IEC 61189-2-630

Edition 1.0 2018-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Test methods for electrical materials, printed board and other interconnection structures and assemblies –
Part 2-630: Test methods for materials for interconnection structures – Moisture absorption after pressure vessel conditioning

Méthodes d'essai pour les matériaux électriques, les cartes imprimées et autres structures d'interconnexion et ensembles –
Partie 2-630: Méthodes d'essai des matériaux pour structures d'interconnexion – Absorption d'humidité après conditionnement dans un récipient sous pression

IEC 61189-2-630:2018-06(en-fr)

IEC Central Office
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 corrigenda or an amendment might have been published.

IEC Catalogue - webstore.iec.ch/catalogue
The stand-alone application for consulting the entire bibliographical information on IEC International Standards, Technical Specifications, Technical Reports and other documents. Available for PC, Mac OS, Android Tablets and iPad.

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 It also gives information on projects, replaced and withdrawn publications.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 also once a month by email.

Electropedia - www.electropedia.org
The world's leading online dictionary of electronic and electrical terms, containing 21 000 terms and definitions in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary
67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

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.

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.

Catalogue IEC - webstore.iec.ch/catalogue
Application autonome pour consulter tous les renseignements bibliographiques sur les Normes internationales, Spécifications techniques, Rapports techniques et autres documents de l'IEC. Disponible pour PC, Mac OS, tablettes Android et iPad.

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 aussi une fois par mois par email.

Electropedia - www.electropedia.org
Le premier dictionnaire en ligne de termes électroniques et électriques. Il contient 21 000 termes et définitions en anglais et en français, ainsi que les termes équivalents dans 16 langues additionnelles. Egalement appelé Vocabulaire Electrotechnique International (IEV) en ligne.

Glossaire IEC - std.iec.ch/glossary
67 000 entrées terminologiques électrotechniques, en anglais et en français, extraites des articles Termes et Définitions des publications IEC parues depuis 2002. Plus certaines entrées antérieures extraites des publications des CE 37, 77, 86 et CISPR de l'IEC.

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 61189-2-630

Edition 1.0 2018-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Test methods for electrical materials, printed board and other interconnection structures and assemblies – Part 2-630: Test methods for materials for interconnection structures – Moisture absorption after pressure vessel conditioning

Méthodes d'essai pour les matériaux électriques, les cartes imprimées et autres structures d'interconnexion et ensembles – Partie 2-630: Méthodes d'essai des matériaux pour structures d'interconnexion – Absorption d'humidité après conditionnement dans un récipient sous pression

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

COMMISSION
ELECTROTECHNIQUE
INTERNATIONALE

ICS 31.180 ISBN 978-2-8322-5741-8

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.

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

TEST METHODS FOR ELECTRICAL MATERIALS, PRINTED BOARD AND OTHER INTERCONNECTION STRUCTURES AND ASSEMBLIES –

Part 2-630: Test methods for materials for interconnection structures – Moisture absorption after pressure vessel conditioning

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 itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
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.

International Standard IEC 61189-2-630 has been prepared by IEC technical committee 91: Electronics assembly technology

The text of this International Standard is based on the following documents:

CDV	Report on voting
91/1471/CDV	91/1503/RVC

Full information on the voting for the approval of this International Standard can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61189 series, published under the general title *Test methods for electrical materials, printed board and other interconnection structures and assemblies*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "http://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.

TEST METHODS FOR ELECTRICAL MATERIALS, PRINTED BOARD AND OTHER INTERCONNECTION STRUCTURES AND ASSEMBLIES –

Part 2-630: Test methods for materials for interconnection structures – Moisture absorption after pressure vessel conditioning

1 Scope

This document specifies a test method to determine the amount of water absorbed by metal-clad laminates after conditioning in a pressure vessel for 1 h, 2 h, 3 h, 4 h or 5 h.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 60194, *Printed board design, manufacture and assembly – Terms and definitions*.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60194 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

4 Preparation of test specimens

a) The specimens shall be etched using any appropriate method.

b) The edges of the test specimen shall be sanded smooth after etching.

5 Test specimens

a) Specimens shall be copper-clad laminate.

b) Specimens shall be cut not less than 25 mm from the edge of the sheet.

c) A minimum of four specimens shall be tested.

d) The test specimens used in this test shall be 50 mm ± 0,5 mm long by 50 mm ± 0,5 mm wide by the thickness of the material (unless otherwise specified).

e) The test specimens shall be etched to remove the copper foil using any appropriate method.

6 Test apparatus

a) Circulating air oven capable of maintaining a uniform temperature of 105 °C to 110 °C.

b) Desiccator – A stabilization chamber (drying cabinet) capable of maintaining less than 20 % R.H. at 21 °C ± 2 °C.

c) Analytical balance with a resolution of ±0,1 mg (or better).

d) Pressure vessel – A standard laboratory autoclave pressure vessel having a capacity of at least 7 l, equipped with a properly calibrated pressure gauge to maintain 103,4 kPa ± 3 kPa (gauge pressure).

e) Stopwatch.

7 Test procedure

a) The specimens shall be cleaned by at least three repeated wipes with a clean damp cloth.

b) The specimens shall be conditioned by drying in the circulating air oven for 1 h at 105 °C to 110 °C.

c) Remove the specimens from the oven and allow them to cool to room temperature in a desiccator.

d) Weigh each specimen immediately upon removal from the desiccator to the nearest 0,1 mg.

e) Record the weight as W1.

f) The specimens will be placed in a suitable rack for suspending in the pressure vessel.

g) Pour enough water, as recommended by the manufacturer, into the pressure vessel.

h) Cover with the lid and bring to a boil without pressurizing.

i) When steam is observed at the vent, take off the lid and suspend specimens vertically over the boiling water, being careful not to allow specimens to touch each other or the walls of the pressure vessel. This step shall be done rapidly to avoid undue cooling of the water and pressure vessel.

j) The heat-up time should be controlled at 7 min ± 1 min.

k) After reaching 103,4 kPa, maintain this condition for one of the condition times below:

   1) Condition A 1 h ± 5 min
   2) Condition B 2 h ± 5 min
   3) Condition C 3 h ± 5 min
   4) Condition D 4 h ± 5 min
   5) Condition E 5 h ± 5 min

l) At the end of the conditioning time, cool and vent the pressure vessel as recommended by the manufacturer.

m) Carefully remove the hot specimens from the pressure vessel and blot dry with a paper towel.

n) Immediately weigh each specimen to the nearest 0,1 mg.

o) Record the weight as W2.

8 Calculation

a) The % moisture pickup is defined as:

$$\% \text{ Moisture} = \frac{W2 - W1}{W1} \times 100\ \%$$

b) The average moisture pickup is defined as:

$$\text{Ave. \% Moisture} = \frac{\text{Sum of 4 results for \% Moisture}}{4}$$

9 Report

The report shall include:

a) the test method number and revision level;
b) the identification and description of the material tested;
c) the % moisture pickup for each of the four test trials;
d) the average % moisture pickup of the four test trials;
e) the date of the test;
f) any degradation of the surface of any of the test specimens;
g) any deviation from the test method;
h) the name of the person conducting the test.