



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 4942.2-1993

**Degrees of protection provided by enclosures for low-voltage
apparatus**

(English Translation)

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1 Subject Content and Application Scope

This Standard specifies the requirements in classification, grading, marking, definition, testing method, and requalification of enclosure protection degree of low-voltage electrical apparatus (hereinafter referred as to electric apparatus).

This Standard is applicable to enclosure protection grading of electric apparatus.

This Standard is not applicable to protection of electric apparatus against physical damage, explosive / active gas, condensing wet (e.g. dew), mold, damage by insect, etc.

This Standard is also not applicable to stress effect caused by short-circuit operation.

2 Normative References

GB 2900.18 Electrotechnical terminology - Low voltage apparatus GB 14048.1 Low-voltage switchgear and controlgear - General rules

3.1.1 Enclosure

A part providing protection of equipment against certain external influences and, in any direction, protection against direct access or contact to alive part and running part.

3.1.5 Excluded

Preventing certain positions of human body, hand tool, metallic thread / bar, or probe;
and / or, even though accessing, keeping adequate distance to alive part or hazard moving

components (except hazardous parts like smooth moving axle and similar component).

3.1.6 Hazardous part

Accessed or exposed hazardous component.

3.1.7 Hazardous live part

Conducting body or conductive component with electric shock hazard.

3.1.8 Hazardous mechanical part

Moving component with exposure hazard, except smooth rotating axle.

3.1.11 Adequate clearance for protection against direct contact

A distance to prevent contact or approach of an access testing apparatus to a hazardous part.

3.1.12 Access probe

A test probe simulating in a conventional manner a part of a person or a tool, or the like, held by a person to verify adequate clearance from hazardous parts.

3.1.13 Object probe

A test probe simulating a solid foreign object to verify the possibility of ingress into an enclosure

3.1.14 Opening

A gap or aperture in an enclosure which exists or may be formed by the application of a test probe at the specified force.

3.1.15 Besides the terms specified in 3.1~ 3.1.14, the terms and definitions related

to this Standard, specified in GB/T 2900.18 "Electrotechnical terminology - Low voltage apparatus", are applied.

4.1 This Standard specifies electric apparatus enclosure coming with the following

two types.

4.2 This Standard only considers enclosures that meet the design requirements in all aspects; under regular service condition, the materials and craft of the enclosure materials

shall be able to that the properties meet the protection requirement in this Standard.

4.3 The protective measures like barrier, arranged outside of the enclosure in account of personal safety, shall not be deemed as a part of enclosure; the barrier (insulation guard) in enclosure, arranged to prevent solid foreign objects again accessing alive part and moving component, shall be deemed as a part of enclosure.

4.4 On enclosure bottom, bleed hole that may be arranged to prevent water inlet accumulation or dew, must meet the requirements of hole opening / closing, and the diameter of the hole shall not be less than 2.5 mm.

5 Marking

5.1

The marking shall be apparent, easy to identify and difficult to fade away.

5.2

The characteristic letter and numeral to indicate protection degree shall be marked on electric apparatus nameplate; if in a difficulty, they may be marked on

5.4

Where the assembly mode of an electric apparatus affects its protection degree, the manufactory shall mark the pre-determined assembly mode on nameplate, assembly instruction or other relevant documents.

5.5

Common protection degrees stated in Table 1 and Table 2 are detailed in Appendix A.

6.1 Code for degree of protection consists of characteristic letters "IP", two

characteristic numerals and additional letters following them. The first characteristic numeral and the additional letter following this numeral indicate grades of protection type 1, and the second characteristic numeral indicates grades of protection type 2.

7 Test Requirements

7.1

Test specified in this Standard are type tests, which are allowable to carry out in type approval of new product or when the structural change affects protection property.

7.2

The standard ambient conditions for water and dust guard are as.

Temperature. 15~35°C;

7.3 Unless otherwise specified, specimen used each test shall be clean and new one, and all components shall be assembled to complete product for test according to the normal use and assembly conditions specified by the manufactory.

7.4 Generally, tests are carried out under the condition of electric apparatus

energized. otherwise, it shall be specified in corresponding product standard or technical specifications, and arranged with adequate safety measures.

7.7 If the conditions of the second characteristic numeral are required to test, the test shall be done in fresh water. In the test, moisture in enclosure may fractional condense partially, so it shall be avoided deeming dew as water inlet.

7.8 Where the duration of test is determined according to the surface area of an electric apparatus, the error of calculated area is $\pm 10\%$.

8.1 Test for the first characteristic numeral

Testing method and conformity assessment for the characteristic numeral and additional letter following it are detailed in Table 3.