



**SLOVENSKI STANDARD**  
**SIST EN 50260-1:2002**  
**01-september-2002**

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Safety of hand-held battery-powered motor-operated tools and battery packs -- Part 1:  
 General requirements

Sicherheit für handgeführte akkubetriebene Elektrowerkzeuge und Akkublöcke -- Teil 1:  
 Allgemeine Anforderungen

**iTeh STANDARD PREVIEW**

Sécurité des outils électroportatifs alimentés sur batterie et des blocs de batteries --  
 Partie 1: Règles générales

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Ta slovenski standard je istoveten z: **EN 50260-1:2002**

**ICS:**

25.140.20	Ò ` dā } æ   [ āæ	Electric tools
29.220.20	Sā   ā • \ ā ^ \ } āæ } ā   ^ } æ àæ   ā	Acid secondary cells and batteries

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EUROPEAN STANDARD

**EN 50260-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English version

**Safety of hand-held battery-powered motor-operated tools  
and battery packs  
Part 1: General requirements**

Sécurité des outils électroportatifs  
alimentés sur batterie  
et des blocs de batteries  
Partie 1: Règles générales

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akkubetriebene Elektrowerkzeuge  
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This European Standard was approved by CENELEC on 2002-03-05. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

**CENELEC**

European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

**Central Secretariat: rue de Stassart 35, B - 1050 Brussels**

## Foreword

This European Standard has been prepared by the Technical Committee CENELEC TC 61F, Hand-held and transportable electric motor-operated tools.

A first draft was submitted to the Unique Acceptance Procedure in August 1996 with positive results. A second draft incorporating the editorial comments received during the UAP and the modifications necessary to incorporate the mechanical requirements which have been agreed for hand-held tools, was submitted to the formal vote in November 1999 and was approved on 2000-08-01.

Based on comments received from directive consultants, a further draft was submitted to a 2 months' vote and was approved by CENELEC as EN 50260-1 on 2002-03-05.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2003-03-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 2005-03-01

Other standards referred to in this European Standard are listed in annex F. The annex lists the valid edition of those documents at the time of issue of this EN. All references are however to be understood as references to the latest edition.

This European Standard is divided into two parts:

- Part 1: General requirements which are common to most hand-held battery powered motor operated tools (for the purpose of this European Standard referred to simply as tools).
- Part 2: Requirements for particular types of tool which either supplement or modify the requirements given in Part 1 to account for the particular hazards and characteristics of these specific tools.

This European Standard has been prepared under a mandate given to CEN and CENELEC by the European Commission and the European Free Trade Association and supports the essential health and safety requirements of the Machinery Directive.

Compliance with the clauses of Part 1 together with a relevant Part 2 of this standard provides one means of conforming with the essential health and safety requirements of the Directive.

A relevant Part 2 is one in which the type of the tool or an accessory which is to be used with the tool is within the scope of that Part 2.

When a relevant Part 2 does not exist, Part 1 can help to establish the requirements for the tool, but will not by itself provide a means of conforming with the relevant essential health and safety requirements of the Machinery Directive.

**Warning:** Other requirements and other EC Directives can be applicable to the products falling within the scope of this standard.

Hand held motor-operated tools are covered by the EN 50144 series. In order to be consistent with the EN 50144 series, the same order of clauses has been kept; the missing clauses are considered void.

CEN Technical Committees have produced a range of standards dealing with a similar range of non-electrically powered tools. Where necessary normative references are made to these standards in the relevant Part 2.

This standard follows the overall requirements of EN 292-1 and EN 292-2.

NOTE In this standard the following print types are used:

- Requirements proper;
- *Test specifications*;
- Explanatory matter.

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## 1 Scope

This standard applies to hand-held rechargeable battery-powered, motor-operated or magnetically driven tools intended for indoor or outdoor use designed for use by one person and the battery packs for such tools including those intended to be charged from chargers with a non-isolated output with an output voltage of not more than 250 volts.

Battery operated tools which can be operated while connected to the mains shall also comply with EN 50144-1.

This Part 1 is to be used in conjunction with the appropriate Part 2, which contains clauses which supplement or modify the corresponding clauses in Part 1 to provide the complete requirement for each sort of tool.

It also applies, as far as is reasonable, to tools not mentioned in Part 2 and to those designed on basically new principles in which case additional requirements may be necessary.

This standard covers tools which can be used in a fixed support. Unless the requirement for such a support is given in a relevant Part 2, this standard alone will not be sufficient to ensure that the combination of tool and support is adequate.

Tools or battery packs incorporating battery chargers are also within the scope of this standard but such tools and packs are also required to comply with EN 60335-2-29.

This standard does not apply to:

- tools used for preparing or processing food;
- tools used in explosive atmospheres.

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It does not apply to a general purpose battery that may be purchased and installed by the user.

It does not apply to battery chargers.

Battery chargers with an output at safety extra-low voltage are covered by EN 60335-2-29.

## 2 Definitions

### 2.1

#### **(hand-held) tool**

battery powered motor-operated or magnetically driven machine intended to do mechanical work and so designed that the motor and the machine form an assembly which together with its battery or battery pack can easily be brought to its place of operation and which is held in the hand during operation

### 2.2

#### **rated no-load speed**

no-load speed at rated voltage or at the upper limit of the rated voltage range, assigned to the tool by the manufacturer

### 2.3

#### **rated voltage**

voltage assigned to the tool or battery pack by the manufacturer

### 2.4

#### **rated voltage range**

voltage range assigned to the tool or battery pack by the manufacturer

**2.5****fully charged battery**

battery or battery pack which has been through at least two charge and discharge cycles with an interval of at least two hours between cycles and is then fully charged in accordance with the manufacturers instructions

**2.6****battery pack**

self contained assembly of one or more secondary cells which is detachable from the tool for recharging or replacement

**2.7****detachable part**

part which can be removed or opened without the aid of a tool or a part the manufacturer instructs the user to remove even if the use of a tool is needed for removal

**2.8****use of a tool; aid of a tool**

expression to indicate the use of a screwdriver, coin or any other object which may be used to operate a screw or other fixing means

**2.9****charger with non-isolated output**

battery charger in which the output voltage for charging a battery is not isolated from the mains supply by means of a safety isolating transformer

**2.10****safety isolating transformer**

transformer, the input winding of which is electrically separated from the output winding by an insulation at least equivalent to double or reinforced insulation and which is designed to supply an output voltage at safety extra-low voltage

**2.11****safety extra-low voltage**

voltage not exceeding 42 V between conductors and between conductors and earth, the no-load voltage not exceeding 50 V

**2.12****type 1 battery pack or tool**

construction where the battery is intended to be charged by means of a charger with non-isolated output

**2.13****type 2 battery pack or tool**

construction where the battery is intended to be charged from a battery charger where the output is isolated from the mains supply by means of a safety isolating transformer (see EN 60335-2-29)

**2.14****basic insulation**

insulation applied to live parts to provide basic protection against electric shock

NOTE Basic insulation does not necessarily include insulation used exclusively for functional purposes.

**2.15****supplementary insulation**

independent insulation applied in addition to the basic insulation, in order to provide protection against electric shock in the event of a failure of the basic insulation



**2.16****double insulation**

insulation system comprising both basic insulation and supplementary insulation

**2.17****reinforced insulation**

single insulation applied to live parts, which provides a degree of protection against electric shock equivalent to double insulation under the conditions specified in this standard

NOTE It is not implied that the insulation is one homogeneous piece. The insulation may comprise several layers which cannot be tested singly as supplementary insulation or basic insulation.

**2.18****class II construction**

part of a tool or battery pack for which protection against electric shock relies upon double insulation or reinforced insulation

**2.19****accessible part**

part or surface which can be touched by means of the test finger shown in Figure 1, including any conductive part connected to accessible metal parts

**2.20****creepage distance**

shortest path between two conductive parts or between a conductive part and the accessible surface of the tool or battery pack, measured along the surface of the insulating material

**2.21****clearance**

shortest distance between two conductive parts or between a conductive part and the accessible surface of the tool or battery pack, measured through air

**3 General requirements**

Tools shall be so designed and constructed that in normal use they function safely and cause no danger to persons or surroundings, even in the event of such careless use as may occur in normal service.

The materials used for the construction of the tool shall not introduce additional hazards during the use or disposal of the tool.

*In general, compliance is checked by carrying out all the relevant tests.*

**4 General conditions for the tests**

**4.1** *Tests according to this standard are type tests.*

**4.2** *Unless otherwise specified, the tests are made on a single sample as supplied which shall withstand all the relevant tests.*

**4.2.1** *If the tool is designed for different supply voltages, speeds, etc., more than one sample may be required.*

**4.2.2** *The testing of components may necessitate the submission of additional samples of these components. When the submission of such samples is necessary, they should be submitted together with the tool.*

**4.3** Unless otherwise specified, the tests are carried out in the order of the clauses of this standard.

Before testing is started, the tool is operated with a fully charged battery in order to verify that it is in working order.

**4.4** Unless otherwise specified, the tests are carried out at an ambient temperature of  $(20 \pm 5)$  °C, the tool being placed in the most unfavourable position which may occur in normal use.

**4.5** Unless otherwise specified, a fully charged battery shall be used for each test. Where consecutive tests on the same battery are specified, there shall be a minimum of 1 min rest time between tests.

**4.6** Tools provided with a regulating device or a similar control, shall be tested with these controls adjusted to their most unfavourable setting within the range specified by the manufacturer for the particular application, if the setting can be altered by the user.

Adequate sealing is regarded as preventing alteration of the setting by the user.

If the adjusting means of the control is accessible without the aid of a tool, this subclause applies whether the setting can be altered by hand or with the aid of a tool; if the adjusting means is not accessible without the aid of a tool, this subclause applies only if the setting can be altered by hand.

**4.7** Tools intended to be used with a non-detachable flexible cable or cord shall be tested with the flexible cable or cord connected to the tool.

**4.8** Tools for which alternative accessories are available shall be tested with that accessory within the manufacturer's specification which gives the most unfavourable results.

For accessories performing a function which is within the scope of one of the Part 2's, the tests are made in accordance with that Part 2.

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**4.9** If a torque is to be applied, the method of loading shall be chosen so as to avoid additional stresses, such as those caused by side thrust. Additional loads necessary for the correct operation of the tool shall however be taken into consideration.

## 5 Rating

The maximum rated voltage for tools and battery packs is 75 V d.c. or 50 V a.c.

## 6 Void

## 7 Marking and information for use

**7.1** Tools shall be marked with

- rated voltage(s) or rated voltage range(s) in Volts,
- symbol for nature of supply, if applicable,
- manufacturer's name or trade mark,
- manufacturer's address or country of origin,
- manufacturer's model or type reference and serial number (if any),
- symbol for Class II construction, if type 1,
- symbol for degree of protection against moisture, if applicable,
- rated no-load speed in revolutions per minute.

Additional markings are allowed, provided they do not give rise to misunderstanding.

**7.2** Battery packs shall be marked with

- rated voltage or rated voltage range, in volts,
- symbol for nature of supply, if applicable,
- manufacturer's name or trade mark,
- manufacturer's model or type reference,
- symbol for Class II construction, if type 1.

**7.3** If a cell or a battery is intended to be replaced by the user and it is possible for it to be put in a reverse polarity then the correct location and polarity shall be marked at its intended location.

**7.4** If the tool can be adjusted to suit different rated voltages, the voltage to which it is adjusted shall be easily and clearly discernible.

**7.5** At least the following symbols shall be used as appropriate.

$n_0$ .....	Rated no load speed
V .....	Volts
A .....	Amperes
W .....	Watts
h.....	Hours
min.....	Minutes
s .....	Seconds
$\text{min}^{-1}$ or .../min.....	Revolutions or reciprocations per minute
$\sim$ .....	Alternating current
$\equiv$ .....	Direct current
 .....	Class II construction

The symbol for nature of supply shall be placed next to the marking for rated voltage. The dimensions of the symbol for Class II construction shall be such that the length of the sides of the outer square is about twice the length of the sides of the inner square. The length of the sides of the outer square shall not be less than 5 mm, unless the largest dimension of the tool does not exceed 15 cm, in which case the dimensions of the symbol may be reduced, but the length of the sides of the outer square shall not be less than 3 mm.

The symbol for Class II construction shall be so placed that it will be obvious that it is a part of the technical information and is unlikely to be confused with any other marking.

**7.6** For tools that might cause danger when started unexpectedly, the „off“ position of the mains switch shall be indicated unless this position is obvious to the user; the indication, if required, shall be the figure 0.

The figure 0 shall not be used for any other indication.

**7.7** Regulating devices and the like, intended to be adjusted during operation of the tool, shall be provided with an indication for the direction of adjustment to increase or to decrease the value of the characteristic being adjusted.

This requirement does not apply to regulating devices provided with reciprocating adjusting means, if its „fully-on“ position is opposite to its „off“ position.

If figures are used for indicating the different positions, the „off“ position shall be indicated by the figure 0 and the position of a greater output, input, speed, etc., shall be indicated by a higher figure.

An indication of + and - is considered to be sufficient.

The indications for the different positions of the operating means of a control device need not be placed on the device itself.

**7.8** The tool shall be accompanied by an instruction sheet, relevant to the tool concerned, in one of the official languages of the country in which it is to be sold.

**7.8.1** The instruction sheet shall include at least the following:

- the name and address of the manufacturer or the country of origin;
- a repeat of the safety markings (e.g. maximum speed, capacity, etc.) that are to be marked on the tool and for those with separate battery packs its part number;
- an explanation of any symbols or pictograms marked on the tool relevant to safe use;
- instruction related to safe use including normal operating conditions, assembly, adjustment, maintenance, etc. and draw attention to ways in which the tool shall not be used;
- list of accessories to be used with the tool;
- warnings against leakage of electrolyte under extreme conditions and information on action to be taken (e.g. flush with water/neutralizing agent, seek medical help if it comes in contact with the eyes etc.);
- the vibration level, if applicable, according to EN 292-2, subclause A.2.2 (measured in accordance with 13.3);
- the declared noise emission according to EN 292-2, subclause A.1.7.4f (measured in accordance with 13.2);
- a recommendation for the operator to wear hearing protection;
- details of the battery charger to be used;
- if necessary, instructions concerning the use of personal protective equipment.

**7.8.2** The general safety instructions shall include the substance of the following text, as appropriate.

**WARNING!** When using battery operated tools, basic safety precautions should always be followed to reduce the risk of fire, leaking batteries and personal injury, including the following:  
Read all these instructions before operating this product and save these instructions.

For safe operations:

- 1 Keep work area clean
  - Cluttered areas and benches invite injuries.
- 2 Consider work area environment
  - Do not expose tools to rain. Do not use tools in damp or wet locations. Keep work area well lit. Do not use tools where there is risk to cause fire or explosion.
- 3 Keep children away
  - Do not let visitors touch the tool. All visitors should be kept away from work area.
- 4 Store batteries or idle tools
  - When not in use, tools and batteries should be stored separately in a dry, high or locked up place, out of reach of children.
  - Ensure that battery terminals cannot be shorted by other metal parts such as screws nails etc.
- 5 Do not force the tool
  - It will do the job better and safer at the rate for which it was intended.
- 6 Use the right tool
  - Do not force small tools or attachments to do the job of a heavy duty tool. Do not use tools for purposes not intended.
- 7 Dress properly
  - Do not wear loose clothing or jewellery, they can be caught in moving parts. Rubber gloves and non-skid footwear are recommended when working outdoors. Wear protecting hair covering to contain long hair.
- 8 Use safety glasses
  - Also use face or dust mask if the cutting operation is dusty.
- 9 Connect dust extraction equipment
  - If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.

- 10 Do not abuse the supply cord (if fitted)
- Never carry the tool by the cord or yank it to disconnect it from the socket. Keep the cord away from heat, oil and sharp edges.
- 11 Secure work
- Use clamps or a vice to hold the work. It is safer than using your hand and it frees both hands to operate the tool.
- 12 Do not overreach
- Keep proper footing and balance at all times.
- 13 Maintain tool with care
- Keep cutting tools sharp and clean for better and safer performance. Follow instructions for lubrication and changing accessories. Inspect tool cord periodically and if damaged have it repaired by an authorized service facility. Keep handles dry, clean and free from oil and grease.
- 14 Disconnect tools
- Where the designs permits, disconnect the tool from its battery pack when not in use, before servicing and when changing accessories such as blades, bits and cutters.
- 15 Remove adjusting keys and wrenches
- Form the habit of checking to see that keys and adjusting wrenches are removed from the tool before turning it on.
- 16 Avoid unintentional starting
- Do not carry the tool with a finger on the switch.
- 17 Stay alert
- Watch what you are doing. Use common sense. Do not operate the tool when you are tired.
- 18 Check damaged parts
- Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, free running of moving parts, breakage of parts, mounting and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced by an authorized service centre unless otherwise indicated in this instruction manual. Have defective switches replaced by an authorized service facility. Do not use the tool if the switch does not turn it on and off.
- 19 Warning
- The use of any accessory or attachment, other than those recommended in this instruction manual, may present a risk of personal injury.
  - Ensure that the battery pack is correct for the tool.
  - Ensure that the outside surface of battery pack or tool is clean and dry before plugging into charger.
  - Ensure that batteries are charged using the correct charger recommended by the manufacturer. Incorrect use may result in a risk of electric shock, overheating or leakage of corrosive liquid from the battery.
- 20 Have your tool repaired by a qualified person
- This tool is in accordance with the relevant safety requirements. Repairs should only be carried out by qualified persons using original spare parts, otherwise this may result in considerable danger to the user.
- 21 Disposal of battery
- Ensure battery is disposed of safely as instructed by the manufacturer.
- 22 If under abusive conditions, liquid is ejected from the battery, avoid contact
- If this accidentally occurs, flush with water. If liquid contacts eyes additionally, seek medical help.