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Australian Standard 2371—1980

GLASS ALCOHOLOMETERS (NOT INCORPORATING A THERMOMETER)

STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter

THE FOLLOWING INDUSTRIAL, SCIENTIFIC AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Australian Medical Association

Chambers of Commerce (N.S.W., Vic.)

Chief Secretary's Department, Victoria

Commonwealth Serum Laboratories

Confederation of Australian Industry

CSIRO, Division of Applied Physics

Department of Agriculture, N.S.W.

Department of Science and the Environment

Government Chemical Laboratories, W.A.

National Standards Commission

Railways of Australia Committee

Royal Australian Chemical Institute

University of Sydney

Victorian State Laboratories

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AUSTRALIAN STANDARD

GLASS ALCOHOLOMETERS
(NOT INCORPORATING A THERMOMETER)

AS 2371– 1980

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PREFACE

This standard was prepared by the Association's Committee on Laboratory Glassware and Related Apparatus under the direction of the Chemical Standards Board in response to requests from the Bureau of Customs and the Australian Government Analytical Laboratory.

The alcoholometers specified are graduated at the reference temperature of 20°C to indicate the concentration of alcohol by volume in simple mixtures of ethanol and water.

The tables published in Appendix C are taken from the 'Practical Alcohol Tables', Volume 1, published by the Commission of the European Communities, 1978. The Association is indebted to the Commission of European Communities for permission to publish these tables in this standard.

This standard requires reference to the following Australian standard:

AS R33 Short Solid-stem Thermometers for Precision Use

Facilities for testing alcoholometers for compliance with this standard are offered by laboratories registered for this purpose by the National Association of Testing Authorities, Australia.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
GLASS ALCOHOLOMETERS (NOT INCORPORATING A THERMOMETER)

1 SCOPE. This standard specifies requirements for glass alcoholometers, not incorporating a thermometer, suitable for the determination for fiscal purposes of the alcohol content of simple mixtures of alcohol and water. One class of accuracy is specified.

NOTE: The procedure for the use of alcoholometers is given in Appendix A.

2 BASIS OF SCALE—UNITS. The scale shall indicate the percentage, by volume, of alcohol in the liquid. The term 'alcohol' used in this standard shall be understood to mean 'ethanol, C_2H_5OH'.

3 NOMINAL RANGE AND DESIGNATION OF RANGE. The nominal concentration range of each alcoholometer shall be 20 percent volume (% vol). This range shall be designated by the number of this standard followed by the concentration range, e.g. AS 2371/20-40%.

4 REFERENCE TEMPERATURE. The standard reference temperature for the alcoholometers shall be 20°C. When used in an alcohol/water mixture at this temperature, the alcoholometer shall indicate the percentage, by volume, of alcohol in the liquid at 20°C.

NOTE: Tables published by the International Organization for Legal Metrology are available to correct readings taken at temperatures other than the reference temperature.

5 DESIGN. Each alcoholometer shall consist of a cylindrical body whose lower end is cone-shaped or hemispherical and such that it will effectively prevent the entrapment of air bubbles.

The body shall be fused on to a hollow cylindrical stem, the top end of which shall be sealed. There shall be no abrupt changes in section that could hinder cleaning and drying or permit air bubbles to be trapped.

NOTE: A preferred form of alcoholometer is shown in Fig. 1.

The alcoholometer shall be symmetrical about its longitudinal (vertical) axis. Its cross-section shall not exhibit any abrupt variations.

The loading material for adjusting the mass of the alcoholometer shall be fixed in the lower part of the body.

The stem shall contain a graduated scale, marked on a cylindrical strip of suitable material which shall be securely fastened to the interior of the stem.

Datum marks shall be provided on the strip and on the stem in order that any displacement of the former relative to the latter would be readily apparent.

Fig. 1. RECOMMENDED FORM OF ALCOHOLOMETER

6 MATERIALS AND WORKMANSHIP.

6.1 Glass. The alcoholometer shall be constructed from soda lime glass which shall be transparent, free from stress, i.e. properly annealed, and free from flaws which would obscure or alter the reading of the scale.

The coefficient of cubical thermal expansion of the glass shall be $(25 \pm 2) \times 10^{-6}/K$.

6.2 Loading Material. The loading material shall be so fixed that after the alcoholometer has been kept in a horizontal position for 1 h at 80°C and subsequently cooled to room temperature in that position, the instrument shall comply with the requirements of Clause 6.3.

Mercury shall not be used as the loading material.

6.3 Floating Position. The alcoholometer shall float so that the stem is within 1.5 degrees of vertical for all readings within the range of the scale.

6.4 Freedom from Loose Material. There shall be no loose material in any part of the alcoholometer.

7 DIMENSIONS.

7.1 Length. The total length of the alcoholometer shall not exceed 325 mm.

7.2 Diameter of Body. The diameter of the body of the alcoholometer shall be 26.0 ± 3.0 mm.