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BSI Group
389 Chiswick High Road
London, W4 4AL
United Kingdom

T: +44 20 845 086 9001
F: +44 20 8996 7400
cservices@bsigroup.com
bsigroup.com

British Standards Limited
Registered in England no: 07864997
Registered address: 389 Chiswick High Road
London, W4 4AL, United Kingdom

BRITISH STANDARD 2076 : 1954

THERMOSETTING SYNTHETIC-RESIN BONDED-PAPER INSULATING SHEETS FOR USE AT RADIO FREQUENCIES

BRITISH STANDARDS INSTITUTION

BRITISH STANDARD SPECIFICATION

THERMOSETTING SYNTHETIC-RESIN BONDED-PAPER INSULATING SHEETS FOR USE AT RADIO FREQUENCIES

B.S. 2076 : 1954

Price 2/6 net

BRITISH STANDARDS INSTITUTION
INCORPORATED BY ROYAL CHARTER
BRITISH STANDARDS HOUSE, 2 PARK ST., LONDON, W.1
TELEGRAMS: STANDARDS, AUDLEY, LONDON TELEPHONE: MAYFAIR 9000

THIS BRITISH STANDARD, having been approved by the Electrical Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council on 11th January, 1954.

The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over 2000, indexed and cross-indexed for reference, together with an abstract of each standard, will be found in the Institution's Yearbook, price 12s. 6d.

This standard makes reference to the following British Standard:—

B.S. 2067 The determination of power factor and permittivity of insulating materials by the method of Hartshorn and Ward.

British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.

CO-OPERATING ORGANIZATIONS

The Electrical Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:—

*Admiralty
Air Ministry
Association of Consulting Engineers (Incorporated)
Association of Supervising Electrical Engineers
*British Electrical and Allied Industries Research Association
*British Electrical and Allied Manufacturers' Association
British Electrical Development Association
British Electricity Authority and Area Boards
British Railways, The British Transport Commission
Cable Makers' Association
Crown Agents for the Colonies
Electric Lamp Manufacturers' Association
Electric Light Fittings Association
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North of Scotland Hydro-Electric Board
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Public Transport Association Incorporated
*Radio Industry Council
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The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:—

Accumulator Makers Association
British Plastics Federation
Glass Textile Association
National Paint Federation
Radio and Electronic Component Manufacturers Federation
Research Association of British Rubber Manufacturers
Telephone Manufacturers Technical Development Committee

BRITISH STANDARD SPECIFICATION FOR

THERMOSETTING SYNTHETIC-RESIN BONDED-PAPER INSULATING SHEETS FOR USE AT RADIO FREQUENCIES

FOREWORD

This British Standard has been prepared from information supplied by the British Electrical and Allied Industries Research Association.

SPECIFICATION

SCOPE

1. This specification applies to natural-coloured material and specifies requirements for two types of thermosetting synthetic-resin bonded-paper sheets, as defined below, for use at frequencies up to and including 30 Mc/s. Limits are specified for sheets from 1/64 in. to 1/4 in. thick (nominal).

The punching test specified in Clause 10 *a* applies to sheets up to and including 3/32 in. thick (nominal) only, and the test specified in Clause 10 *b* to sheets up to and including 1/8 in. thick (nominal) only.

DEFINITIONS

2. For the purposes of this British Standard the following definitions shall apply:—

a. Type H material. Sheet material characterized by relatively low power factor, permittivity (dielectric constant) and water absorption, high electrical resistivity in a humid atmosphere, and good machining properties.

b. Type L material. Sheet material in which the power factor, permittivity (dielectric constant) and water absorption are higher than those of Type H. The mechanical strength of Type L material is usually greater than that of Type H, and the machining properties are good.

c. Edgewise direction. Denotes that the electrical stress is applied to the edge of the sheet in a direction parallel to the plane of the laminations.

d. Flatwise direction. Denotes that the electrical and/or mechanical stress is applied in a direction normal to the plane of the laminations.

e. Lengthwise direction. Denotes that the principal axis of the specimen is in the machine direction of the paper.

f. Crosswise direction. Denotes that the principal axis of the specimen is in the cross direction of the paper.

TOLERANCE ON THICKNESS

3. *a. Deviation from nominal thickness.* The permissible variation in the thickness of sheets of either type from the nominal thickness, when the thickness is determined by the method described in Appendix B, shall not exceed the appropriate value given in Table 1.

b. Deviation from mean thickness. The thickness of any given sheet at any point shall not deviate from the mean thickness by more than half the appropriate tolerance given in Table 1.

TABLE 1. TOLERANCE ON THICKNESS

Nominal thickness	Tolerance
in.	in.
1/64	± 0·0025
Above 1/64 up to and including 1/32	± 0·0035
Above 1/32 up to and including 3/64	± 0·0045
Above 3/64 up to and including 1/16	± 0·0055
Above 1/16 up to and including 3/32	± 0·007
Above 3/32 up to and including 1/8	± 0·008
Above 1/8 up to and including 5/32	± 0·009
Above 5/32 up to and including 3/16	± 0·010
Above 3/16 up to and including 7/32	± 0·011
Above 7/32 up to and including 1/4	± 0·012

POWER FACTOR AND PERMITTIVITY (DIELECTRIC CONSTANT) NORMAL TO LAMINAE

4. *a. Mandatory test at 1 Mc/s.* The power factor (tan δ*) and permittivity normal to the laminae of a sheet in the condition as received shall be determined at a temperature of 20 ± 5°C. and at a frequency of 1 Mc/s by the Hartshorn and Ward method described in B.S. 2067,† and when so determined shall not exceed the appropriate values given in Table 2.

b. Optional test. Subject to agreement between purchaser and supplier, the power factor and permittivity normal to the laminae of a sheet

* tan δ = dissipation factor in U.S. terminology.

† B.S. 2067, 'The determination of power factor and permittivity of insulating materials by the method of Hartshorn and Ward.'