

L.N. 407 of 2002

THE METROLOGY ACT
ACT NO. XXV OF 2002

Alcoholmeters and Alcoholic Hydrometers Regulations, 2002

IN exercise of the powers conferred by article 19 of the Metrology Act, the Malta Standards Authority has made the following regulations:–

1. (1) The title of these regulations is the Alcoholmeters and Alcoholic Hydrometers Regulations, 2002. Citation and commencement

(2) These regulations shall come into force on such date or dates as the Authority may by notice in the Gazette appoint and different dates may be so appointed for different purposes and different provisions of the regulations.

2. For the purposes of these regulations, all the definitions in the Malta Standards Authority Act shall apply, and in addition, unless the context otherwise requires: Definitions.

“alcoholmeters” means glass instruments which indicate the alcohol strength by mass and by volume of a mixture of water and ethanol.

“alcohol hydrometers” means glass instruments designed to measure the density of a mixture of water and ethanol

3. These regulations define the characteristics of alcoholmeters and alcohol hydrometers used to determine the alcoholic strength of mixtures of water and ethanol. Scope.

4. (1) The alcoholmeters and alcohol hydrometers which may bear EEC marks and signs shall be those listed in the Annex.

(2) Such instruments shall be subject to EEC pattern approval and shall be submitted for EEC initial verification.

ANNEX

ALCOHOLMETERS AND ALCOHOL HYDROMETERS

1. DEFINITION OF THE INSTRUMENTS

1.1. Alcohometers are glass instruments which indicate:

- i. the alcoholic strength by mass,
- ii. the alcoholic strength by volume of a mixture of water and ethanol.

They are described as either mass alcohometers or volume alcohometers, depending upon what is measured.

Alcohol Hydrometers are glass instruments deigned to measure the density of a mixture of water and ethanol.

1.2. The instruments defined in these regulations, are graduated at a reference temperature of 20°C, in accordance with the values appearing in the international alcohol tables published by the International Organisation of Legal Metrology.

1.3. They are graduated for readings made at the free horizontal surface of the liquid.

2. Description of the Instruments

2.1. Alcohometers and alcohol hydrometers are glass instruments, consisting of:

(a) a cylindrical body, the bottom of which is cone-shaped or hemispherical so that it does not entrap air bubbles,

(b) a hollow cylindrical stem fused to the upper part o the body; its upper end is closed.

2.2. The entire external surface of each instrument must be symmetrical about its main axis.

The cross-section must not exhibit any abrupt alteration.

2.3. The lower part of the body must contain the loading material, the purpose of which is the adjustment of the mass of the instrument.

2.4. The stem must carry a scale marked on a cylindrical support rigidly fixed to the inside of the stem.

3. Principles of Construction

- 3.1. The glass used for making the instruments shall be transparent and free from any defect liable to interfere with the reading of scale measurements.

The glass shall have a coefficient of cubic expansion $(25 \pm 2) 10^{-6} \text{ }^{\circ}\text{C}^{-1}$.

- 3.2. The loading material shall be fixed in the bottom of the instrument. After the finished instrument has been kept in a horizontal position for one hour at 80°C and subsequently cooled in that position, it shall float with its axis vertical to within 1 degree 30 minutes.

4. Scale

- 4.1. No instrument shall have more than one scale of type referred to in 4.5 or 4.6

- 4.2. The scale and the inscriptions shall be marked on a support having a smooth matt surface.

This support shall be held rigidly in place in the stem and reference marks shall be provided so that any displacement of the scale and its support relative to the stem is apparent.

The support, the scale and the inscription shall show no trace of distortion, discoloration or charring when maintained at 70°C for 24 hours

- 4.3. The scale marks shall be:

situated in planes perpendicular to the axis of the instrument,
black ⁽¹⁾ and marked clearly and indelibly,
fine, clear-cut and of a uniform thickness not greater than 0.2 mm.

- 4.4. The length of the short lines on the scale shall be at least one-fifth, that of the medium lines at least one-third and that of the long lines at least half of the circumference on the stem.
- 4.5. Alcoholmeters shall have nominal scales graduated by %mass or by % volume of alcohol. They shall cover a range not greater than 10% of alcohol by volume or by mass.

The scale interval shall be 0.1%

Each scale shall include from five to 10 additional scale intervals beyond its upper and lower nominal range limits.

⁽¹⁾ Beyond the range of the nominal scale the scale lines may be of a different colour

- 4.6. The nominal scales of alcohol hydrometers shall be graduated in kilogrammes per cubic meter. They shall cover a range not greater than 20 kg m⁻³.

The scale interval shall be 0.2 kg m⁻³.

Each scale shall include from five to ten additional scale intervals beyond its upper and lower nominal range limits. However, the scale must not extend beyond 1,000 kg m⁻³.

5 Graduation and Numbering

- 5.1. On alcoholometers, every 10th scale mark, counting from one end of the nominal scale, shall be a long line. There shall be a medium line between each successive pair of long lines and four short lines between each long line and the nearest medium line.

Only the long lines shall be numbered.

- 5.2. On alcohol hydrometers, every fifth line, counting from one end of the nominal scale, shall be a long line. There shall be four short lines between two consecutive long lines.

Only the fifth or the 10th lines shall be numbered.

- 5.3. The lines indicating the limits of the nominal scale shall show the figures in full. On alcohol hydrometers the other numbers may be abbreviated.

6 CLASSIFICATION AND PRINCIPAL DIMENSIONS OF INSTRUMENTS

- 6.1. The instruments shall be one of the following classes of accuracy:

- i. Class I: The minimum mean scale spacing shall be 1.5 mm.
Instruments in this class shall not incorporate a thermometer.
- ii. Class II: The minimum mean scale spacing shall be 1.05mm.
Instruments in this class may incorporate a thermometer.
- iii. Class III: The minimum mean scale spacing shall be 0.85mm.
Instruments in this class may incorporate a thermometer.

- 6.2. The external diameter of the body of any instrument shall be between 19 and 40 mm.

The external diameter of the stem shall be at least 3mm for Class I and Class II instruments and at least 2.5 mm for Class III instruments. The stem shall extend for at least 15mm above the uppermost scale mark.

The cross-section of the stem must be uniform for at least 5mm below the lowest scale mark.

7 INSCRIPTIONS

7.1. The following inscriptions shall be legibly and indelibly marked inside the instrument:

- i. Class I, II or III,
- iii. kg/m^3 or % volume or % mass,
- i. 20°C ,
- ii. ethanol,
- iii. the name or identification mark of the manufacturer,
- vi. the identification number of the instrument,
- vii. the sign of the pattern approved by the Authority.

7.2. The mass of the instrument, expressed to the nearest milligramme may, if desired, be marked on the body.

8 MAXIMUM PERMISSIBLE ERRORS AND VERIFICATION

8.1. The maximum permissible error alcoholometers and alcohol hydrometers shall have:

- (i) for Class I, $\pm$ one half scale interval for each reading measured,
- (ii) for Classes II and III, $\pm$ one scale interval for each reading measured

8.2. Verification shall be carried out at the minimum of three points in the nominal scale range.

9 THERMOMETERS USED IN DETERMINING ALOHOLIC STRENGTH

9.1. Thermometers incorporated in the instrument used to determine alcoholic strength.

If the instrument used to determine alcoholic strength belongs to Class II or III, a thermometer of the memory-expansion type with glass casing may be incorporated therein.

9.1.1. The thermometer shall be graduated to 0.1 or 0.2 or 0.5°C and it need not have any scale mark at 0°C .

9.1.2. The minimum scale spacing shall be:

- (i) 0.8 mm in the case of thermometers graduated to 0.1 and 0.2°C,
- (ii) 1.0 mm in the case of thermometers graduated to 0.5°C.

9.1.3. The thickness of the lines shall not be more than one fifth of the scale spacing.

9.1.4. The maximum permissible error, positive or negative, shall be:

- (i) 0.10°C if the thermometer is graduated to 0.1°C;
- (ii) 0.20°C if the thermometer is graduated to 0.2 or 0.5°C.

9.1.5. During EEC initial verification, the error of the incorporated thermometer shall be determined at a minimum of three points in the scale range.

9.2. Thermometers not incorporated in an instrument used to determine alcoholic strength.

9.2.1. If the instrument used to determine alcoholic strength belongs to Class I, the thermometer employed in conjunction with it shall be:

- i. either of the metallic resistance type, enabling the temperature of the mixture of water and alcohol to be determined with a maximum permissible error of $\pm 0.10^\circ\text{C}$,
- ii. or of the mercury-expansion type with a glass casing graduated to 0.1 or 0.5°C.

Mercury thermometers shall have a scale mark at 0°C, the minimum scale spacing shall be 0.8mm and the thickness of the lines shall not be more than one fifth of the scale spacing.

The maximum permissible error, positive or negative, shall be one scale interval.

9.2.2. If the instrument used to determine alcoholic strength belongs to Class II or III, the thermometer employed in conjunction with it shall be of the mercury-expansion type with glass casing.

9.2.2.1. The thermometer shall be graduated to 0.1 or 0.2 or 0.5°C. It shall have a scale mark at 0°C

9.2.2.2. The minimum scale spacing shall be:

- (i) 0.8mm in case of thermometers graduated to 0.1 or 0.2°C;
- (ii) 1.0mm in the case of thermometers graduated to 0.5°C.

9.2.2.3. The thickness of the lines shall not be more than one fifth of the scale spacing.

9.2.2.4. The maximum permissible error shall be:

- (i) $\pm 0.10^{\circ}\text{C}$ if the thermometer is graduated to 0.1°C;
- (ii) $\pm 0.20^{\circ}\text{C}$ if the thermometer is graduated to 0.2 or 0.5°C.

10 MARKINGS

On the back of alcoholometers and alcohol hydrometers a space must be left on the upper third of the body for the EEC initial verification mark.

In accordance with 3.1.1. of Annex II to the Measuring Instruments Regulations and by way of derogation from the general rule laid down in section 3 of that Annex, the EEC initial verification mark must, due to special marking requirements for glass instruments, consist of a series of signs having the following meaning:

- i. a small letter 'e',
- ii. the last two digits of the year of EEC initial verification
- iii. the identifying letter or letters of the state where the EEC initial verification was carried out,
- iv. if necessary, the identifying number of the verification office.

When the marking is carried out by sandblasting, the letters and numbers shall be applied so as not to impair legibility.

Example

e 75 D 48: EEC initial verification carried out in 1975 by Bureau 48 in the Federal Republic of Germany.