



**NSAI**  
Standards

Irish Standard  
I.S. EN 61212-3-2:2013

Insulating materials - Industrial rigid round laminated tubes and rods based on thermosetting resins for electrical purposes -- Part 3: Specifications for individual materials -- Sheet 2: Round laminated moulded tubes (IEC 61212-3-2:2013 (EQV))

## I.S. EN 61212-3-2:2013

*Incorporating amendments/corrigenda issued since publication:*

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

<i>This document replaces:</i> EN 61212-3-2:2006	<i>This document is based on:</i> EN 61212-3-2:2013 EN 61212-3-2:2006	<i>Published:</i> 5 July, 2013 5 September, 2006
This document was published under the authority of the NSAI and comes into effect on:  16 July, 2013		ICS number: 29.035.01
<b>NSAI</b> 1 Swift Square, Northwood, Santry Dublin 9	T +353 1 807 3800 F +353 1 807 3838 E standards@nsai.ie  W NSAI.ie	<b>Sales:</b> T +353 1 857 6730 F +353 1 857 6729 W standards.ie
Údarás um Chaighdeáin Náisiúnta na hÉireann		

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 61212-3-2**

July 2013

ICS 29.035.01

Supersedes EN 61212-3-2:2006

English version

**Insulating materials -  
Industrial rigid round laminated tubes and rods based on thermosetting  
resins for electrical purposes -  
Part 3: Specifications for individual materials -  
Sheet 2: Round laminated moulded tubes  
(IEC 61212-3-2:2013)**

Matériaux isolants -  
Tubes et barres industriels rigides, ronds,  
stratifiés, à base de résines  
thermodurcissables, à usages électriques  
-  
Partie 3: Spécifications pour matériaux  
particuliers -  
Feuille 2: Tubes ronds stratifiés moulés  
(CEI 61212-3-2:2013)

Isolierstoffe – Runde Rohre und Stäbe  
aus technischen Schichtpressstoffen auf  
der Basis wärmehärtender Harze für  
elektrotechnische Zwecke – Teil 3:  
Bestimmungen für einzelne Werkstoffe –  
Blatt 2: Runde, formgepresste Rohre  
(IEC 61212-3-2:2013)

This European Standard was approved by CENELEC on 2013-06-03. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

**CENELEC**

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

**Management Centre: Avenue Marnix 17, B - 1000 Brussels**

## Foreword

The text of document 15/700/FDIS, future edition 3 of IEC 61212-3-2, prepared by IEC/TC 15 "Solid electrical insulating materials", was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 61212-3-2:2013.

The following dates are fixed:

- latest date by which the document has (dop) 2014-03-03  
to be implemented at national level by  
publication of an identical national  
standard or by endorsement
- latest date by which the national (dow) 2016-06-03  
standards conflicting with the  
document have to be withdrawn

This document supersedes EN 61212-3-2:2006.

EN 61212-3-2:2013 includes the following significant technical changes with respect to EN 61212-3-2:2006:

Details of test for insulation resistance after immersion in water are changed.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

## Endorsement notice

The text of the International Standard IEC 61212-3-2:2013 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61212-3 series	NOTE Harmonized in EN 61212-3 series (not modified).
ISO 472:1999	NOTE Harmonized as EN ISO 472:2001 (not modified).

**Annex ZA**  
(normative)  
**Normative references to international publications**  
**with their corresponding European publications**

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

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61212-1	-	Insulating materials - Industrial rigid round laminated tubes and rods based on thermosetting resins for electrical purposes - Part 1: Definitions, designations and general requirements	EN 61212-1	-
IEC 61212-2	2006	Insulating materials - Industrial rigid round laminated tubes and rods based on thermosetting resins for electrical purposes - Part 2: Methods of test	EN 61212-2	2006

*This page is intentionally left BLANK.*

## CONTENTS

FOREWORD .....	3
INTRODUCTION .....	5
1 Scope .....	6
2 Normative references .....	6
3 Terms and definitions .....	6
4 Designations and abbreviations .....	7
4.1 General .....	7
4.2 Designation .....	7
4.3 Abbreviations .....	7
5 Requirements .....	7
Bibliography .....	13
Table 1 – Types of industrial round moulded tubes .....	8
Table 2 – Permissible deviation from nominal external diameter of round moulded tubes in the “as moulded” condition .....	8
Table 3 – Permissible deviation from nominal external diameter of moulded tubes in ground or turned condition, all types .....	9
Table 4 – Permissible deviation from nominal internal diameter of moulded tubes .....	9
Table 5 – Tolerance on wall thickness for round moulded tubes .....	9
Table 6 – Departure from straightness for round moulded tubes .....	10
Table 7 – Property requirements for round moulded tubes .....	11
Table 8 – Electric strength at 90 °C in oil, perpendicular to laminations for round moulded tubes (1 min proof test or 20 s step-by-step test) <sup>a</sup> (kV/mm) .....	12

INTERNATIONAL ELECTROTECHNICAL COMMISSION

---

**INSULATING MATERIALS –  
INDUSTRIAL RIGID ROUND LAMINATED TUBES  
AND RODS BASED ON THERMOSETTING RESINS  
FOR ELECTRICAL PURPOSES –**

**Part 3: Specifications for individual materials –  
Sheet 2: Round laminated moulded tubes**

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 61212-3-2 has been prepared by IEC technical committee 15: Solid electrical insulating material.

This third edition cancels and replaces the second edition published in 2006. This edition constitutes a technical revision.

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

Details of test for insulation resistance after immersion in water are changed.



The text of this standard is based on the following documents:

FDIS	Report on voting
15/700/FDIS	15/710/RVD

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

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

A list of all parts in the IEC 61212 series, published under the general title *Insulating materials – Industrial rigid round laminated tubes and rods based on thermosetting resins for electrical purposes*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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

## INTRODUCTION

This part of IEC 61212 is one of a series which deals with industrial rigid round laminated tubes and rods based on thermosetting resins for electrical purposes.

This series consists of three parts:

- Part 1: Definitions, designations and general requirements (IEC 61212-1)
- Part 2: Methods of test (IEC 61212-2)
- Part 3: Specifications for individual materials (IEC 61212-3)

IEC 61212-3-2 contains one of the specification sheets comprising Part 3, as follows:

Sheet 2: Round laminated moulded tubes.

# **INSULATING MATERIALS – INDUSTRIAL RIGID ROUND LAMINATED TUBES AND RODS BASED ON THERMOSETTING RESINS FOR ELECTRICAL PURPOSES –**

## **Part 3: Specifications for individual materials – Sheet 2: Round laminated moulded tubes**

### **1 Scope**

This part of IEC 61212 gives requirements for industrial rigid round laminated moulded tubes for electrical purposes, based on different resins and different reinforcements.

Applications and distinguishing properties are given in Table 1.

Materials which conform to this specification meet established levels of performance. However, the selection of a material by a user for a specific application should be based on the actual requirements necessary for adequate performance in that application and not based on this specification alone.

#### **Safety Warning:**

It is the responsibility of the user of the methods contained or referred to in this document to ensure that they are used in a safe manner.

### **2 Normative references**

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

IEC 61212-1, *Insulating materials – Industrial rigid round laminated tubes and rods based on thermosetting resins for electrical purposes – Part 1: Definitions, designations and general requirements*

IEC 61212-2:2006, *Insulating materials – Industrial rigid round laminated tubes and rods based on thermosetting resins for electrical purposes – Part 2: Methods of test*

### **3 Terms and definitions**

For the purposes of this document, the following term and definition apply.

#### **3.1**

##### **moulded tube**

<thermosets> tube formed by rolling impregnated layers of material on a mandrel, curing the assembly in a cylindrical mould under heat and pressure, and then removing the mandrel

[SOURCE: ISO 472:1999, modified – In the ISO definition, the term “laminated moulded tube” is used instead of “moulded tube” and an indication “or other suitable” is provided between the words “cylindrical” and “mould”.]

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- Looking for additional Standards? Visit Intertek Inform Infostore
  - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-