

Specifications for particular types of winding wires —

Part 53: Aromatic polyamide (aramid) tape wrapped rectangular copper wire, temperature index 220

The European Standard EN 60317-53:1999 has the status of a
British Standard

ICS 29.060.10

National foreword

This British Standard is the English language version of EN 60317-53:1999. It is identical with IEC 60317-53:1999.

The UK participation in its preparation was entrusted to Technical Committee GEL/55, Winding wires, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

From 1 January 1997, all IEC publications have the number 60000 added to the old number. For instance, IEC 27-1 has been renumbered as IEC 60027-1. For a period of time during the change over from one numbering system to the other, publications may contain identifiers from both systems.

Cross-references

Attention is drawn to the fact that CEN and CENELEC Standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 16 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

This British Standard, having been prepared under the direction of the Electrotechnical Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 October 1999

© BSI 03-2000

ISBN 0 580 35342 7

Amendments issued since publication

Amd. No.	Date	Comments

Contents

	Page
National foreword	Inside front cover
Foreword	2
Text of EN 60317-53	3

English version

Specifications for particular types of winding wires
Part 53: Aromatic polyamide (aramid) tape wrapped
rectangular copper wire, temperature index 220

(IEC 60317-53:1999)

Spécifications pour types particuliers
de fils de bobinage
Partie 53: Fil de section rectangulaire
en cuivre enveloppé par un ruban
polyamide aromatique (aramide),
d'indice de température 220
(CEI 60317-53:1999)

Technische Lieferbedingungen für
bestimmte Typen von Wickeldrähten
Teil 53: Flachdrähte aus Kupfer,
lackisoliert mit aromatischen
Polyamiden, Klasse 220
(IEC 60317-53:1999)

This European Standard was approved by CENELEC on 1999-08-01. 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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

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

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

The text of document 55/665/FDIS, future edition 1 of IEC 60317-53, prepared by IEC TC 55, Winding wires, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60317-53 on 1999-08-01.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2000-05-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2002-08-01

Annexes designated “normative” are part of the body of the standard.

Annexes designated “informative” are given for information only.

In this standard, Annex ZA is normative and Annex A is informative.

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 60317-53:1999 was approved by CENELEC as a European Standard without any modification.

Contents

	Page
Foreword	2
Introduction	3
1 Scope	3
2 Normative references	3
3 Terms, definitions and general notes on methods of test	3
4 Dimensions	4
5 Electrical resistance	7
6 Elongation	7
7 Springiness	7
8 Flexibility and adherence	7
9 Heat shock	7
10 Cut-through	7
11 Resistance to abrasion	7
12 Resistance to solvents	7
13 Breakdown voltage	7
14 Continuity of insulation	7
15 Temperature index	7
16 Resistance to refrigerants	7
17 Solderability	7
18 Heat or solvent bonding	7
19 Dielectric dissipation factor	7
20 Resistance to hydrolysis and transformer oil	7
21 Loss of mass	7
30 Packaging	7
Annex A (informative) Nominal cross-sectional areas for preferred and intermediate sizes	9
Annex ZA (normative) Normative references to international publications with their corresponding European publications	16
Table 1 — Conductor tolerances	4
Table 2 — Nominal cross-sectional areas of preferred sizes	5
Table 3 — Corner radii	6
Table 4 — Elongation requirements	7
Table A.1 — Nominal cross-sectional areas	9

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. The series has three groups describing:

- 1) methods of test (IEC 60851);
- 2) specifications (IEC 60317);
- 3) packaging (IEC 60264).

1 Scope

This part of IEC 60317 specifies requirements for tape wrapped rectangular copper winding wire of temperature index 220. The insulation consists of one or more wrappings of aromatic polyamide (aramid) tape of various thicknesses.

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.

The temperature in degrees Celsius corresponding to the temperature index is not necessarily that at which the wire is recommended to be operated and this will depend on many factors, including the types of equipment involved.

The range of nominal conductor sizes covered by this standard is:

- width: min. 2,00 mm max. 16,00 mm;
- thickness: min. 0,80 mm max. 5,60 mm.

The specified combinations of width and thickness as well as the specified ratio width/thickness are given in Table 1.

When reference is made to winding wire according to this standard, the following information should be given:

- reference to IEC 60317-53;
- dimensions of the conductor;
- reference should also be made to the number and thickness of the papers used and to the degree of overlap, as agreed between purchaser and supplier.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 60317. For dated references subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of IEC 60317 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60172:1987, *Test procedure for the determination of the temperature index of enamelled winding wires*.

IEC 60317-0-2:1997, *Specifications for particular types of winding wires — Part 0: General requirements — Section 2: Enamelled rectangular copper wire*.

IEC 60819-3-3:1991, *Specification for non-cellulosic papers for electrical purposes — Part 3: Specifications for individual materials — Sheet 3: Untilled aramid (aromatic polyamide) papers*.

IEC 60851 (all parts), *Winding wires — Test methods*.

ISO 3:1973, *Preferred numbers — Series of preferred numbers*.

3 Terms, definitions and general notes on methods of test

3.1 Terms and definitions

For the purpose of this part of IEC 60317, the following terms and definitions apply.

3.1.1 class

thermal performance of a wire expressed by the temperature index and the heat shock temperature

3.1.2 conductor

bare metal after removal of the insulation

3.1.3 covering

material which is wound, wrapped or braided around a bare or insulated conductor

3.1.4 crack

opening in the insulation which exposes the conductor to view at the stated magnification