IEC 62262

Edition 1.1 2021-09
CONSOLIDATED VERSION

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts (IK code)

Degrés de protection procurés par les enveloppes de matériels électriques contre les impacts mécaniques externes (Code IK)

IEC 62262:2002-02+AMD1:2021-09 CSV(en-fr)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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DEGREES OF PROTECTION PROVIDED BY ENCLOSURES FOR ELECTRICAL EQUIPMENT AGAINST EXTERNAL MECHANICAL IMPACTS (IK CODE)

FOREWORD

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IEC 62262 edition 1.1 contains the first edition (2002-02) [documents 70/99/FDIS and 70/100/RVD] and its amendment 1 (2021-09) [documents 70/157/FDIS and 70/158/RVD].

In this Redline version, a vertical line in the margin shows where the technical content is modified by amendment 1. Additions are in green text, deletions are in strikethrough red text. A separate Final version with all changes accepted is available in this publication.

International Standard IEC 62262 has been prepared by IEC technical committee 70: Degrees of protection provided by enclosures.

It is based on the CENELEC publication EN 50102.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

The committee has decided that the contents of the base publication and its amendment will remain unchanged until the stability date indicated on the IEC web site under 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- withdrawn,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.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This standard describes a system for classifying the degrees of protection provided by enclosures for electrical equipment against external mechanical impacts. Whilst this system is suitable for use with most types of electrical equipment, it should not be assumed that all the listed degrees of protection are applicable to a particular type of equipment. The manufacturer of the equipment should be consulted to determine the degrees of protection available and the parts of equipment to which the stated degree of protection applies.

The adoption of this classification system, wherever possible, should promote uniformity in the methods of describing the protection provided by the enclosure and in the tests to prove the various degrees of protection. It should also reduce the number of types of test devices necessary to test a wide range of products.

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES FOR ELECTRICAL EQUIPMENT AGAINST EXTERNAL MECHANICAL IMPACTS (IK CODE)

1 Scope

This ~~standard~~ document refers to the classification of the degrees of protection provided by enclosures against external mechanical impacts when the rated voltage of the protected equipment is not greater than 72,5 kV.

~~This standard is only applicable to enclosures of equipment where the specific standard establishes degrees of protection of the enclosure against mechanical impacts (expressed in this standard as "impacts").~~

The object of this ~~standard~~ document is to give

a) the definitions for the degrees of protection provided by enclosures of electrical equipment as regards protection of the equipment inside the enclosure against harmful effects of mechanical impacts;

b) the designations for the degrees of protection;

c) the requirements for each designation;

d) the tests to be performed to verify that the enclosure meets the requirements of this ~~standard~~ document.

It will remain the responsibility of individual technical committees to decide on the extent and manner in which the classification is used in their standards and to define the "enclosure" as it applies to their equipment~~. However, it is recommended~~ and to ensure that~~,~~ for a given classification, the tests do not differ from those specified in this ~~standard~~ document. If necessary, complementary requirements ~~may~~ can be included in the relevant product standard.

For a particular type of equipment, a product committee ~~may~~ can specify different requirements provided that at least the same level of safety is ensured.

This ~~standard~~ document deals only with enclosures that are in all other respects suitable for their intended use as specified in the relevant product standard and which, from the point of view of materials and workmanship, ensure that the claimed degrees of protection are maintained under the normal conditions of use.

~~This standard is also applicable to empty enclosures provided that the general test requirements are met and that the selected degree of protection is suitable for the type of equipment.~~

2 Normative references

The following ~~referenced~~ documents are ~~indispensable for~~ referred to in the ~~application~~ 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 60050(826):1982, *International Electrotechnical Vocabulary – Chapter 826: Electrical installations of buildings*~~

IEC 60068-1~~:1988~~, *Environmental testing – Part 1: General and guidance*

IEC 60068-2-75:1997, *Environmental testing – Part 2: Tests – Test Eh: Hammer tests*

3 Terms and definitions

For the purposes of this standard document, the following terms and definitions 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

3.1
enclosure[1]
part providing protection of equipment against certain external influences and, in any direction, protection against direct contact

[IEV 826-03-12]

Note 1 to entry: This definition from the existing International Electrotechnical Vocabulary (IEV) needs the following explanations under the scope of this standard document:

a) Enclosures provide protection of equipment against harmful effects of mechanical impacts;

b) Barriers, shapes of openings or any other means – whether attached to the enclosure or formed by the enclosed equipment – suitable to prevent or limit the penetration of the specified test probes are considered as a part of the enclosure, except when they can be removed without the use of a key or tool.

[SOURCE: IEC 60529:1989, 3.1, modified – Reference to IEV 826-03-12 has been deleted and the note has been replaced with a new Note 1 to entry.]

3.2
degree of protection against mechanical impacts
the extent (level) of protection of the equipment provided by an enclosure against harmful mechanical impacts and verified by standardised test methods

3.3
IK code
coding system to indicate the degree of protection provided by an enclosure against harmful external mechanical impacts

4 Designations

The degree of protection provided by an enclosure against impacts is indicated by the IK code in the following way:

4.1 Arrangement of the IK code

The degree of protection provided by an enclosure against mechanical impacts is indicated by the IK code in the following way:

IK 05

Codes letters (international mechanical protection)

Characteristic group numeral (00 to 10 11)

[1] This definition is identical to 3.1 of IEC 60529.

4.2 Characteristic group numerals of the IK code and their meanings

Each characteristic group numeral represents an impact energy value as shown in table 1.

Table 1 – Relation between IK code and impact energy

IK code	IK00	IK01	IK02	IK03	IK04	IK05	IK06	IK07	IK08	IK09	IK10	IK11
Impact energy, J	* [a]	0,14	0,2	0,35	0,5	0,7	1	2	5	10	20	50
* [a] Not protected according to this ~~standard~~ document.												
~~NOTE 1 When higher impact energy is required, the value of 50 J is recommended.~~ ~~NOTE 2 A characteristic group numeral of two figures has been chosen to avoid confusion with some national standards which used a single numeral for a specific impact energy.~~												

NOTE IK11 can be specified on special enclosures or protection grids for extremely harsh outdoor applications. It does not substitute the sandbag test when specified in the relevant product standard.

4.3 Application of the IK code

In general, the degree of protection applies to the complete enclosure. If parts of the enclosure have differing degrees of protection, the latter shall be indicated separately.

4.4 Marking

In cases where the relevant product committee decides that the marking of the IK-code shall be required, the marking requirements shall be detailed in the relevant product standard.

Where appropriate, such a standard should also specify the method of marking which is to be used when

– one part of an enclosure has a different degree of protection to that of another part of the same enclosure,

– the mounting position has an influence on the degree of protection.

5 General requirements for tests

5.1 Atmospheric conditions for tests

Unless otherwise specified in the relevant product standard, the test shall be carried out under the standard atmospheric conditions for tests described in IEC 60068-1:

– temperature range: 15 °C to 35 °C,

– air pressure: 86 kPa to 106 kPa (860 mbar to 1 060 mbar).

When the altitude at which the test is performed is higher than 2 000 m, the height of fall shall be adjusted where necessary to result in the specified impact energy.

5.2 Enclosures under test

Each enclosure under test shall be in a clean and new condition, complete with all its parts in place unless otherwise specified in the relevant product standard.

5.3 Specifications to be given in the relevant product standard

The relevant product standard shall specify

– the definition of "enclosure" as it applies to the particular type of equipment;
– the test equipment (e.g. pendulum hammer, spring hammer or vertical hammer, see clause 7);
– the number of samples to be tested;
– the conditions for mounting, assembling and positioning the samples, e.g. by the use of an artificial surface (ceiling, floor or wall), in order to simulate intended service conditions as far as possible;
– the pre-conditioning, if any, which is to be used;
– whether to be tested energised;
– whether to be tested with any moving parts in motion;
– the number of impacts and their points of application (see 6.4).

In the absence of such specifications in the relevant product standard, the conditions of this standard shall apply.

6 Test to verify the protection against mechanical impacts

6.1 The test specified in this standard is a type test.

6.2 In order to verify the protection against mechanical impacts, blows shall be applied to the enclosure to be tested. The devices to be used for this test are described in clause 7.

6.3 During the test the enclosure shall be mounted on a rigid support, according to the manufacturer's instructions for use. A support is considered to be sufficiently rigid if its displacement is less than or equal to 0,1 mm under the effect of an impact directly applied and whose energy corresponds to the degree of protection. Alternative mounting and support, suitable for the product, may be specified in the relevant product standard.

6.4 The number of impacts shall be five on each exposed face unless otherwise specified in the relevant product standard. The impacts shall be evenly distributed on the faces of the enclosure(s) under test. In no case shall more than three impacts be applied in the surroundings of the same point of the enclosure. The relevant product standard shall specify the points of application of impacts.

6.5 Test evaluation

The relevant product standard shall specify the criteria upon which the acceptance or rejection of the enclosure is to be based, particularly

– admissible damages,
– verification criteria relative to the continuity of the safety and reliability of the equipment.

In the absence of these criteria, at least the following acceptance criterion shall apply:

– No damage is accepted that impairs the specified IP code.

7 Test apparatus

The test shall be done by using one of the test apparatus described in IEC 60068-2-75.

The relevant product standard shall specify which types of test apparatus are appropriate.