ANNEX X

MATERIAL MEASURES (MI-008)

CHAPTER I

Material measures of length

The relevant essential requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this chapter, apply to material measures of length defined below. However, the requirement for the supply of a copy of declarations of conformity may be interpreted as applying to a batch or consignment rather than each individual instrument.
DEFINITIONS

Material measure of length	An instrument comprising scale marks whose distances are given in legal units of length.

SPECIFIC REQUIREMENTS
Reference Conditions

1.1. For tapes of length equal to or greater than 5 metres, the maximum permissible errors (MPEs) are to be met when a tractive force of fifty newtons or other force values as specified by the manufacturer and marked on the tape accordingly, or in the case of rigid or semi-rigid measures no tractive force is needed, is applied.

1.2. The reference temperature is 20 °C unless otherwise specified by the manufacturer and marked on the measure accordingly.

MPEs

2. The MPE, positive or negative in mm, between two non-consecutive scale marks is (a + bL), where:

— L is the value of the length rounded up to the next whole metre; and

— a and b are given in Table 1 below.

When a terminal interval is bounded by a surface, the MPE for any distance beginning at this point is increased by the value c given in Table 1.

Table 1

Accuracy Class	**a (mm)**	**b**	**c (mm)**
I	0,1	0,1	0,1
II	0,3	0,2	0,2
III	0,6	0,4	0,3
D — special class for dipping tapes[a]	1,5	zero	zero

a Applies to the tape/dip weight combinations.

b If the nominal tape length exceeds 30 m, an additional mpe of 0,75 mm shall be permitted for each 30 m of tape length.

Table 1			
Up to and including 30 m[b]			
S — special class for tank strapping tapes For each 30 m length when the tape is supported on a flat surface	1,5	zero	zero

a Applies to the tape/dip weight combinations.

b If the nominal tape length exceeds 30 m, an additional mpe of 0,75 mm shall be permitted for each 30 m of tape length.

Dip tapes may also be of Classes I or II in which case for any length between two scale marks, one of which is on the sinker and the other on the tape, the MPE is ± 0,6 mm when application of the formula gives a value of less than 0,6 mm.

The MPE for the length between consecutive scale marks, and the maximum permissible difference between two consecutive intervals, are given in Table 2 below.

Table 2			
Length i of the interval	**MPE or difference in millimetres according to accuracy class**		
	I	**II**	**III**
$i \leq 1$ mm	0,1	0,2	0,3
1 mm $< i \leq$ 1 cm	0,2	0,4	0,6

Where a rule is of the folding type, the jointing shall be such as not to cause any errors, supplementary to those above, exceeding: 0,3 mm for Class II, and 0,5 mm for Class III.

Materials

3.1. Materials used for material measures shall be such that length variations due to temperature excursions up to ± 8 °C about the reference temperature do not exceed the MPE. This does not apply to Class S and Class D measures where the manufacturer intends that thermal expansion corrections shall be applied to observed readings where necessary.

3.2. Measures made from material whose dimensions may alter materially when subjected to a wide range of relative humidity, may only be included in Classes II or III.

Markings

4. The nominal value shall be marked on the measure. Millimetre scales shall be numbered every centimetre and measures with a scale interval greater than 2 cm shall have all scale marks numbered.

CONFORMITY ASSESSMENT

The conformity assessment procedures referred to in Article 17 that the manufacturer can choose between are:

F 1 or D1 or B + D or H or G.

CHAPTER II

Capacity serving measures

The relevant essential requirements of Annex I, and the specific requirements and the conformity assessment procedures listed in this chapter, apply to capacity serving measures defined below. However, the requirement for the supply of a copy of declarations of conformity may be interpreted as applying to a batch or consignment rather than each individual instrument. Also, the requirement for the instrument to bear information in respect of its accuracy shall not apply.

DEFINITIONS

Capacity serving measure	A capacity measure (such as a drinking glass, jug or thimble measure) designed to determine a specified volume of a liquid (other than a pharmaceutical product) which is sold for immediate consumption.
Line measure	A capacity serving measure marked with a line to indicate nominal capacity.
Brim measure	A capacity serving measure for which the internal volume is equal to the nominal capacity.
Transfer measure	A capacity serving measure from which it is intended that the liquid is decanted prior to consumption.
Capacity	The capacity is the internal volume for brim measures or internal volume to a filling mark for line measures.

SPECIFIC REQUIREMENTS

1. **Reference Conditions**

1.1. Temperature: the reference temperature for measurement of capacity is 20 °C.

1.2. Position for correct indication: free standing on a level surface.

2. **MPEs**

TABLE 1

	Line	**Brim**
Transfer measures		
< 100 ml	± 2 ml	– 0 + 4 ml
≥ 100 ml	± 3 %	– 0 + 6 %
Serving measures		
< 200 ml	± 5 %	– 0

		+ 10 %
≥ 200 ml	± (5 ml + 2,5 %)	– 0 + 10 ml + 5 %

3. **Materials**

Capacity serving measures shall be made of material which is sufficiently rigid and dimensionally stable to maintain capacity within the MPE.

4. **Shape**

4.1. Transfer measures shall be designed so that a change of contents equal to the MPE causes a change in level of at least 2 mm at the brim or filling mark.

4.2. Transfer measures shall be designed so that the complete discharge of the liquid being measured will not be impeded.

5. **Marking**

5.1. The nominal capacity declared shall be clearly and indelibly marked on the measure.

5.2. Capacity serving measures may also be marked with up to three clearly distinguishable capacities, none of which shall lead to confusion one to the other.

5.3. All filling marks shall be sufficiently clear and durable to ensure that MPEs are not exceeded in use.

CONFORMITY ASSESSMENT

The conformity assessment procedures referred to in Article 17 that the manufacturer can choose between are:

A2 or F1 or D1 or E1 or B + E or B + D or H.