

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

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**Conductors of insulated cables**

**Ames des câbles isolés**





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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## CONDUCTORS OF INSULATED CABLES

## FOREWORD

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IEC 60228 has been prepared by IEC technical committee 20: Electric cables. It is an International Standard.

This fourth edition cancels and replaces the third edition published in 2004. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) a description of Milliken conductors has been added;
- b) nominal cross-sectional areas above 2 500 mm<sup>2</sup> have been added;

- c) the old 2 500 mm<sup>2</sup> aluminium resistance value has been corrected and a new value introduced.

For legacy systems where the 2 500 mm<sup>2</sup> aluminium conductor was designed taking into account the value presented in previous editions and no longer tabulated, then the original design can be maintained and still utilized.

The suppliers can furthermore utilize such superseded design of 2 500 mm<sup>2</sup> aluminium conductors either in systems already designed and qualified but not delivered or for example to produce repair and additional spare lengths for delivered systems.

The choice of utilizing the original superseded design of 2 500 mm<sup>2</sup> aluminium conductors or a new one based on the new resistance tabulated value is a matter of agreement between the supplier and final users.

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

Draft	Report on voting
20/2125/FDIS	20/2131/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn, or
- revised.

## INTRODUCTION

This document is intended as a fundamental reference standard for IEC technical committees and National Committees in drafting standards for electric cables, and to the National Committees in drafting specifications for use in their own countries. These committees select from the tables of this general standard the conductors appropriate to the particular applications relevant to them and either include the applicable details in their cable specifications or make appropriate references to this document.

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# CONDUCTORS OF INSULATED CABLES

## 1 Scope

This document specifies the nominal cross-sectional areas, in the range 0,5 mm<sup>2</sup> to 3 500 mm<sup>2</sup>, for conductors in electric power cables and cords of a wide range of types. Requirements for numbers and sizes of wires and resistance values are also included. These conductors include solid, stranded and Milliken, copper, aluminium and aluminium alloy conductors in cables for fixed installations and flexible copper conductors.

This document does not apply to conductors for telecommunication purposes.

The applicability of this document to a particular type of cable is as specified in the standard for the type of cable.

Unless specified otherwise in a particular clause, this document relates to the conductors in the finished cable and not to the conductor as made or supplied for inclusion into a cable.

Conductors described in this document are specified in metric sizes.

Informative annexes provide supplementary information covering temperature correction factors for resistance measurement (Annex B) and guidance on dimensional limits of circular conductors (Annex C).

## 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.

IECEE OD-5014, *Instrument Accuracy Limits*

## 3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

### 3.1

#### **metal-coated**

coated with a thin layer of suitable metal, such as tin or tin alloy

### 3.2

#### **nominal cross-sectional area**

value that identifies a particular size of conductor but is not subject to direct measurement

Note 1 to entry: Each particular size of conductor in this document is required to meet a maximum resistance value.