

BRITISH STANDARD

**BS 5354 :
Part 2 : 1994
IEC 763-2 :
1991**

Specification for

Laminated pressboard for electrical purposes

Part 2. Methods of test

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Cables and Insulation Standards Policy Committee (CIL/-) to Technical Committee CIL/15, upon which the following bodies were represented:

British Ceramic Research
British Industrial Ceramic Manufacturers' Association
Department of Trade and Industry (National Measurement Accreditation Service)
EEA (the Association of Electronics, Telecommunications and Business Equipment Industries)
Electrical and Electronic Insulation Association (BEAMA Ltd.)
Electricity Association
Rotating Electrical Machines Association (BEAMA Ltd.)
Transmission and Distribution Association (BEAMA Ltd.)

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National foreword

This Part of BS 5354 has been prepared under the direction of the Cables and Insulation Standards Policy Committee. It is identical with the English text of IEC Publication 763-2 : 1991 *Specification for laminated pressboard Part 2: Methods of test*, published by the International Electrotechnical Commission (IEC).

BS 5354 : Part 2 : 1994 supersedes BS 5354 : 1976 which has been withdrawn.

Cross-references

International standard	Corresponding British Standard
IEC 247 : 1978	BS 5737 : 1979 <i>Method for the measurement of relative permittivity dielectric dissipation factor and d.c. resistivity of insulating liquids</i> (Identical)
IEC 641-2 : 1979	BS 5937 <i>Pressboard and presspaper for electrical purposes</i> Part 2 : 1980 <i>Methods of test</i> (Identical)
IEC 763-1 : 1983	BS 5354 <i>Specification for laminated pressboard for electrical purposes</i> Part 1 : 1993 <i>Definitions, classification and general requirements</i> (Identical)
ISO 1924	BS 4415 <i>Determination of the tensile properties of paper and board</i> (Identical)
ISO 2144 : 1987	BS 3631 : 1984 <i>Method for determination of ash of paper and board</i> (Identical)

The Technical Committee has reviewed the provisions of IEC 243-1, IEC 250, IEC 296 and ISO 287, to which normative reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

INTRODUCTION

This part of IEC 763 deals with laminated pressboard as defined in clause 2 of Part 1.

The standard will consist of the following parts:

Part 1 : Definitions and general requirements.

Part 2 : Methods of test.

Part 3 : Specification of requirements for individual materials.

IEC 641 applies to pressboard which is not laminated and the material covered by this part is made from sheets conforming to the requirements of that publication.

NOTE - The numbering of clauses is the same as for laminated pressboard, non-impregnated densified laminated wood and industrial rigid laminated sheets. For this reason some tests are mentioned, but they are not applicable.

SPECIFICATION FOR LAMINATED PRESSBOARD

Part 2: Methods of test

1 Scope

This part of IEC 763 gives methods of test applicable for the material classified in Part 1.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of IEC 763. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of IEC 763 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 243-1: 1988, *Methods of test for electric strength of solid insulating materials. Part 1: Tests at power frequencies.*

IEC 247: 1978, *Measurement of relative permittivity, dielectric dissipation factor and d.c. resistivity of insulating liquids.*

IEC 250: 1969, *Recommended methods for the determination of the permittivity and dielectric dissipation factor of electrical insulating materials at power, audio and radio frequencies including metre wavelengths.*

IEC 296: 1982, *Specification for unused mineral insulating oils for transformers and switchgear.*

IEC 641-2: 1979, *Specification for pressboard and presspaper for electrical purposes. Part 2: Methods of test.*

IEC 763-1: 1983, *Specification for laminated pressboard. Part 1: Definitions, classification and general requirements.*

ISO 287: 1985, *Paper and board - Determination of moisture content - Oven-drying method.*

ISO 1924: *Paper and board - Determination of tensile properties.*

ISO 2144: 1987, *Paper and board - Determination of ash.*

3 Conditioning of test specimens

When conditioning in accordance with this clause is specified in the test method, test specimens of the specified form shall be conditioned at $23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ and $(50 \pm 5)\%$ relative humidity and then tested either under these conditions or within 5 min of removal from them. The conditioning period shall be as follows:

Nominal thickness (mm)	Minimum conditioning time (h)
≤ 10	16
> 10 up to ≤ 15	$16 + 24 = 40$
> 15 up to ≤ 20	$16 + (2 \times 24) = 64$
> 20 up to ≤ 30	112
> 30	240

In case of dispute, the conditioning shall be approached from the dry side after drying at $70\text{ }^{\circ}\text{C}$ for a period sufficient to ensure that the conditioning atmosphere produces a gain in weight of the test specimen. The subsequent conditioning at $23\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ and $(50 \pm 5)\%$ relative humidity shall have a duration of 240 h for all thicknesses.

4 Drying of test specimens

Method A (preferable)

When drying in accordance with this method is specified, the test specimens shall be dried at $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for 24 h in a vacuum chamber at a residual pressure of not more than 100 Pa.

The specimens shall then be removed and allowed to cool in a desiccator before the test.

Method B

On test specimens of the specified size, similar results may be expected if the test specimens are dried in a ventilated oven at $105\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ for seven days at atmospheric pressure.

5 Dimensions

5.1 Thickness

5.1.1 Test apparatus

An external screw type micrometer shall be used for testing having measuring faces of 6 mm to 8 mm diameter. The measuring faces shall be flat to within 0,01 mm and parallel to within 0,003 mm. The micrometer shall be graduated in divisions of 0,01 mm. The pressure exerted on the specimens shall be 0,1 MPa to 0,2 MPa.