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Rigid cellular plastics — Determination of shear strength

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 1922 was drawn up by Technical Committee ISO/TC 61, *Plastics*.

It was approved in May 1970 by the Member Bodies of the following countries :

Austria	India	Sweden
Belgium	Italy	Switzerland
Canada	Japan	Turkey
Czechoslovakia	Netherlands	United Kingdom
Egypt, Arab Rep. of	New Zealand	U.S.A.
France	Poland	U.S.S.R.
Germany	Portugal	Yugoslavia
Greece	Romania	
Hungary	South Africa, Rep. of	

No Member Body expressed disapproval of the document.

Rigid cellular plastics — Determination of shear strength

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of determining the shear strength of rigid cellular plastics when in the form of a sandwich between metal plates.

2 REFERENCES

ISO/R 291, *Standard atmospheres for conditioning and testing*.

ISO 1923, *Rigid cellular plastics — Determination of linear dimensions*.

3 PRINCIPLE

Subjection of a test piece of a given shape to a shear stress transmitted through metal supports fixed to the surfaces of the test piece.

4 APPARATUS

4.1 Test machine (see Figure). The test machine shall be such that

- a test piece having the form and dimensions indicated in section 5 can be held between two fixing devices each comprising a metal support, one of these devices being fixed and the other movable, the stress being transmitted along the axis of the test piece;
- the movable grip can be moved away from the fixed grip at a constant rate in a direction parallel to the longitudinal axis of the test piece;
- the force exerted on the test piece can be known with a maximum error of 1 %, preferably by means of a recording device.

4.2 Metal supports consisting of steel plates, machined flat on one side, with a thickness of 5 ± 0.5 mm; two are required for each test piece submitted to the test.

4.3 Adhesive for fixing the metal supports to the test pieces. It shall be such that the shear strength of the adhesive film is greater than that of the cellular product in question, so as to avoid any slipping of the test piece in the

supports. In addition, the adhesive film shall not appreciably modify the characteristics of the cellular product. (An epoxy resin base adhesive is likely to prove satisfactory.)

5 TEST PIECES

5.1 Dimensions

The test pieces shall be rectangular parallelepipeds of the dimensions given in the Figure.

The distance between two surfaces shall not vary by more than 1 % (tolerance on parallelism).

The dimensions shall be measured in accordance with ISO 1923.

5.2 Preparation and conditioning

Any moulding skin shall be removed from the test pieces; their surfaces shall be machined without modifying the original structure.

The two metal supports shall be bonded to the large surfaces of the test pieces as shown in the Figure.

When necessary the test pieces shall be marked so as to indicate their orientation in relation to the direction of anisotropy.

The conditioning of the test pieces shall be carried out in accordance with the requirements of either ISO/R 291, for a period of not less than 24 h, or of the relevant material specification.

5.3 Number of test pieces

The test shall be carried out on at least five test pieces; any test pieces of which the bonded surface breaks before the cellular material shall be rejected and if necessary the number of test pieces shall be increased so that the number of significant results is not less than five.

6 PROCEDURE

Carry out the test in a room in which the atmosphere is maintained at one of the conditions defined by ISO/R 291.