

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Rubber insulated cables – Rated voltages up to and including 450/750 V –
Part 1: General requirements**

**Conducteurs et câbles isolés au caoutchouc – Tension assignée au plus égale
à 450/750 V –
Partie 1: Exigences générales**



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**RUBBER INSULATED CABLES –
RATED VOLTAGES UP TO AND INCLUDING 450/750 V –****Part 1: General requirements**

FOREWORD

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International Standard IEC 60245-1 has been prepared by IEC technical committee 20: Electric cables.

The principal change with respect to the previous edition is the replacement of insulation IE 1 with IE 4. This fourth edition does not constitute a full technical revision.

This consolidated version of IEC 60245-1 consists of the fourth edition (2003) [documents 20/659/FDIS and 20/679/RVD] and its amendment 1 (2007) [documents 20/902/FDIS and 20/909/RVD].

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience.

It bears the edition number 4.1.

A vertical line in the margin shows where the base publication has been modified by amendment 1.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IEC 60245 consists of the following parts, under the general title *Rubber insulated cables – Rated voltages up to and including 450/750 V*:

Part 1: General requirements

Part 2: Test methods

Part 3: Heat resistant silicone insulated cables

Part 4: Cords and flexible cables

Part 5: Lift cables

Part 6: Arc welding electrode cables

Part 7: Heat resistant ethylene-vinyl-acetate rubber insulated cables

Part 8: Cords for applications requiring high flexibility

Parts 3 to 8 are for particular types of cable and should be read in conjunction with Part 1 and Part 2. Further parts may be added as other types are standardized.

The committee has decided that the contents of the base publication and its amendments will remain unchanged until the maintenance result date indicated on the IEC web site under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

RUBBER INSULATED CABLES – RATED VOLTAGES UP TO AND INCLUDING 450/750 V –

Part 1: General requirements

1 General

1.1 Scope

This part of IEC 60245 applies to rigid and flexible cables with insulation, and sheath if any, based on vulcanized rubber of rated voltages U_0/U up to and including 450/750 V used in power installations of nominal voltage not exceeding 450/750 V a.c.

NOTE For some types of flexible cables the term 'cord' is used.

The particular types of cables are specified in IEC 60245-3, IEC 60245-4, etc. The code designations of these types of cables are given in Annex A.

The test methods specified in Parts 1 to 8 are given in IEC 60245-2, IEC 60332-1 and in the relevant parts of IEC 60811.

1.2 Normative references

The following referenced documents are indispensable for the application 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 60173:1964, *Colours of the cores of flexible cables and cords*

IEC 60228:1978, *Conductors of insulated cables*

IEC 60245-2:1994, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 2: Test methods*

IEC 60245-3:1994, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 3: Heat resistant silicone insulated cables*

IEC 60245-4:1994, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 4: Cords and flexible cables*

IEC 60245-7:1994, *Rubber insulated cables – Rated voltages up to and including 450/750 V – Part 7: Heat resistant ethylene-vinyl-acetate rubber insulated cables*

IEC 60332-1:1993, *Tests on electric cables under fire conditions – Part 1: Test on a single vertical insulated wire or cable*

IEC 60811-1-1:1993, *Common test methods for insulating and sheathing materials of electric cables – Part 1: Methods for general application – Section 1: Measurement of thickness and overall dimensions – Tests for determining the mechanical properties*

IEC 60811-1-2:1985, *Common test methods for insulating and sheathing materials of electric cables – Part 1: Methods for general application – Section Two: Thermal ageing methods*

IEC 60811-1-4:1985, *Common test methods for insulating and sheathing materials of electric cables – Part 1: Methods for general application – Section Four: Tests at low temperature*

IEC 60811-2-1:1998, *Insulating and sheathing materials of electric and optical cables – Common test methods – Part 2-1: Methods specific to elastomeric compounds – Ozone resistance, hot set and mineral oil immersion tests*

IEC 60811-3-1:1985, *Common test methods for insulating and sheathing materials of electric cables – Part 3: Methods specific to PVC compounds – Section One: Pressure test at high temperature – Tests for resistance to cracking*

IEC 62440, *Electric cables – Guide to use for cables with a rated voltage not exceeding 450/750V¹*

2 Terms and definitions

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

2.1 Definitions relating to insulating and sheathing materials

2.1.1

type of compound

category in which a compound is placed according to its properties, as determined by specific tests

NOTE The type designation is not directly related to the composition of the compound.

2.1.2

rubber compound

combination of materials suitably selected, proportioned, treated and vulcanized, of which the characteristic constituent is a rubber and/or synthetic elastomer

NOTE Vulcanization is defined as a post-application treatment taking place after the insulation and/or sheath has been applied in order to induce permanent cross-linking of the elastomer.

2.1.3

polychloroprene compound (PCP) or other equivalent synthetic elastomer

vulcanized compound in which the elastomer is polychloroprene or other equivalent synthetic elastomer providing a compound with properties similar to PCP

2.1.4

ethylene-vinyl acetate rubber compound (EVA) or other equivalent synthetic elastomer

cross-linked compound in which the elastomer is ethylene-vinyl acetate or other equivalent synthetic elastomer providing a compound with properties similar to EVA

2.1.5

ethylene-propylene rubber compound (EPR) or equivalent synthetic elastomer

cross-linked compound in which the elastomer is ethylene-propylene or equivalent synthetic elastomer providing a compound with properties similar to EPR

2.1.6

cross-linked polyvinyl chloride (XLPVC)

combinations of materials of which polyvinyl chloride is the characteristic constituent, including adequate cross-linking agents, suitably selected, proportioned and treated which, when cross-linked, meet the requirements given in the particular specification

¹ In preparation.