	(+ 50 to - 50)	1 deg cel	Yes	
			Room Air Conditioner,	2 ton			
			Thermometer	0-50 deg cel	1 deg cel	Yes	
			Profile Projector or Go/No Go for V- groove gauges				
13	Ultrasonic Test	As given in IS 11630	Ultrasonic Tester				