



IEC 60763-2

Edition 2.1 2023-11
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Specification for laminated pressboard –
Part 2: Methods of test**

**Spécification pour cartons comprimés et contrecollés –
Partie 2: Méthodes d'essai**





THIS PUBLICATION IS COPYRIGHT PROTECTED

Copyright © 2023 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

Droits de reproduction réservés. Sauf indication contraire, aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'IEC ou du Comité national de l'IEC du pays du demandeur. Si vous avez des questions sur le copyright de l'IEC ou si vous désirez obtenir des droits supplémentaires sur cette publication, utilisez les coordonnées ci-après ou contactez le Comité national de l'IEC de votre pays de résidence.

IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Discover our powerful search engine and read freely all the publications previews. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 300 terminological entries in English and French, with equivalent terms in 19 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

A propos de l'IEC

La Commission Electrotechnique Internationale (IEC) est la première organisation mondiale qui élabore et publie des Normes internationales pour tout ce qui a trait à l'électricité, à l'électronique et aux technologies apparentées.

A propos des publications IEC

Le contenu technique des publications IEC est constamment revu. Veuillez vous assurer que vous possédez l'édition la plus récente, un corrigendum ou amendement peut avoir été publié.

Recherche de publications IEC - webstore.iec.ch/advsearchform

La recherche avancée permet de trouver des publications IEC en utilisant différents critères (numéro de référence, texte, comité d'études, ...). Elle donne aussi des informations sur les projets et les publications remplacées ou retirées.

IEC Just Published - webstore.iec.ch/justpublished

Restez informé sur les nouvelles publications IEC. Just Published détaille les nouvelles publications parues. Disponible en ligne et une fois par mois par email.

Service Clients - webstore.iec.ch/csc

Si vous désirez nous donner des commentaires sur cette publication ou si vous avez des questions contactez-nous: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Découvrez notre puissant moteur de recherche et consultez gratuitement tous les aperçus des publications. Avec un abonnement, vous aurez toujours accès à un contenu à jour adapté à vos besoins.

Electropedia - www.electropedia.org

Le premier dictionnaire d'électrotechnologie en ligne au monde, avec plus de 22 300 articles terminologiques en anglais et en français, ainsi que les termes équivalents dans 19 langues additionnelles. Également appelé Vocabulaire Electrotechnique International (IEV) en ligne.



IEC 60763-2

Edition 2.1 2023-11
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Specification for laminated pressboard –
Part 2: Methods of test**

**Spécification pour cartons comprimés et contrecollés –
Partie 2: Méthodes d'essai**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 17.220.99, 29.035.10

ISBN 978-2-8322-7876-5

**Warning! Make sure that you obtained this publication from an authorized distributor.
Attention! Veuillez vous assurer que vous avez obtenu cette publication via un distributeur agréé.**



IEC 60763-2

Edition 2.1 2023-11
CONSOLIDATED VERSION

REDLINE VERSION

VERSION REDLINE



**Specification for laminated pressboard –
Part 2: Methods of test**

**Spécification pour cartons comprimés et contrecollés –
Partie 2: Méthodes d'essai**



CONTENTS

FOREWORD	4
INTRODUCTION	6
1 Scope	7
2 Normative references	7
3 Conditioning of test specimens	8
4 Drying of test specimens	8
4.1 Method A (preferable)	8
4.2 Method B	8
5 Dimensions	8
5.1 Thickness	8
6 Mechanical tests	9
6.1 Flexural strength and load to produce a standard deflection	9
6.2 Apparent modulus of elasticity in flexure	10
7 Compressibility	10
7.1 Principle	10
7.2 Test apparatus	11
7.3 Test pieces	11
7.4 Procedure	11
7.5 Results	11
8 Electric strength in oil	12
8.1 General and conditioning	12
8.2 Electric strength along laminate (edgewise electric strength)	12
9 Internal ply strength, thermal resistance and oil compatibility	12
9.1 Principle	12
9.2 Test specimens	12
9.3 Test apparatus	13
9.4 Procedure	13
9.5 Determination of the flexural strength	13
9.6 Results	13
10 Apparent density	14
10.1 Test specimens	14
10.2 Procedure	14
10.3 Results	14
11 Moisture content	15
12 Shrinkage <i>in air after drying</i>	15
12.1 <i>Test specimens</i>	15
12.2 <i>Procedure</i>	15
12.3 <i>Results</i>	15
12.1 Test apparatus	15
12.2 Test pieces	15
12.3 Procedure	16
12.4 Results	16
13 Oil absorption	17
13.1 Test specimens	17
13.2 Procedure	17

13.3 Results	17
14 Ash content	17
14.1 Procedure	17
14.2 Results	17
15 Contamination of liquid dielectrics	17
15.1 Apparatus	17
15.2 Test specimens	18
15.3 Procedure	18
15.4 Results	18
16 Conductivity of aqueous extract	18
16.1 Procedure	18
16.2 Results	18
17 pH of aqueous extract	18
 Figure 1 – Position of test specimen in relation to length, width and thickness of sheet	19
Figure 2 – Size of the test specimens and arrangement of the electrodes for testing the electric strength along laminae (edgewise electric strength)	19
Figures 3 and 4 – Alternative forms of vented electrodes	20
 Table 1 – Number of test specimens	13

INTERNATIONAL ELECTROTECHNICAL COMMISSION**SPECIFICATION FOR LAMINATED PRESSBOARD –****Part 2: Methods of test****FOREWORD**

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

This consolidated version of the official IEC Standard and its amendment has been prepared for user convenience.

IEC 60763-2 edition 2.1 contains the second edition (2007-02) [documents 15/360/FDIS and 15/373/RVD] and its amendment 1 (2023-11) [documents 15/1018/FDIS and 15/1024/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 60763-2 has been prepared by IEC technical committee 15: Solid electrical insulating materials.

This second edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition.

- a) The standard has generally been revised editorially and brought into line with IEC 60641-2.
- b) The test method for the determination of the internal ply strength has been replaced with an alternative method.
- c) The test method for the determination of the thermal resistance has been enlarged in its scope.

The list of all parts of the IEC 60763 series, under the general title *Specification for laminated pressboard*, can be found on the IEC website.

The committee has decided that the contents of this document and its amendment will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This International Standard deals with laminated pressboard as defined in Clause 2 of IEC 60763-1.

IEC 60641 applies to pressboard which is not laminated, and the material covered by this International Standard is made from sheets conforming to the requirements of that publication.

SPECIFICATION FOR LAMINATED PRESSBOARD –**Part 2: Methods of test****1 Scope**

This part of IEC 60763 gives methods of test applicable for the material classified in IEC 60763-1.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60243-1:1998, *Electrical strength of insulating materials – Test methods – Part 1: Tests at power frequencies*

IEC 60247:2004, *Insulating liquids – Measurement of relative permittivity, dielectric dissipation factor ($\tan \delta$) and d.c. resistivity*

IEC 60250:1969, *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 60296:2003, *Fluids for electrotechnical applications – Unused mineral insulating oils for transformers and switchgear*

IEC 60641-2:2004, *Pressboard and presspaper for electrical purposes – Part 2: Methods of tests*

IEC 60763-1:1983, *Specification for laminated pressboard – Part 1: Definitions, classification and general requirements*

IEC 61125:1992, *Unused hydrocarbon-based insulating liquids – Test methods for evaluating the oxidation stability*

IEC 62021-1:2003, *Insulating liquids – Determination of acidity – Part 1: Automatic potentiometric titration*

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

ISO 2144:1997, *Paper, board and pulps – Determination of residue (ash) on ignition at 900 degrees C*