

TEST MANUAL FOR LENGTH MEASURES (NON FLEXIBLE)

1.0 GENERAL

This test manual deals with the non-flexible type of length measures made or manufactured from metal or wood.

2.0 DENOMINATIONS

The denominations of the length measures shall be as follows:-

- Metallic Measures of 1m or 0.5m
- Wooden Measures of 2m, 1m or 0.5m

3.0 MATERIAL, SHAPE ETC. OF METALLIC MEASURES

- (a) Materials:- The measures shall be made from mild steel, brass or stainless steel
- (b) Shape and Dimensions: - The shape shall be rectangular and the dimensions of measures shall be of thickness of 5.0 +or- 0.5mm and width of 13 +or- 1mm.
- (c) Graduations: - The graduation marks shall be made at every centimeter or at every centimeter for the first ten centimeters and thereafter at every five centimeters. The graduations at every ten centimeters shall be numbered. The marks at the centimeter divisions shall extend over half the breadth of the measures. A cross marks shall be provided at 25cm in the case of 0.5m measure and at 25, 50 and 75cm in the case of 1m measure. The graduations shall be only on one side of the measure.
- (d) Permissible Errors:- The error on the length between any two consecutive five centimeter graduation marks shall not exceed +or- 0.25mm and further the error from the beginning of the measure to any graduation mark shall not exceed 1.0mm for 1metre bar and 0.5mm for half meter bars provided that the errors on the full length of the measures shall not exceed the following limits:-

- **Verification**

Denomination	Tolerances	
	Excess	Deficiency
1 m	1.0 mm	0.5 mm
0.5 m	0.5 mm	0.25 mm

- **Inspection**

Denomination	Tolerances	
	Excess	Deficiency
1 m	1.0 mm	1.0 mm
0.5 m	0.5 mm	0.5 mm

- (e) Provision for stamping: - The measures shall be provided with a copper rivet near each end firmly fixed in a hole, countersunk on both sides, for the Inspector's stamp. An arrow head shall be marked at each end of the measure to provide the points for checking the length.

4.0 MATERIALS, SHAPE ETC. OF WOODEN MEASURES

- (a) **Materials:** - The measure shall be made from well seasoned timber of any of the suitable species.
- (b) **Shape and Dimensions:-** The shape shall be rectangular and dimensions of the measure shall be of *thickness of 8.0 +or- 0.5mm and of width of 40 +or- 2mm*
- (c) **Graduations:** - The graduation marks shall be made at every centimeter for the first ten centimeters and thereafter at every five centimeters. The graduation marks at every ten centimeters shall be numbered. The marks at the centimeter divisions shall extend over half the breadth and thereafter at the five centimeter divisions over the full breadth of the measures. A cross mark shall be provided at every 25 cm, excluding the one meter and the two meter graduations. Last and first marks shall coincide with the end faces. The graduations shall be one side of the measures only.
- (d) **Permissible Error:-** The error on the length between any two consecutive five centimeter graduation marks shall not exceed +or – 1mm, and further the error from the beginning of the measures to any graduation marks shall not exceed 2 mm for 2 meter bar, 1mm for 1 meter bar and 0.5 mm for half meter bar provided that the errors on the full length of the measure shall not exceed the following limits:-

- **Verification**

Denomination	Tolerances	
	Excess	Deficiency
2 m	4.0 mm	2.0 mm
1 m	2.0 mm	1.0 mm
0.5 m	1.0 mm	0.5 mm

- **Inspection**

Denomination	Tolerances	
	Excess	Deficiency
2 m	4.0 mm	4.0 mm
1 m	2.0 mm	2.0 mm
0.5 m	1.0 mm	1.0 mm

- (f) **Provision for stamping:** - Each measure shall be provided at each end with a metal tip not less than 1 cm in width, securely riveted with two rivets at each end for receiving the Inspector's stamp. The width of the tips shall be included in the total length of the measure.

5.0 MANUFACTURE AND FINISH

- (a) The measure shall be evenly finished and shall be reasonably straight
- (b) In the case of metallic measures, the graduation marks and the cross marks shall be legible and deep enough to ensure indelibility over a reasonably long period of use, but not so deep as to make the measures liable to be easily bent. In the case of wooden measures, the markings shall be finished neatly, sharply and legibly, in a color contrasting with the wood finish. They shall be visible from a distance and shall remain indelible over a reasonably long period of use.

6.0 MARKING

- (a) The denomination shall be stamped on the un-graduated side of the measure at about one third of the total length from the beginning of the measure and the manufacturer's name or trade mark at a similar distance from the end of the measure. In case of wooden measures, the markings shall be finished in the same manner as the graduations.
- (b) In indicating the denominations the numerals shall be preceded by the word 'meter'. The size of numerals and letters, indicating denominations of the measures shall be twice the size of the letters indicating the manufacturer's name or trade mark.
- (c) The end of the measure shall be marked on the graduated side with the International form of numeral indicating the denomination, preceded and followed by the letter 'm'.