
Specification for solventless polymerisable resinous compounds used for electrical insulation - Part 3: Specifications for individual materials - Sheet 3: Unfilled polyurethane compounds (IEC 60455-3-3:1984)

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UDC: 621.315.616:620.2

KEY WORDS: Specification; unfilled polyurethane

SPECIFICATION FOR SOLVENTLESS POLYMERISABLE
RESINOUS COMPOUNDS USED FOR ELECTRICAL INSULATION
PART 3: SPECIFICATIONS FOR INDIVIDUAL MATERIALS
SHEET 3: UNFILLED POLYURETHANE COMPOUNDS

Spécification relative aux
composés résineux polymérisables
sans solvant utilisés comme
isolants électriques
Troisième partie: Spécifications
pour les matériaux particuliers
Feuille 3: Composés résineux de
polyuréthane non chargés

Bestimmung für
lösemittelfreie härtbare
Reaktionsharzmassen für die
Elektroisolierung
Teil 3: Anforderungen an
einzelne Werkstoffe
Blatt 3: Ungefüllte
Polyurethanharzwerkstoffe

BODY OF THE HD

The Harmonization Document consists of:

- IEC 455-3-3 (1984) ed 1; IEC/SC 15C, not appended

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

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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.

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE
NORME DE LA CEI

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC STANDARD

Publication 455-3-3
Première édition — First edition
1984

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

Troisième partie : Spécifications pour les matériaux particuliers
Feuille 3 : Composés résineux de polyuréthane non chargés

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

SPECIFICATION FOR
SOLVENTLESS POLYMERISABLE RESINOUS COMPOUNDS
USED FOR ELECTRICAL INSULATION

Part 3: Specifications for individual materials
Sheet 3: Unfilled polyurethane compounds

FOREWORD

- 1) The formal decisions or agreements of the I E C 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 I E C expresses the wish that all National Committees should adopt the text of the I E C recommendation for their national rules in so far as national conditions will permit. Any divergence between the I E C recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

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PREFACE

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This standard has been prepared by Sub-Committee 15C: Specifications, of I E C 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)157	15C(CO)171

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

The following I E C publications are quoted in this standard:

- Publications Nos. 93 (1980): Methods of Test for Volume Resistivity and Surface Resistivity of Solid Electrical Insulating Materials.
- 296 (1982): Specification for Unused Mineral Insulating Oils for Transformers and Switch-gear.
- 426 (1973): Test Methods for Determining Electrolytic Corrosion with Insulating Materials.
- 455-2 (1977): Specification for Solventless Polymerisable Resinous Compounds Used for Electrical Insulation, Part 2: Methods of Test.

Other publication quoted:

- ISO Standard 604 (1973): Plastics – Determination of Compressive Properties.

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

**Part 3: Specifications for individual materials
Sheet 3: Unfilled polyurethane compounds**

1. Scope

This sheet 3 of Part 3 of the standard contains the requirements for unfilled polyurethane resinous compounds in the cured form for classes PUR-U-4 to PUR-U-8 with an ash content of not more than 6%.

2. Requirements

The requirements for unfilled polyurethane resinous compounds in the cured form are given in Table I.

Note. — Materials for use in low temperature conditions may require additional tests not specified in this sheet to establish their suitability.

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3. List of properties in the uncured form which are not specified in this sheet but should be stated in the purchase order
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Test method according

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Part 2

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Clause

Density	3
Viscosity after mixing at 23 °C	4
Volatile content	11
Shelf life for resin components	14
Gel time	16
Exothermic temperature peak	17

TABLE I
Requirements for unfilled polyurethane resinous compounds in the cured form

Properties	Methods of test according to Part 2 (Clause or Sub-clause)	Units	Requirements for compounds type							
			PUR-U-4	PUR-U-5	PUR-U-6	PUR-U-7	PUR-U-8			
Density	23	g/cm ³	1.10-1.25	1.10-1.25	1.10-1.25	1.05-1.25	1.0-1.20			
Flexural strength	24	MPa	min.	100	50	Not applicable	Not applicable	Not applicable		
Tensile strength	25	MPa	min.	50	25	5	0.5			
Elongation at break	25	%	min.	Not required	5	25	50			
Impact strength	26	kJ/m ²	min.	20	10	25	30			
Hardness	28.1	Shore	min.	Not applicable	D-60	D-20	A-30			
30% compressive yield stress	ISO Standard 604	MPa	min.	60	4	8	12			
Glass transition temperature			Method under consideration							
Temperature of deflection under load	32	C	min.	100	75	Not required	Not required	Not required		
Water absorption	34	mg	max.	30	40	50	80	120		
Hydrolytic stability (Resistance against hydrolysis)			Under consideration							
Ash content	7	%	max.	6	6	6	6	6		