

# INTERNATIONAL STANDARD

# NORME INTERNATIONALE

**Specifications for particular types of winding wires –  
Part 70-2: Polyester glass-fibre wound resin/varnish impregnated, bare or  
enamelled round copper wire, temperature index 155**

**Spécifications pour types particuliers de fils de bobinage –  
Partie 70-2: Fil de section circulaire en cuivre nu ou émaillé, guipé de fibres de  
verre polyester imprégnées de vernis ou de résine, d'indice de température 155**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**SPECIFICATIONS FOR PARTICULAR TYPES OF WINDING WIRES –****Part 70-2: Polyester glass-fibre wound resin/varnish impregnated,  
bare or enamelled round copper wire, temperature index 155**

## FOREWORD

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International Standard IEC 60317-70-2 has been prepared by IEC technical committee 55: Winding wires.

IEC 60317-70-2 and IEC 60317-70-1 cancel and replace IEC 60317-70 published in 2017. This document constitutes a technical revision.

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

FDIS	Report on voting
55/1846/FDIS	55/1862/RVD

Full information on the voting for the approval of this document 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.

This International Standard is to be used in conjunction with IEC 60317-0-10:2017.

A list of all parts in the IEC 60317 series, published under the general title *Specifications for particular types of winding wires*, can be found on the IEC website.

The numbering of clauses in this standard is not continuous from Clauses 21 through 30 in order to reserve space for possible future wire requirements prior to those for wire packaging.

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

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- withdrawn,
- replaced by a revised edition, or
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## INTRODUCTION

This part of IEC 60317 forms an element of a series of standards which deals with insulated wires used for windings in electrical equipment. It is composed of the following series:

- 1) *Winding wires – Test methods* (IEC 60851 series);
- 2) *Specifications for particular types of winding wires* (IEC 60317 series);
- 3) *Packaging of winding wires* (IEC 60264 series).

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# SPECIFICATIONS FOR PARTICULAR TYPES OF WINDING WIRES –

## Part 70-2: Polyester glass-fibre wound resin/varnish impregnated, bare or enamelled round copper wire, temperature index 155

### 1 Scope

This part of IEC 60317 specifies the requirements of polyester glass-fibre wound resin/varnish impregnated bare, grade 1 or grade 2 enamelled round copper winding wires, temperature index 155. The impregnating agent can be, for instance, epoxy, polyester, or polyesterimide resin based.

The nominal conductor diameters are specified in Clause 4 of IEC 60317-0-10:2017.

NOTE For this type of wire, the heat shock test is inappropriate and therefore a heat shock temperature cannot be established. Consequently, a class based on the requirements for temperature index and heat shock temperature cannot be specified.

### 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 60317-70-2:2020

IEC 60317-0-10:2017, *Specifications for particular types of winding wires – Part 0-10: General requirements – Polyester glass-fibre wound fused, unvarnished, or resin or varnish impregnated, bare or enamelled round copper wire*

### 3 Terms, definitions, general notes and appearance

#### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60317-0-10:2017 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>

#### 3.2 General notes

##### 3.2.1 Methods of test

Subclause 3.2.1 of IEC 60317-0-10:2017 applies. In case of inconsistencies between IEC 60317-0-10 and this document, the latter shall prevail.



### 3.2.2 Winding wire

The fibre covering shall consist of a combination of polyester and glass fibres. The glass fibres shall be electrical-grade continuous-filament glass yarn. The polyester fibre shall be a high-grade yarn resulting from the linear polymerization of ethylene glycol and terephthalic acid. The maximum content by weight of polyester fibre in the yarn shall not exceed 50 %.

The enamelled wire shall have a temperature index of at least 155 and shall be agreed between purchaser and supplier.

The temperature index of the wire is dependent upon the type of impregnating agent used. The impregnating agent applied to the polyester glass fibre shall have a minimum temperature index of 155.

The coating shall be characterized by the following different grades of thickness:

- PG1: bare conductor with 1 layer of polyester glass fibre or 2 layers of finer polyester glass fibres that together comply with the dimensional requirements in IEC 60317-0-10;
- PG2: bare conductor with 2 layers of polyester glass fibre;
- Grade 1 PG1: enamelled grade 1 (grade 1) with 1 layer of polyester glass fibre (PG1);
- Grade 1 PG2: enamelled grade 1 (grade 1) with 2 layers of polyester glass fibre (PG2);
- Grade 2 PG1: enamelled grade 2 (grade 2) with 1 layer of polyester glass fibre (PG1);
- Grade 2 PG2: enamelled grade 2 (grade 2) with 2 layers of polyester glass fibre (PG2).

### 3.3 Appearance

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Subclause 3.3 of IEC 60317-0-10:2017 applies.

[IEC 60317-70-2:2020](#)

## 4 Dimensions

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Clause 4 of IEC 60317-0-10:2017 applies.

## 5 Electrical resistance

Clause 5 of IEC 60317-0-10:2017 applies.

## 6 Elongation

Clause 6 of IEC 60317-0-10:2017 applies.

## 7 Springiness

Clause 7 of IEC 60317-0-10:2017 applies.

## 8 Flexibility and adherence

Clause 8 of IEC 60317-0-10:2017 applies.

## 9 Heat shock

Test inappropriate.

## **10 Cut-through**

Test inappropriate.

## **11 Resistance to abrasion**

Test inappropriate.

## **12 Resistance to solvents**

Test inappropriate.

## **13 Breakdown voltage**

Clause 13 of IEC 60317-0-10:2017 applies.

## **14 Continuity of insulation**

Test inappropriate.

## **15 Temperature index**

Clause 15 of IEC 60317-0-10:2017 applies.

## **16 Resistance to refrigerants**

Test inappropriate.

## **17 Solderability**

Test inappropriate.

## **18 Heat or solvent bonding**

Test inappropriate.

## **19 Dielectric dissipation factor**

Test inappropriate.

## **20 Resistance to hydrolysis and to transformer oil**

Test inappropriate.

## **21 Loss of mass**

Test inappropriate.

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### **23 Pin hole test**

Test inappropriate.

### **30 Packaging**

Clause 30 of IEC 60317-0-10:2017 applies.

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