TRADING STANDARDS

Draft general certificate of approval for material measures of length – Length measures in use for trade

This draft certificate of approval includes the technical specifications for material measures of length to support Trading Standards consultation on length measures in use for trade.

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Te Kāwanatanga o Aotearoa
New Zealand Government

Pattern:	Material Measures of Length				
Make:	N/A				
Model:	N/A				
Submitter:	N/A				
Manufacturer:	N/A				
Date Received:	N/A	**Date Actioned:**	TBC	**Date Finalised:**	TBC
Overseas Certificate:		N/A	**Order No:**	N/A	
Weighing Instrument/Indicator					
Nominal Length:	500 mm to 20 m				
Verification Scale Interval:	≥ 1 mm				
Class:	II or III				
Load Receptor size:	N/A				

Conditions of Approval:

1. Trading Standards reserves the right to examine any instrument or component of an instrument purporting to comply with this approval.
2. For the purpose of performing verification and subsequent inspections, the instrument must be assessed against and meet the requirements detailed in Technical Policy xx-Design and construction requirements for length measures. The verification and subsequent inspections of the instrument must be carried out by Accredited Persons who are accredited under the Weights and Measures Act 1987 Section 30A or by an Inspector of Weights and Measures.

Description:

This approval is issued to measures of length (*) having a nominal length of 500 mm to 20 m.

(*) Acceptable types of measures of length:

1. Flexible tape measures enclosed within a case up to 20 m in length.
2. Rigid measures made of stainless steel up to 1 m in length.

The nominal length of the measures shall have one of the following values: 500 mm or 1, 1.5, 2, 3, 4, 5, or an integral multiple of 5 m.

General requirements:

1. **Material:**

Measures of length shall be made of metal or other suitable materials which, under normal conditions of use, are sufficiently durable, stable, and resistant to environmental influences.

2. Construction:

2.1 The dimensions and shape of the cross-section of measures shall be such that, under normal conditions of use, measurements can be made with the degree of accuracy required for the accuracy class to which the measures belong, and when the tape is stretched out on a flat surface, its edges are virtually straight and parallel.

2.2 Winding devices for tape measures shall be made in such a way that they do not cause any permanent deformation of the tape.

2.3 The tape must have a blank length of the measure, extending beyond the principal scale mark at the end of the measure and long enough for verification purposes.

2.4 Scale and Numbering:

2.4.1 The scale and numbering shall be clear, regular, indelible, and carried out in such a way that reading is definite, easy, and unambiguous; the number of numbered scale marks shall be determined accordingly.

2.4.2 The scale interval shall take the form 1 × 10n, 2 × 10n or 5 ×10n metres, (n being a positive or negative whole number or zero).

2.4.3 Regardless of the scale interval, the numbers shall represent millimetres, centimetres, decimetres, or metres and shall not be accompanied by the corresponding symbols.

2.4.4 When the scale marks are lines, these shall be straight, perpendicular to the axis of the measure, and shall all have the same width, which shall be constant throughout their length.

2.4.5 Tape measures are permissible to have no markings between 0 and 2 cm.

2.4.6 Furthermore, the scale interval shall not exceed:

- 1 mm for measures with a nominal length of 0.5 m to 1 m, in relation to their accuracy,
- 1 cm for measures with a nominal length not greater than 2 m,
- 2 cm if the nominal length is greater than 2 m and less than 10 m,
- 20 cm if the nominal length is equal to or greater than 10 m and less than 20 m.

The **maximum admissible width of the lines**, in relation to the accuracy class and the scale interval of the measure is given in Table 1.

TABLE 1

Scale interval of the measure	Accuracy class II and III
less than or equal to 2 mm	0.2 mm
greater than 2 mm and less than or equal to 2 cm	10 % of the scale spacing
greater than 2 cm	2 mm

3. Markings

3.1.1 The measure must be marked with the following inscriptions (on the measure blade/material):

- nominal length (optional in a rectangle),
- manufacturer's trade mark or trade name and/or of his representative,
- designation of accuracy class: II or III, in an oval.

3.1.2 Measures should also be marked with the reference temperature when other than 20 °C.

3.1.3 Tape measures exceeding 8 m in length must be marked with the tension (50 N for metals) or as otherwise specified by the manufacturer.

3.1.4 Nominal length, temperature, and tension shall be expressed in one of the units permitted under Schedule 2 of the Weights and Measures Regulations 1999.

3.1.5 All these inscriptions shall be placed in a visible and legible manner starting at the beginning of the measure or on the case of the measure.

Measures are permitted to have the year of manufacturer marked on the measure.
In the above example the measure is manufactured in 2013.

4. Maximum Permissible Error (MPE):

The maximum amount of error permitted in respect of the initial verification of any measure of length.

4.1 MPE in respect of the nominal length

4.1.1 Maximum permissible error (positive or negative) of the nominal length, and the distance between any 2 non-consecutive scale divisions (see also 4.1.2)

Use the formula (a + bL) mm to establish the MPE at the nominal length and at any value of length within the nominal length of the measure.

Where:-

a and b are, -

(i) In relation to class II: 0.3 and 0.2 respectively
(ii) In relation to class III: 0.6 and 0.4 respectively

L is the value of the nominal length in question, rounded up to the nearest whole number of metres.

4.1.2 Where one of the two non-consecutive scale divisions is a terminal scale division bounded by an end surface the MPE is increased by:

i) 0.2 mm for class II
ii) 0.3 mm for class III

4.2 MPE in respect of the scale spacing

Maximum amount of error, positive or negative, permitted in respect of a scale spacing on a measure of length is:

4.2.1 The MPE for scale spacing not exceeding 1 mm is:

i) 0.2 mm for class II

ii) 0.3 mm for class III.

4.2.2 The MPE for scale spacing exceeding 1 mm but not exceeding 1 cm is:
i) 0.4 mm for class II
ii) 0.6 mm for class III.

4.2.3 The MPE for scale spacing exceeding 1 cm is determined by the formula:

(a + bL) mm

Where:-

a and b are, -
(i) In relation to class II: 0.3 and 0.2 respectively
(ii) In relation to class III: 0.6 and 0.4 respectively

L is the value of the length in question, rounded up to the nearest whole number of metres.

4.3 Maximum difference permitted between 2 consecutive scale divisions

4.3.1 The maximum permissible difference for consecutive divisions having a scale spacing not exceeding 1 mm is:
i) 0.2 mm for class II
ii) 0.3 mm for class III.

Note: Do not apply where one of the two consecutive scale divisions is a terminal scale division bounded by an end surface.

4.3.2 The maximum permissible difference for consecutive divisions having a scale spacing exceeding 1 mm but not exceeding 1 cm is:
i) 0.4 mm for class II
ii) 0.6 mm for class III.

Note: Do not apply where one of the two consecutive scale divisions is a terminal scale division bounded by an end surface.

4.3.3 The maximum permissible difference for consecutive divisions having a scale spacing exceeding 1 cm is determined by the formula:

(a + bL) mm

Where:-

a and b are, -
(i) In relation to class II: 0.3 and 0.2 respectively
(ii) In relation to class III: 0.6 and 0.4 respectively

L is the value of the length in question, rounded up to the nearest whole number

of metres.

Note: Do not apply where one of the two consecutive scale divisions is a terminal scale division bounded by an end surface.

For the purpose of verifying any measure of length in service, the maximum amount of error permitted must be doubled.

Zero Setting Devices:	N/A
Metrological Markings:	All measures of length must be marked with inscriptions as detailed in section 3 of this certificate. In addition, the Certificate of Approval number #xxxx must also be marked on the measure.
Test Procedures:	TBC
Components:	N/A
Sealing:	TBC
Mark of Verification:	Measures of length must carry an adhesive destructible label or an approved type of seal carrying a Mark of Verification. Removal of this deems the measure not verified.
Leveling:	TBC
Temperature:	TBC