

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

Hand-held motor-operated electric tools – Safety –  
Part 2-6: Particular requirements for hammers

Outils électroportatifs à moteur – Sécurité –  
Partie 2-6: Règles particulières pour les marteaux

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## NORME INTERNATIONALE

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**HAND-HELD MOTOR-OPERATED ELECTRIC TOOLS –  
SAFETY –****Part 2-6: Particular requirements for hammers**

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International Standard IEC 60745-2-6 has been prepared by subcommittee 61F: Safety of hand-held motor-operated electric tools, of IEC technical committee 61: Safety of household and similar electrical appliances.

This consolidated version of IEC 60745-2-6 consists of the second edition (2003) [documents 61F/463/FDIS and 61F/487/RVD], its amendment 1 (2006) [documents 61F/622/FDIS and 61F/630/RVD] and its amendment 2 (2006) [documents 61F/734/FDIS and 61F/754/RVD].

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

It bears the edition number 2.2.

A vertical line in the margin shows where the base publication has been modified by amendments 1 and 2.

The French version of this standard has not been voted upon.

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

This Part 2-6 is to be used in conjunction with the third edition of IEC 60745-1: Safety of hand-held motor-operated electric tools – Part 1: General requirements. When this standard states “addition”, “modification” or “replacement”, the relevant text in Part 1 is to be adapted accordingly.

NOTE in this standard, the following print types are used:

- requirements: in roman type;
- *test specifications: in italic type;*
- notes: in smaller roman type.

Subclauses, tables and figures which are additional to those in Part 1 are numbered starting from 101; additional annexes are lettered AA, BB, etc.

2 | With amendment 2, this Part 2 is established on the basis of the fourth edition (2006) of IEC 60745-1, *Hand-held motor-operated electric tools – Safety – Part 1: General requirements*.

Main changes include editorial modifications to match with the fourth edition of IEC 60745-1, addition of a new safety warning to Clause 8: Marking and instructions, and clarifications in Annex K.

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

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# HAND-HELD MOTOR-OPERATED ELECTRIC TOOLS – SAFETY –

## Part 2-6: Particular requirements for hammers

### 1 Scope

2 This clause of Part 1 is applicable, except as follows:

*Addition:*

This standard applies to hammers.

Tools covered by this standard include but are not limited to percussion and rotary hammers.

### 2 Normative references

This clause of Part 1 is applicable.

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### 2 | 3 Terms and definitions (standards.iteh.ai)

This clause of Part 1 is applicable, except as follows:

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*Additional definitions:* <https://standards.iteh.ai/catalog/standards/sist/6558e4b2-6c0b-4db8-8f5e-526f456d7459/iec-60745-2-6-2003amd1-2006amd2-2008-csv>

#### 3.101

##### **percussion hammer**

tool equipped with a built-in percussion system which is not influenced by the operator

#### 3.102

##### **rotary hammer**

tool equipped with a built-in percussion system which is not influenced by the operator and also has the capability of rotational motion

#### 3.103

##### **rotary hammer with “drill only mode”**

rotary hammer able to rotate only with the percussion system disengaged

### 4 General requirements

This clause of Part 1 is applicable.

### 5 General conditions for the tests

This clause of Part 1 is applicable.



## 6 Void

## 7 Classification

This clause of Part 1 is applicable.

## 8 Marking and instructions

This clause of Part 1 is applicable, except as follows:

### 2 | 8.12.1.1 Addition:

#### Hammer safety warnings

- **Wear ear protectors.** *Exposure to noise can cause hearing loss.*
- **Use auxiliary handle(s), if supplied with the tool.** *Loss of control can cause personal injury.*
- **Hold power tool by insulated gripping surfaces, when performing an operation where the cutting accessory may contact hidden wiring or its own cord.** *Cutting accessory contacting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.*

## 9 Protection against access to live parts

This clause of Part 1 is applicable.

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## 10 Starting

This clause of Part 1 is applicable.

## 11 Input and current

This clause of Part 1 is applicable.

## 12 Heating

This clause of Part 1 is applicable, except as follows:

### 12.4 Replacement:

*The tool is operated intermittently until the temperature stabilises or for 30 cycles, whichever is achieved first, each cycle comprising a period of operation of 30 s and a rest period of 90 s with the tool switched off. During the periods of operation the tool is loaded by means of a brake adjusted so as to attain rated input or rated current, the hammer mechanism being disengaged or removed. At the manufacturer's option, the tool may also be operated continuously until thermal stabilisation. The temperature-rise limit specified for the external enclosure does not apply to the enclosure of the hammer mechanism.*

## 13 Leakage current

This clause of Part 1 is applicable.

## 14 Moisture resistance

This clause of Part 1 is applicable.

## 15 Electric strength

This clause of Part 1 is applicable.

## 16 Overload protection of transformers and associated circuits

This clause of Part 1 is applicable.

## 17 Endurance

This clause of Part 1 is applicable, except as follows:

### 17.2 Replacement:

*Rotary hammers with “drill only mode” are operated at no-load with the impact mechanism disengaged for 12 h at a voltage equal to 1,1 times the rated voltage, and then for 12 h at a voltage equal to 0,9 times rated voltage.*

*Each cycle of operation comprises an “on” period of 100 s and an “off” period of 20 s, the “off” periods being included in the specified operating time.*

*During the test, the tool is placed in three different positions, the operating time, at each voltage, being approximately 4 h for each position.*

NOTE The change of position is made to prevent abnormal accumulation of carbon dust in any particular place. Examples for the three positions are horizontal, vertically up and vertically down.

*All hammers, including hammers with drill only mode, are mounted vertically in a test apparatus as shown in Figure 103 and are operated at rated voltage or at the mean value of the rated voltage range, for four periods of 6 h each, the interval between these periods being at least 30 min.*

*During these tests, hammers are operated intermittently, each cycle comprising a period of operation of 30 s and a rest period of 90 s during which the tool remains switched off.*

*During the tests, an axial force to ensure steady operation of the impact mechanism is applied to the hammer through a resilient medium.*

*If the temperature rise of any part of the tool exceeds the temperature rise determined during the test of 12.1, forced cooling or rest periods are applied, the rest periods being excluded from the specified operating time.*

*During these tests, overload protection devices shall not operate.*

*The tool may be switched on and off by means of a switch other than that incorporated in the tool.*

*During these tests, replacement of the carbon brushes is allowed, and the tool is oiled and greased as in normal use.*

*If the impact mechanism fails mechanically during the test without causing an accessible part to become live it may be replaced by a new one.*

## 18 Abnormal operation

This clause of Part 1 is applicable.

## 19 Mechanical hazards

This clause of Part 1 is applicable, except as follows:

*Additional subclauses:*

**19.101** Chuck keys shall be so designed that they drop easily out of position when released.

This requirement does not exclude the provision of clips for holding the key in place when not in use; metal clips fixed to the flexible cable or cord are not allowed.

*Compliance is checked by inspection and manual test.*

*The key is inserted in the chuck and, without tightening, the tool is turned such that the key is facing down. The key shall fall out.*

**19.102** The force on the hand due to the static stalling torque shall not be excessive.

*Compliance is checked by the following test.*

*Static stalling torque or slip torque of a clutch is measured on the locked output spindle of the tool in the cold condition ( $M_R$ ).*

*The tool is connected to rated voltage. The mechanical gears are adjusted to the lowest speed. Electronic regulators are adjusted to their maximum speed setting. The tool switch is to be in the full “on” position. The mean value of the torque measured shall not exceed the relevant maximum value ( $M_{Rmax}$ ) in Figure 101 and Figure 102.*

## 20 Mechanical strength

This clause of Part 1 is applicable, except as follows:

### 20.3 Replacement:

*Hammers up to 10 kg shall withstand being dropped three times in total on a concrete surface from a height of 1 m. For these three drops, the sample shall be tested in the three most unfavourable positions and the lowest point of the tool shall be 1 m above the concrete surface. For the test, separable accessories are not mounted.*

*Hammers exceeding 10 kg are subjected to three impacts that result from the tool being tipped over to strike a concrete surface. The tool is tipped with the longest accessory recommended by the manufacturer except when the recommended accessory is longer than 1 m. In this case, the tools are tested with a 1 m accessory. The tool is positioned in an upright position with the tip of the accessory resting on a concrete surface. The tool is then tipped in three different directions on to the concrete surface.*

**20.5 Replacement:**

Hammers are regarded as tools that are likely to cut into concealed wiring or their own cord. Therefore, handles and grasping surfaces, as specified in the instruction manual, shall have adequate mechanical strength in order to provide insulation between the grasping area and the output shaft.

*Compliance is checked by the following test:*

*A separate sample, at the discretion of the manufacturer, is to be subjected to a single impact on each handle and each recommended grasping surface.*

*For hammers up to 10 kg, the impacts are carried out from a height of 1 m onto a concrete surface.*

*For hammers exceeding 10 kg, the impacts are carried out by tipping the tool over to strike the concrete surface. The tool is tipped with the longest accessory recommended by the manufacturer except when the recommended accessory is longer than 1 m. In this case, the tool is tested with a 1 m accessory.*

*The impacts are followed by an electric strength test according to Clause 15 using 1 250 V a.c. between the grasping surfaces in contact with foil and the output shaft of the tool.*

**21 Construction**

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This clause of Part 1 is applicable, except as follows:

**21.18 Addition:** [IEC 60745-2-6:2003+AMD1:2006+AMD2:2008 CSV](https://standards.iteh.ai/catalog/standards/sist/6558e4b2-6c0b-4db8-8f5e-150150150150/iec-60745-2-6-2003-amd1-2006-amd2-2008-csv)  
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Percussion hammers and rotary hammers operating in the percussion mode may have a switch with a locking arrangement to lock it in the "on" position. For these tools, the switch shall unlock automatically with a single motion without releasing the grasp on the tool.

*Compliance is checked by inspection and by a manual test.*

For rotary hammers, a switch lock-on device, if any, shall be located outside the grasping area or so designed that it is not likely to be unintentionally locked on by the user's hand during intended left- or right-handed operation. This grasping area is considered to be the contact area between either hand and the tool while the index finger of that hand is resting on the switch actuator of the tool.

*Compliance is checked by inspection or by the following test.*

*For a switch with a lock-on button device within the grasping area, the lock-on device shall not be actuated by a straight-edged utensil when the utensil is made to pass back and forth across the device in any direction. The straight edge of the utensil shall be of sufficient length to bridge the surface of the lock-on device and any surface adjacent to the lock-on device.*

**22 Internal wiring**

This clause of Part 1 is applicable.

**23 Components**

This clause of Part 1 is applicable.