

Specification for

Insulating materials based on mica —

Part 2: Methods of test

The European Standard EN 60371-2:1997 has the status of a
British Standard

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee GEL/15, Insulating materials, to Subcommittee GEL/15/3, Material specifications, upon which the following bodies were represented:

- Adhesive Tape Manufacturers Association
- British Capacitor Manufacturers Association (BEAMA Ltd.)
- British Industrial Ceramic Manufacturers Association
- British Plastics Federation
- ERA Technology Ltd.
- Electrical and Electronic Insulation Association (BEAMA Ltd.)
- Federation of the Electronics Industry
- Transmission and Distribution Association (BEAMA Ltd.)

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National foreword

This Part of BS EN 60371 has been prepared by Subcommittee GEL/15/3, and is the English language version of EN 60371-2:1997, *Specification for insulating materials based on mica — Part 2: Methods of test*, published by the European Committee for Electrotechnical Standardization (CENELEC). It is identical with IEC 371-2:1987, (including Amendment 1:1994), published by the International Electrotechnical Commission (IEC). It supersedes BS 6236-2:1988 which is withdrawn.

Cross-references

Publication referred to	Corresponding British Standard
EN 60216 series (IEC 216 series)	BS EN 60216 <i>Guide for the determination of thermal endurance properties of electrical insulating materials</i>
EN 60216-3-2:1995 (IEC 216-3-2:1993)	Part 3 <i>Instructions for calculating thermal endurance characteristics</i> Section 2:1995 <i>Calculations for incomplete data: proof test results up to and including the median time to end-point (equal test groups)</i>
HD 559.S1:1991 (IEC 243-1:1988)	BS 2918 <i>Methods of test for electric strength of solid insulating materials</i> Part 1:1994 <i>Tests at power frequencies</i>
EN 60371-3-1:1995 (IEC 371-3-1:1984)	BS EN 60371 <i>Specification for insulating materials based on mica</i> Part 3 <i>Specifications for individual materials</i> Section 1:1995 <i>Commutator separators and materials</i>
ISO 67:1981	BS 3564:1986 <i>Method for size-grading of muscovite mica blocks, thins and films</i>
ISO 178:1993 ^a	BS 2782 <i>Methods of testing plastics</i> Part 3 <i>Mechanical properties</i> Method 335A:1993 <i>Determination of flexural properties</i>

^a ISO 178:1975 has been superseded by ISO 178:1993.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 16, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Descriptors: Solid electrical insulating materials, mica, micaceous products, tests

English version

Specification for insulating materials based on mica Part 2: Methods of test

(IEC 371-2:1987 + A1:1994)

Spécification pour les matériaux
isolants à base de mica
Partie 2: Méthodes d'essais
(CEI 371-2:1987 + A1:1994)

Bestimmung für Isolierstoffe auf
der Basis von Glimmer
Teil 2: Prüfverfahren
(IEC 371-2:1987 + A1:1994)

This European Standard was approved by CENELEC on 1996-10-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

The text of the International Standard IEC 371-2:1987 and its amendment 1:1994, prepared by SC 15C, Specifications, of IEC TC 15, Insulating materials, was submitted to the formal vote and was approved by CENELEC as EN 60371-2 on 1996-10-01 without any modification.

This European Standard supersedes HD 352.2 S1:1978.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1997-06-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1997-06-01

Annexes designated “normative” are part of the body of the standard.

In this standard, Annex ZA is normative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 371-2:1987 and its amendment 1:1994, was approved by CENELEC as a European Standard without any modification.

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Introduction

This standard is one of a series which deals with insulating materials for use in electrical equipment built up from mica splittings or mica paper, with or without reinforcement, and with mica paper in its pure state.

The series consists of three parts:

1. Definitions and General Requirements.
2. Methods of Test.
3. Specifications for Individual Materials.

1 Scope

This Part 2 defines the methods of test which are applicable to built-up mica materials, products based on them and mica paper.

General notes on tests

Tests are carried out at ambient temperature (15 °C to 35 °C), unless a test temperature is specified either in the method or in the specification for individual materials.

2 Preparation of test specimens for curable materials

Test specimens are prepared in accordance with the following methods which are applicable only to curable materials:

Method 1

Clean off all loose particles and projecting fibres from sufficient material to provide the test pieces required for the particular test.

Cut and stack the pieces required to form the test laminate. For tape material, build up the laminate to the required thickness using half-lapped layers with successive layers at right angles, where necessary cutting the sides to obtain the required dimensions.

Adjust the press temperature to 160 ± 5 °C, unless otherwise specified.

Place the test laminate in the centre of two caul plates not exceeding 1.5 mm thick and at 15 °C to 35 °C.

Insert stops of a size to provide the required test laminate thickness.

Insert the assembly of plates and test piece in the centre of the preheated press.

Close the press immediately and apply sufficient pressure to reach stops. Cure the test piece for a minimum of 30 min.

Remove the test piece and post-cure for the length of time at the temperature given in Part 3 or according to the recommendation of the supplier.

Unless otherwise specified, condition the test piece for 24 h in a controlled atmosphere of 50 ± 5 % r.h. and 23 ± 2 °C before the test.

Method 2

Clean off all loose particles and projecting fibres from sufficient material to provide the test sheets required for the particular test.

For full-width and sheet material, cut and stack the sheets required to form the test laminate.

There are two suggested ways of producing a laminate from tape material:

- a) Cut the tape in pieces to the length of the laminate. Stack the pieces parallel and half-overlapped. The second and the following layers shall be moved sideways, so that the overlapping edges do not lie one upon another. In order to fix the pieces, the use of a hot iron is recommended.
- b) Take a metal sheet of the size of the required laminate and of a thickness of 2 mm to 3 mm. Wind the tape half-overlapped and always in the same direction around this sheet until the required thickness is reached. It is recommended to start each layer separately and to move the second and the following layers sideways, so that the overlapping edges do not lie one upon another. It is necessary to put an interleaving release material between the metal sheet and the tape. Two laminates with the same thickness are formed.

The prepared stacks, having a composition as shown in Figure 1, page 42, will be put in the press.

The following press procedure, illustrated by Figure 2, page 42, is an example. Other press procedures shall be subject to contract.

- Close the cold press and bring it to a pressure of 0.15 N/mm^2 .
- Heat the press to 70 °C under pressure of 0.15 N/mm^2 .
- Reduce the pressure down to zero, open the press for a short time (ventilate).
- Heat the press to 90 °C under pressure of 0.15 N/mm^2 .
- Reduce the pressure down to zero, open the press for a short time (ventilate).
- Heat the press to 110 °C under pressure of 0.15 N/mm^2 .
- Reduce the pressure down to zero, open the press for a short time (ventilate).