

Resin based reactive compounds used for electrical insulation - Part 3: Specifications for individual materials - Sheet 8: Resinous compounds for cable accessories (IEC 60455-3-8:2013)

EESTI STANDARDI EESSÕNA

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**Resin based reactive compounds used for electrical insulation -
Part 3: Specifications for individual materials -
Sheet 8: Resins for cable accessories
(IEC 60455-3-8:2013)**

Composés réactifs à base de résines
utilisés comme isolants électriques -
Partie 3: Spécifications pour matériaux
particuliers -
Feuille 8: Résines pour accessoires de
câble
(CEI 60455-3-8:2013)

Reaktionsharzmassen für die
Elektroisolierung – Teil 3: Anforderungen
an einzelne Werkstoffe – Blatt 8:
Reaktionsharzmassen für Kabelgarnituren
(IEC 60455-3-8:2013)

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

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Foreword

The text of document 15/701/FDIS, future edition 1 of IEC 60455-3-8, prepared by IEC/TC 15 "Solid electrical insulating materials", was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 60455-3-8:2013.

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document have to be withdrawn

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Endorsement notice

The text of the International Standard IEC 60455-3-8:2013 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 60455-1	NOTE Harmonized as EN 60455-1.
IEC 60455-3 series	NOTE Harmonized in EN 60455-3 series (not modified).
IEC 61234-2	NOTE Harmonized as EN 61234-2.
ISO 291	NOTE Harmonized as EN ISO 291.
ISO 2592	NOTE Harmonized as EN ISO 2592.
ISO 3521	NOTE Harmonized as EN ISO 3521.

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 60093	-	Methods of test for volume resistivity and surface resistivity of solid electrical insulating materials	HD 429 S1 ¹⁾	-
IEC 60212	-	Standard conditions for use prior to and during the testing of solid electrical insulating materials	EN 60212	-
IEC 60243-1	-	Electrical strength of insulating materials - Test methods - Part 1: Tests at power frequencies	EN 60243-1	-
IEC 60250	-	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 60455-2	-	Resin based reactive compounds used for electrical insulation - Part 2: Methods of test	EN 60455-2	-
ISO 179	Series	Plastics - Determination of Charpy impact properties	EN ISO 179	Series
ISO 527	Series	Plastics - Determination of tensile properties	EN ISO 527	Series
ISO 868	-	Plastics and ebonite - Determination of indentation hardness by means of a durometer (Shore hardness)	EN ISO 868	-
ISO 1183-1	-	Plastics - Methods for determining the density of non-cellular plastics - Part 1: Immersion method, liquid pycnometer method and titration method	EN ISO 1183-1	-
ISO 2555	-	Plastics - Resins in the liquid state or as emulsions or dispersions - Determination of apparent viscosity by the Brookfield test method	EN ISO 2555	-
ISO 4895	-	Plastics - Liquid epoxy resins - Determination of tendency to crystallize	EN ISO 4895	-

¹⁾ HD 429 S1 is superseded by EN 62631-1:2011, which is based on IEC 62631-1:2011.

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INTRODUCTION

This part of IEC 60455-3-8 is one of a series which deals with specifications for reactive compounds and their components for electrical insulation. This series consist of three parts:

Part 1: Definitions and general requirements (IEC 60455-1);

Part 2: Methods of test (IEC 60455-2);

Part 3: Specifications for individual materials (IEC 60455-3)

IEC 60455-3-8 consists of one of the sheets comprising Part 3 as follows:

Sheet 8: Resins for cable accessories

RESIN BASED REACTIVE COMPOUNDS USED FOR ELECTRICAL INSULATION –

Part 3: Specifications for individual materials Sheet 8: Resins for cable accessories

1 Scope

This sheet 8 of IEC 60455-3 gives the requirements for resins for power cable accessories which conform to this specification and 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 on this specification alone.

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 60093, *Methods of test for volume resistivity and surface resistivity of solid electrical insulating materials*

IEC 60212, *Standard conditions for use prior to and during the testing of solid electrical insulating materials*

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

IEC 60250, *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 60455-2, *Resin based reactive compounds used for electrical insulation – Part 2: Methods of test*¹

ISO 179 (all parts), *Plastics – Determination of Charpy impact properties*

ISO 527 (all parts), *Plastics – Determination of tensile properties*

ISO 868, *Plastics and ebonite – Determination of indentation hardness by means of a durometer (Shore hardness)*

ISO 1183-1, *Plastics – Methods for determining the density of non-cellular plastics – Part 1: Immersion method, liquid pycnometer method and titration method*

ISO 2555, *Plastics – Resins in the liquid state or as emulsions or dispersions – Determination of apparent viscosity by the Brookfield Test method*

¹ Third edition to be published.

ISO 4895, *Plastics – Liquid epoxy resins – Determination of tendency to crystallize*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

tendency to crystallization

measurement of the ability of epoxy base resin not to change from a liquid to a solid state at a certain temperature close to water freezing point for a fixed time

3.2

type tests

tests made on materials or components of a cable accessory in order to demonstrate satisfactory performance characteristics to meet the intended application

3.3

outer protection

cured resinous compound to protect the connections from damage by external mechanical forces

4 Designation

Resins for cable accessories are classified according to their application in categories as follows:

Table 1 – Categories of resins

Voltage Class	Function	Characteristic
Low Voltage (L)	Outer Protection (OP)	Cures in presence of water ^a (W)
Medium Voltage (M)	Insulation (I)	
^a Low foaming during curing when in contact with water as described in the subclause dealing with curing under water in IEC 60455-2.		

A resin is identified by a combination of categories.

For example: Low voltage compound for outer protection: **L-OP**;
 Low voltage compound for insulation, curing in presence of water: **L-I-W**;
 Low voltage compound for insulation and mechanical protection: **L-OP-I**.

Tests for type testing are carried out in accordance with each of the resin categories.

Low voltage: 0,6/1,0 (1,2) kV

Medium voltage: 20,8/36 (42) kV

5 Type testing

5.1 General

Tests shall be carried out based on the category of the resins as defined in Table 1. These tests are of such a nature that, once successfully completed, they need not to be repeated unless changes are made in the material, component formulation or manufacturing process, which might change the performance characteristics.