

**SLOVENSKI STANDARD**  
**SIST HD 307.2.2 S1:1998****01-oktober-1998**

---

**Specification for solventless polymerisable resinous compounds used for electrical insulation -- Part 2: Methods of test - Test methods for coating powders for electrical purposes (IEC 60455-2-2:1984 + Corrigendum December 1991)**

Specification for solventless polymerisable resinous compounds used for electrical insulation -- Part 2: Methods of test -- Test methods for coating powders for electrical purposes

Bestimmungen für Reaktionsharzmassen und -formstoffe in der Elektrotechnik -- Teil 2: Prüfmethode -- Prüfverfahren für Beschichtungspulver für elektronische Zwecke

Spécifications relatives aux composés résineux polymérisables sans solvant utilisés comme isolants électriques -- Partie 2: Méthodes d'essai -- Méthodes d'essai des poudres de revêtement à usages électriques

**Ta slovenski standard je istoveten z: HD 307.2.2 S1:1986**

---

**ICS:**

29.035.01	Izolacijski materiali na splošno	Insulating materials in general
-----------	----------------------------------	---------------------------------

**SIST HD 307.2.2 S1:1998****en**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST HD 307.2.2 S1:1998

<https://standards.iteh.ai/catalog/standards/sist/b13687d8-0ab6-45e5-ae6b-2f2176279941/sist-hd-307-2-2-s1-1998>

**CENELEC**

Rue Broderode 2, B-1050 BRUXELLES  
 Tel.: (+32 2) 519 68 71 - Telex: 2625 Cenelec b  
 Fax: (+32 2) 519 68 19 - Telex: 208 2610 F7 CENCL

HD 307.2.2 S1

ENGLISH VERSION

UDC: 621.315.616:620.1

KEY WORDS: Method of test; electrical insulation; solventless  
 polymerisable resinous compound; unfilled epoxy resinous  
 compound

SPECIFICATION FOR SOLVENTLESS POLYMERISABLE  
 RESINOUS COMPOUNDS USED FOR ELECTRICAL INSULATION  
 PART 2: METHODS OF TEST -  
 TEST METHODS FOR COATING POWDERS FOR ELECTRICAL  
 PURPOSES

Spécification relative aux  
 composés résineux polymérisables  
 sans solvant utilisés comme  
 isolants électriques  
 Deuxième partie: Méthodes  
 d'essai -  
 Méthodes d'essai des poudres de  
 revêtement à usages  
 électriques

Bestimmung für  
 lösemittelfreie härtbare  
 Reaktionsharzmassen für die  
 Elektroisolierung  
 Teil 2: Prüfverfahren -  
 Prüfverfahren für  
 Beschichtungspulver für  
 elektrotechnische Zwecke

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

BODY OF THE HD

The Harmonization Document consists of:  
 - IEC 455-2-2 (1984) ed 1; IEC/SC 15C, not appended

This Harmonization Document was approved by CENELEC on 26 June 1986.

The English and French versions of this Harmonization Document are provided by the text of the IEC publication and the German version is the official translation of the IEC text.

According to the CENELEC Internal Regulations the CENELEC member National Committees are bound:

to announce the existence of this Harmonization Document at national level by or before 1987-01-01

to publish their new harmonized national standard by or before 1987-07-01

to withdraw all conflicting national standards by or before 1987-07-01.

Harmonized national standards are listed on the HD information sheet, which is available from the CENELEC National Committees or from the CENELEC Central Secretariat.

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

© Copyright reserved to all CENELEC members

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST HD 307.2.2 S1:1998

<https://standards.iteh.ai/catalog/standards/sist/b13687d8-0ab6-45e5-aeff-2f2176279941/sist-hd-307-2-2-s1-1998>

**NORME  
INTERNATIONALE  
INTERNATIONAL  
STANDARD**

**CEI  
IEC**

**60455-2-2**

Première édition  
First edition  
1984-01

**Spécification relative aux composés résineux  
polymérisables sans solvant utilisés comme  
isolants électriques**

**Deuxième partie:**

**Méthodes d'essai – Méthodes d'essai des poudres  
de revêtement à usages électriques**

**Specification for solventless polymerisable  
resinous compounds used for electrical insulation**

**Part 2:**

**Methods of test – Test methods for coating  
powders for electrical purposes**

© IEC 1984 Droits de reproduction réservés — Copyright - all rights reserved

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'éditeur.

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 the publisher.

International Electrotechnical Commission  
Telefax: +41 22 919 0300

3, rue de Varembé Geneva, Switzerland  
IEC web site <http://www.iec.ch>



Commission Electrotechnique Internationale  
International Electrotechnical Commission  
Международная Электротехническая Комиссия

CODE PRIX  
PRICE CODE

**R**

Pour prix, voir catalogue en vigueur  
For price, see current catalogue

Publication 455-2-2 de la CEI  
(Première édition - 1984)

Spécification relative aux composés  
résineux polymérisables sans solvant  
utilisés comme isolants électriques

Deuxième partie: Méthodes d'essai  
Méthodes d'essai des poudres de revêtement  
usages électriques

IEC Publication 455-2-2  
(First edition - 1984)

Specification for solventless  
polymerisable resinous compounds  
used for electrical insulation

Part 2: Methods of test  
Test methods for coating powders  
for electrical purposes

## C O R R I G E N D U M 1

Page 4

Preface

Remplacer le tableau existant par le nouveau tableau suivant:

**iteh STANDARD PREVIEW**  
(standards.iteh.ai)

Règle des Six Mois	Rapport de vote	Procédure des Deux Mois	Rapport de vote
15C(BC)139	15C(BC)161	15C(BC)165	15C(BC)190

SIST HD 307.2.2 S1:1998  
<https://standards.iteh.ai/catalog/standards/sist/b15687d6-0ab6-45e3-aefb-2d2176279941/sist-hd-307-2-2-s1-1998>

Pour de plus amples renseignements, consulter les rapports de vote mentionnés dans le tableau ci-dessus.

Page 5

Preface

Replace the existing table by the following new table:

Six Months' Rule	Report on Voting	Two Months' Procedure	Report on Voting
15C(CO)139	15C(CO)161	15C(CO)165	15C(CO)190

Further information can be found in the Reports on Voting indicated in the table above.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST HD 307.2.2 S1:1998

<https://standards.iteh.ai/catalog/standards/sist/b13687d8-0ab6-45e5-aeff-2f2176279941/sist-hd-307-2-2-s1-1998>

## CONTENTS

	Page
FOREWORD .....	5
PREFACE .....	5
INTRODUCTION .....	9
Clause	
Scope .....	9

## SECTION ONE – TESTS FOR MATERIALS BEFORE CURE

1.1 Bulk density .....	9
1.2 Pourability .....	9
1.3 Particle size distribution .....	11
1.4 Softening temperature .....	11
1.5 Gel time .....	11
1.6 Non-volatile matter content .....	13

## SECTION TWO – TESTS FOR MATERIALS IN THE CURED FORM

2.1 Preparation of test specimens .....	15
2.2 Visual examination .....	15
2.3 Thickness .....	15
2.4 Porosity of coating (test for uniformity) .....	17
2.5 Scratch hardness .....	17
2.6 Cut-through resistance .....	21
2.7 Impact strength .....	21
2.8 Cupping test .....	23
2.9 Electric strength .....	23
2.10 Dissipation factor and permittivity .....	25
2.11 Volume resistivity after immersion in water .....	25
2.12 Resistance to tracking .....	25
2.13 Resistance to chemicals .....	27
2.14 Resistance to vapour of solvents .....	29
2.15 Thermal endurance .....	31
2.16 Edge coverage .....	31
2.17 Thermal shock resistance .....	33
FIGURES .....	35



## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SPECIFICATION FOR  
SOLVENTLESS POLYMERISABLE RESINOUS COMPOUNDS  
USED FOR ELECTRICAL INSULATION**

**Part 2: Methods of test  
Test methods for coating powders for electrical purposes**

## FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

## PREFACE

This standard has been prepared by Sub-Committee 15C: Specifications, of IEC Technical Committee No. 15: Insulating Materials.

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

Six Months' Rule	Report on Voting
15C(CO)139	15C(CO)161

Further information can be found in the Report on Voting indicated in the table above.

*The following IEC publications are quoted in this standard:*

- Publications Nos. 79-7 (1969): Electrical Apparatus for Explosive Gas Atmospheres, Part 7: Construction and Test of Electrical Apparatus, Type of Protection "e".
- 93 (1980): Methods of Test for Volume Resistivity and Surface Resistivity of Solid Electrical Insulating Materials.
- 112 (1979): Method for Determining the Comparative and the Proof Tracking Indices of Solid Insulating Materials under Moist Conditions.
- 212 (1971): Standard Conditions for Use prior to and during the Testing of Solid Electrical Insulating Materials.
- 216-1 (1974): Guide for the Determination of Thermal Endurance Properties of Electrical Insulating Materials, Part 1: General Procedures for the Determination of Thermal Endurance Properties, Temperature Indices and Thermal Endurance Profiles.
- 243 (1967): Recommended Methods of Test for Electric Strength of Solid Insulating Materials at Power Frequencies.
- 250 (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.
- 394-2 (1972): Varnished Fabrics for Electrical Purposes, Part 2: Methods of Test.
- 455-1 (1974): Specification for Solventless Polymerisable Resinous Compounds Used for Electrical Insulation, Part 1: Definitions and General Requirements.
- 455-2 (1977): Part 2: Methods of Test.

*Other publications quoted:*

- ISO Standard 60 (1977): Plastics — Determination of Apparant Density of Material that Can be Poured from a Specified Funnel.
- 683-1 (1968): Heat-treated Steels, Alloy Steels and Free-cutting Steels, Part 1: Quenched and Tempered Unalloyed Steels.
- 1518 (1973): Paints and Varnishes — Scratch Test.
- 2591 (1973): Test Sieving.

---

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

SIST HD 307.2.2 S1:1998

<https://standards.iteh.ai/catalog/standards/sist/b13687d8-0ab6-45e5-ae6b-2f2176279941/sist-hd-307-2-2-s1-1998>

**SPECIFICATION FOR  
SOLVENTLESS POLYMERISABLE RESINOUS COMPOUNDS  
USED IN ELECTRICAL INSULATION**

**Part 2: Methods of test  
Test methods for coating powders for electrical purposes**

---

#### INTRODUCTION

This standard is one of the series which deals with solventless polymerisable resinous compounds used for electrical insulation. The series will have the following three parts:

Part 1: Definitions and general requirements.

Part 2: Methods of test.

Part 3: Specifications for individual materials (under consideration).

#### Scope

This standard gives methods of test for thermo-setting coating powders as defined in Sub-clause 3.7 of IEC Publication 455-1: Specification for Solventless Polymerisable Resinous Compounds used for Electrical Insulation, Part 1: Definitions and General Requirements. Tests are included for the material before cure and in the cured form.

ITIH STANDARD PREVIEW  
(standards.iteh.ai)

#### SECTION ONE — TESTS FOR MATERIALS BEFORE CURE

##### 1.1 Bulk density

<https://standards.iteh.ai/catalog/standards/sist/b13687d8-0ab6-45e5-aefb-2f2176279941/sist-hd-307-2-2-s1-1998>

To be determined in accordance with ISO Standard 60: Plastics — Determination of Apparent Density of Material that Can be Poured from a Specified Funnel.

##### 1.2 Pourability

###### 1.2.1 Apparatus

- Funnel according to Figure 1, page 35, provided with means for placing it in a vertical position.
- Stop-watch or timer of comparable accuracy.

###### 1.2.2 Procedure

Work powder sample on a sheet of paper until there is no tendency for the material to pack or cake. Place the funnel in a vertical position and close the small end with the hand or with a suitable strip and pour a 100 g sample of powder lightly into the funnel, avoiding any tendency to pack it. Then quickly open the bottom of the funnel and at the same instant start the stop watch or timer. Allow the powder to run freely from the funnel, and stop the watch or timer at the instant the last of it leaves the funnel.

###### 1.2.3 Result

State the time, in seconds, required for the funnel to discharge, to the nearest 0.5 s or, if necessary, state that the material will not run through the funnel.