

**TEST FACILITIES REQUIRED FOR COLD ROLLED NON-ORIENTED ELECTRICAL
STEEL SHEETS AND STRIPS-FULLY PROCESSED TYPE AS PER IS 648: 2006**

Sl. No.	IS Clause No.	Requirement	Name of Test Equip/Chem. etc.	Range	L.C	
1.	6.1	Conditions of delivery	As per buyer's requirement/ as per agreement between purchaser and mfr. Measuring Tape Weighing Scale of at least 3.5 tons capacity			
2.	6.2	Chemical(optional)	As per buyer requirement/ manufacturers discretion			
3.	6.3	Surface Condition	Depth gauge) Vernier Caliper) Bend tester with bend former radius of 5mm	Upto 100mm 5 mm radius mandrel	0.001mm	Sec -II, 68.7 of IS 649
4.	7.1	Magnetic Characteristics -Magnetization Test -Total specific loss/Core loss Thickness Lab Standard Room Cond. & Sample preparation& conditioning. Anisotropy of losses Characteristics - Curves for properties Typical electrical Resistivity Typical Thermal conductivity	De-magnetizing and Magnetizing Device Epstein Test Frame Tesla meter Timer Vernier Caliper Frequency meter Flux Volt meter RMS Volt meter Watt meter RMS Ammeter AC Power supply Ageing oven Micrometer Thermometer, Air conditioner with Heater Shearing machine, Punching m/c, lab stress relieving furnace (non oxidizing) with Temp. indicator Weighing balance Wall clock Optional (based on purchasers requirement) Optional (as per agreement between purchaser & mfr.) Optional (as per agreement between purchaser & mfr.) Optional (as per agreement between purchaser & mfr.)	0-2.0T 0-12 hrs 0-300mm 40-100 Hz 0-300 °C 0-10mm 0-110°C - - 0-1000°C 0-1000gm	- 0.001T 5 min. 0.1mm 1Hz 2/5°C 0.01mm 1°C - - 5/10°C 1gm 1 sec	Sec I&II, 5-12 of IS 649
5.	7.2	Surface Insulation Characteristic (Franklin tester) -Insulation Resistance	Unless specified by purchaser / as agreed to between purchaser and mfr. -Test Head -Press with clamping arrangement and pressure	As appropriate		Annex-C & D

		-Thermal effect on Coating -Resistance to Solvents and cleanliness	gauge -Lab. Oven -Hot Plate Ammeter Voltmeter Weighing machine Vernier caliper Thermometer Trough Trichloroethylene or Xylene Furnace with Temp. Indicator	Upto 300°C upto 250°c 0-2kg 300mm 0-360 Upto 1000 °C	1°C 0.1g 0.01mm 1 °C 1 °C	
6.	8.1	Thickness Tolerance	Micrometer Depth Gauge Steel Scale	0-150	0.001 mm 0.001 mm 0.5/1mm	
7.	8.2	Width Tolerance	Measuring tape	0-2 m	0.1mm	
8.	8.3	Length tolerance	Measuring Tape		1 mm	
9.	8.5	Tolerance on Shape -Out of Squareness -Edge Camber -Residual Curvature (width >100 mm)	Measuring Tape Vernier Caliper Steel scale Straight Edge bar	0-150 mm 3 mtr	0.1 mm 0.01 mm 0.5/1 mm	
10.	8.6	Flatness (wave factor) (for width>100 mm)	Steel scale Taper Gauge/dial gauge Surface plate	0-150	0.5/1mm 0.001mm	
11.	9.1	Staking Factor	Compression device/CTM Pressure gauge Vernier caliper/dial gauge Weighing machine Rigid metal plates	0-10 kgf/cm2 0-300mm 0-1kg	0.1kgf/cm2 0.01mm 1g	Sec7,45-47 of IS 649
12.	9.2	Bend Test	Bend tester Test mandrels (for each Thickness/width) Measuring tape Micrometer Steel scale	Capable of bending 90° & 180° 0-25mm 0-150mm	1mm 0.01mm 0.5/1mm	See Fig-9 of IS 649