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METHODS OF TEST FOR RIGID CELLULAR THERMAL INSULATION MATERIALS

PART 1 DIMENSIONS

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PART 1 DIMENSIONS

0. FOREWORD

0.1 This Indian Standard (Part 1) was adopted by the Indian Standards Institution on 28 February 1985, after the draft finalized by the Thermal Insulation Materials Sectional Committee had been approved by the Chemical Division Council.

0.2 The methods of test described in this standard and its other parts are intended to apply to cellular products of polymeric origin, but they are not necessarily suitable for testing cellular materials of inorganic origin.

0.3 Many rigid cellular products and test specimens are not isotropic. This is usually ascribed to the fact that the cells in the material are elongated in a 'direction of anisotropy'. Tests carried out in this direction usually give results differing in magnitude from those carried out in the other directions. It should be noted that the direction of anisotropy may vary from place to place in a product. Hence, the number of test specimens required in the product specifications may be greater than those given here.

0.4 In the preparation of this standard, considerable assistance has been drawn from ISO 1923-1972 'Rigid Cellular Plastics — Determination of Linear Dimensions', issued by International Organization for Standardization.

0.5 In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS : 2-1960*.

1. SCOPE

1.1 This standard (Part 1) prescribes the method for determination of linear dimensions of rigid cellular thermal insulation materials.

*Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.1 For the purpose of this standard, the difinitions given in IS : 3069-1965* and the following shall apply.

2.1.1 *Linear Dimension* — The shortest distance, measured with an instrument in accordance with **3**, between two specific points, between two parallel lines or between two parallel planes, defined by corners, edges or surfaces of the specimen.

3. APPARATUS

3.1 Micrometer — Having a measuring surface with a minimum diameter of 5 mm, but in any case not less than five times the average diameter of the cells, permitting reading to an accuracy of 0·05 mm (for test specimens only).

3.2 Sliding Caliper — With a vernier, permitting reading to an accuracy of 0·1 mm.

3.3 Metal Rule or Metal Tape — Graduated in millimetres and permitting reading to an accuracy of 0 5 mm.

4. NUMBER OF MEASUREMENTS

4.1 The number of measuring locations depend on the size and shape of the specimen, but shall be at least five. The locations shall be as widely separated as possible, in order to give a good average. The median of three readings at each position shall be taken and the average of five or more median values calculated.

5. PROCEDURE

5.1 Measurement with Micrometer — For linear dimensions equal to or less than 10 mm, a micrometer shall be used. Apply the micrometer to the specimen taking care so that no distortion or damage to the surface of the specimen is caused. Bring the plane surfaces of the micrometer continuously together, simultaneously moving the specimen slightly back and forth until a slight resistance to the movement is felt. Take this reading and round off to the nearest 0·1 mm.

5.2 Measurement with Sliding Caliper — Sliding caliper shall be used for linear dimension more than 10 mm but less than or equal to 100 mm. Apply a previously set vernier caliper so that the specimen is not distorted or damaged. Take the reading when the measuring faces of the caliper are in contact with the two surfaces of the test specimen without compressing it. Round off the reading to the nearest 0·2 mm.

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*Glossary of terms, symbols and units relating to thermal insulation materials.