

**BS EN 62841-1:2015**

*Incorporating corrigendum October 2015*



**BSI Standards Publication**

# **Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery — Safety**

Part 1: General requirements

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### National foreword

This British Standard is the UK implementation of EN 62841-1:2015. It is derived from IEC 62841-1:2014, incorporating corrigenda May 2014 and October 2015. It supersedes BS EN 60745-1:2009+A11:2010 and BS EN 61029-1:2009+A11:2010. However, BS EN 60745-1:2009+A11:2010 and BS EN 61029-1:2009+A11:2010 remain valid until all parts of the BS EN 62841-2 and BS EN 62841-3 series have been published.

NOTE: The BS EN 62841 series supersedes the BS EN 60745 series, the BS EN 61029 series and parts of the BS EN 60335 series (for lawn and garden machinery).

The CENELEC common modifications have been implemented at the appropriate places in the text. The start and finish of each common modification is indicated in the text by tags **[C]** **[C]**.

IEC corrigendum May 2014 corrects the first row of the Table 12.

The UK participation in its preparation was entrusted to Technical Committee CPL/116, Safety of motor-operated electric tools.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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### Compliance with a British Standard cannot confer immunity from legal obligations.

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### Amendments/corrigenda issued since publication

Date	Text affected
31 December 2015	Implementation of IEC corrigendum October 2015 with CENELEC endorsement AC:2015: Subclause 5.19 modified

EUROPEAN STANDARD

**EN 62841-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 25.140.20

Incorporating corrigendum October 2015

English Version

**Electric motor-operated hand-held tools, transportable tools and  
lawn and garden machinery - Safety - Part 1: General  
requirements  
(IEC 62841-1:2014 + corrigendum May 2014, modified)**

Outils électroportatifs à moteur, outils portables et machines  
pour jardins et pelouses - Sécurité - Partie 1: Règles  
générales  
(IEC 62841-1:2014 + corrigendum May 2014, modifiée)

Elektrische motorbetriebene handgeführte Werkzeuge,  
transportable Werkzeuge und Rasen- und  
Gartenmaschinen - Sicherheit - Teil 1: Allgemeine  
Anforderungen  
(IEC 62841-1:2014 + corrigendum May 2014, modifiziert)

This European Standard was approved by CENELEC on 2015-06-15. 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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.



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

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Foreword

The text of document 116/156/FDIS, future edition 1 of IEC 62841-1, prepared by IEC/TC 116 "Safety of motor-operated electric tools" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN 62841-1:2015.

A draft amendment, which covers common modifications to IEC 62841-1, was prepared by CLC/TC 116 "Safety of motor-operated electric tools" and approved by CENELEC.

The following dates are fixed:

- latest date by which this document has to be implemented (dop) 2016-06-15  
at national level by publication of an identical  
national standard or by endorsement
- latest date by which the national standards conflicting (dow) -  
with this document have to be withdrawn

The EN 62841 series supersedes the EN 60745 series, the EN 61029 series and (for lawn and garden machinery) parts of the EN 60335 series.

This European Standard replaces EN 60745-1:2009 and EN 61029-1:2009. However, EN 60745-1:2009 and EN 61029-1:2009 remain valid until all Part 2's which are used in conjunction with them have been withdrawn. No date of withdrawal (dow) has been given pending the updating of all the Part 2's to align with this EN 62841-1:2015 as respective Part 2's and Part 3's. The applicable date of withdrawal is given in each Part 2 and Part 3. It is intended the dow for this Part 1 will be fixed once all the Part 2's and Part 3's have been published.

EN 62841-1:2015 includes the following significant technical changes:

- requirements in various clauses introduced or modified in order to include the requirements for transportable tools and lawn and garden machinery (formerly covered by EN 61029-1 and EN 60335-1);
- leakage current test and electric strength test moved from former Clauses 13 and 15 to Annexes C and D;
- former Clauses 29, 30 and 31 renumbered to become Clauses 6, 13 and 15;
- requirements for electronic safety critical functions added to Clause 18;
- requirements for switches revised and moved from Annex I to Clause 23;
- clarifications in respect to soft materials (elastomers) added to Clauses 9, 19 and 13;
- test finger in Figure 1 of EN 60745-1 and test probe in Figure 2 of EN 60745-1 replaced by references to basic IEC standards;
- requirements for Li-ion battery systems added to Annexes K and L;
- Annex M removed.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s), see informative Annex ZZ, which is an integral part of this document.

This European Standard is divided into four parts:

Part 1: General requirements which are common to most electric motor operated tools (for the purpose of this standard referred to simply as tools) which could come within the scope of this standard;

Part 2, 3 or 4: Requirements for particular types of tools which either supplement or modify the requirements given in Part 1 to account for the particular hazards and characteristics of these specific tools.

This Part 1 is to be used in conjunction with the appropriate parts of EN 62841-2, EN 62841-3 or EN 62841-4 which contain clauses that supplements or modify the corresponding clauses in Part 1 to provide the relevant requirements for each type of product.

Compliance with the relevant clauses of Part 1 together with a relevant Part 2, 3 or 4 of this standard provides one means of conforming with the essential health and safety requirements of the Directive concerned.

A relevant Part 2, 3 or 4 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, 3 or 4.

When a relevant Part 2, 3, or 4 does not exist, Part 1 can help to establish the requirements for the tool, but will not by itself provide a means of conforming to the relevant essential health and safety requirements of the Machinery Directive.

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

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, 3 or 4.

This European Standard follows the overall requirements of EN ISO 12100.

NOTE 1 In this standard, the following print types are used:

- requirements proper; in roman type
- *test specifications: in italic type;*
- explanatory matter: in smaller roman type.

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

NOTE 2 In Annexes B, K and L, subclauses which are additional to those in the main body of the text are numbered starting from 201.

NOTE 3 Clauses, subclauses, notes, tables, figures and annexes which are additional to those in IEC 62841-1:2014 are prefixed "Z".

### **Endorsement notice**

The text of the International Standard IEC 62841-1:2014 + corrigendum May 2014 was approved by CENELEC as a European Standard with agreed common modifications.

### **Endorsement notice**

The text of the corrigendum IEC 62841-1:2014/COR2:2015 was approved by CENELEC as EN 62841-1:2015/AC:2015 without any modification.

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu)

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60061	Series	Lamp caps and holders together with gauges for the control of interchangeability and safety	EN 60061	Series
IEC 60065 (mod) + corr. August + A1 (mod) + A2 (mod)	2001 2002 2005 2010	Audio, video and similar electronic apparatus - Safety requirements	EN 60065 + corr. August + A1 + A2	2002 <sup>1)</sup> 2007 <sup>1)</sup> 2006 <sup>1)</sup> 2010 <sup>1)</sup>
-	-		+ A11	2008 <sup>1)</sup>
-	-		+ A12	2011 <sup>1)</sup>
IEC 60068-2-75	1997	Environmental testing Part 2-75: Tests - Test Eh: Hammer tests	EN 60068-2-75	1997 <sup>2)</sup>
IEC/TR 60083	-	Plugs and socket-outlets for domestic and similar general use standardized in member countries of IEC	-	-
IEC 60085	2007	Electrical insulation - Thermal evaluation and designation	EN 60085	2008
IEC 60127	Series	Miniature fuses	EN 60127	Series
IEC 60227	Series	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V	-	-
IEC 60238	-	Edison screw lampholders	EN 60238	-
IEC 60245	Series	Rubber insulated cables - Rated voltages up to and including 450/750 V	-	-
IEC 60252-1	-	AC motor capacitors Part 1: General - Performance, testing and rating - Safety requirements - Guidance for installation and operation	EN 60252-1	-
IEC 60320	Series	Appliance couplers for household and similar general purposes	EN 60320	Series

<sup>1)</sup> Superseded by EN 60065:2014 (IEC 60065:2014): DOW = 2017-11-17.

<sup>2)</sup> Superseded by EN 60068-2-75:2014 (IEC 60068-2-75:2014): DOW = 2017-10-08. 

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60320-1	-	Appliance couplers for household and similar general purposes Part 1: General requirements	EN 60320-1	-
IEC 60335-1 (mod) + corr. July + corr. April	2010 2010 2011	Household and similar electrical appliances - Safety Part 1: General requirements	EN 60335-1	2012
IEC 60384-14	-	Fixed capacitors for use in electronic equipment Part 14: Sectional specification - Fixed capacitors for electromagnetic interference suppression and connection to the supply mains	EN 60384-14	-
IEC 60417 DB	-	Graphical symbols for use on equipment	-	-
IEC 60529  + A1 + A2	1989  1999 2013	Degrees of protection provided by enclosures (IP Code)	EN 60529 + corr. May + A1 + A2	1991 1993 2000 2013
IEC 60664-1	-	Insulation coordination for equipment within low-voltage systems Part 1: Principles, requirements and tests	EN 60664-1	-
IEC 60695-2-11 + corr. January	2000 2001	Fire hazard testing Part 2-11: Glowing/hot-wire based test methods - Glow-wire flammability test method for end-products	EN 60695-2-11	2001 <sup>3)</sup>
IEC 60695-2-13 + corr. February	2010 2012	Fire hazard testing Part 2-13: Glowing/hot-wire based test methods - Glow-wire ignition temperature (GWIT) test method for materials	EN 60695-2-13	2010
IEC 60695-10-2 + corr. February	2003 2006	Fire hazard testing Part 10-2: Abnormal heat - Ball pressure test	EN 60695-10-2	2003 <sup>4)</sup>
IEC 60695-11-10	2013	Fire hazard testing Part 11-10: Test flames - 50 W horizontal and vertical flame test methods	EN 60695-11-10	2013
IEC 60730-1 (mod)	2010	Automatic electrical controls for household and similar use Part 1: General requirements	EN 60730-1	2011
IEC 60825-1	2007	Safety of laser products Part 1: Equipment classification and requirements	EN 60825-1	2007 <sup>5)</sup>
IEC 60884	Series	Plugs and socket-outlets for household and similar purposes	-	-
IEC 60906-1	-	IEC system of plugs and socket-outlets for household and similar purposes Part 1: Plugs and socket-outlets 16 A 250 V a.c.	-	-

<sup>3)</sup> Superseded by EN 60695-2-11:2014 (IEC 60695-2-11:2014): DOW = 2017-03-13.

<sup>4)</sup> Superseded by EN 60695-10-2:2014 (IEC 60695-10-2:2014): DOW = 2017-03-26.

<sup>5)</sup> Superseded by EN 60825-1:2014 (IEC 60825-1:2014): DOW = 2017-06-19. 



<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60990	1999	Methods of measurement of touch current and protective conductor current	EN 60990	1999
IEC 60998-2-1	-	Connecting devices for low-voltage circuits for household and similar purposes Part 2-1: Particular requirements for connecting devices as separate entities with screw-type clamping units	EN 60998-2-1	-
IEC 60998-2-2	-	Connecting devices for low-voltage circuits for household and similar purposes Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units	EN 60998-2-2	-
IEC 60999-1	1999	Connecting devices - Electrical copper conductors - Safety requirements for screw-type and screwless-type clamping units Part 1: General requirements and particular requirements for clamping units for conductors from 0,2 mm <sup>2</sup> up to 35 mm <sup>2</sup> (included)	EN 60999-1	2000
IEC 61000-4-2	2008	Electromagnetic compatibility (EMC) Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test	EN 61000-4-2	2009
IEC 61000-4-3 + A1 + A2	2006 2007 2010	Electromagnetic compatibility (EMC) Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	EN 61000-4-3 + A1 + A2	2006 2008 2010
IEC 61000-4-4	2012	Electromagnetic compatibility (EMC) Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test	EN 61000-4-4	2012
IEC 61000-4-5 + corr. October	2005 2009	Electromagnetic compatibility (EMC) Part 4-5: Testing and measurement techniques - Surge immunity test	EN 61000-4-5	2006 <sup>6)</sup>
IEC 61000-4-6	2008	Electromagnetic compatibility (EMC) Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	EN 61000-4-6	2009 <sup>7)</sup>
IEC 61000-4-11	2004	Electromagnetic compatibility (EMC) Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	EN 61000-4-11	2004
IEC 61032 + corr. January	1997 2003	Protection of persons and equipment by enclosures - Probes for verification	EN 61032	1998


<sup>6)</sup> Superseded by EN 61000-4-5:2014 (IEC 61000-4-5:2014); DOW: 2017-06-19.


<sup>7)</sup> Superseded by EN 61000-4-6:2014 (IEC 61000-4-6:2014); DOW: 2016-11-27. 


<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61056-1	-	General purpose lead-acid batteries (valve-regulated types) Part 1: General requirements, functional characteristics - Methods of test	EN 61056-1	-
IEC 61058-1 (mod) + corr. January + A1 + A2	2000 2009 2001 2007	Switches for appliances Part 1: General requirements	EN 61058-1 - + A2	2002 <sup>8)</sup> - 2008
IEC 61210	-	Connecting devices - Flat quick-connect terminations for electrical copper conductors - Safety requirements	EN 61210	-
IEC 61540 + A1 -	1997 1998 -		HD 639 S1 + corr. July + A2	2002 <sup>9)</sup> 2003 2010
IEC 61558-1	-	Safety of power transformers, power supplies, reactors and similar products Part 1: General requirements and tests	EN 61558-1	-
IEC 61558-2-4	-	Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V Part 2-4: Particular requirements and tests for isolating transformers and power supply units incorporating isolating transformers	EN 61558-2-4	-
IEC 61558-2-6	-	Safety of transformers, reactors, power supply units and similar products for supply voltages up to 1 100 V Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers	EN 61558-2-6	-
IEC 61558-2-16	-	Safety of transformers, reactors, power supply units and similar products for voltages up to 1 100 V Part 2-16: Particular requirements and tests for switch mode power supply units and transformers for switch mode power supply units	EN 61558-2-16	-
IEC 61951-1	-	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Portable sealed rechargeable single cells Part 1: Nickel-cadmium	EN 61951-1	-
IEC 61951-2	-	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Portable sealed rechargeable single cells Part 2: Nickel-metal hydride	EN 61951-2	-
IEC 61960	-	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Secondary lithium cells and batteries for portable applications	EN 61960	-

<sup>8)</sup> EN 61058-1 includes A1 to IEC 61058-1 (mod) + corr. January.

<sup>9)</sup> HD 639 S1 includes A1 to IEC 61540. 

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 61984	-	Connectors - Safety requirements and tests	EN 61984	-
IEC 62133	-	Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications	EN 62133	-
IEC 62233	-	Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure	EN 62233	-
IEC 62471	-	Photobiological safety of lamps and lamp systems	EN 62471	-
IEC/TR 62471-2	2009	Photobiological safety of lamps and lamp systems Part 2: Guidance on manufacturing requirements relating to non-laser optical radiation safety	-	-
ISO 1463	-	Metallic and oxide coatings - Measurement of coating thickness - Microscopical method	EN ISO 1463	-
ISO 2178	-	Non-magnetic coatings on magnetic substrates - Measurement of coating thickness - Magnetic method	EN ISO 2178	-
ISO 2768-1	-	General tolerances Part 1: Tolerances for linear and angular dimensions without individual tolerance indications	EN 22768-1	-
ISO 3744	-	Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane	EN ISO 3744	-
ISO 3864-2	-	Graphical symbols - Safety colours and safety signs Part 2: Design principles for product safety labels	-	-
ISO 3864-3	-	Graphical symbols - Safety colours and safety signs Part 3: Design principles for graphical symbols for use in safety signs	-	-
ISO 4871	1996	Acoustics - Declaration and verification of noise emission values of machinery and equipment	EN ISO 4871	2009
ISO 5347	Series	Methods for the calibration of vibration and shock pick-ups	-	-
ISO 5349-1	-	Mechanical vibration - Measurement and evaluation of human exposure to hand-transmitted vibration Part 1: General requirements 	EN ISO 5349-1	-

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ISO 5349-2	-	Mechanical vibration - Measurement and evaluation of human exposure to hand-transmitted vibration Part 2: Practical guidance for measurement at the workplace	EN ISO 5349-2	-
ISO 7000	2012	Graphical symbols for use on equipment - Registered symbols	-	-
ISO 7010	-	Graphical symbols - Safety colours and safety signs - Registered safety signs	EN ISO 7010	-
ISO 7574-4	-	Acoustics - Statistical methods for determining and verifying stated noise emission values of machinery and equipment Part 4: Methods for stated values for batches of machines	EN 27574-4	-
ISO 8041	-	Human response to vibration - Measuring instrumentation	EN ISO 8041	-
ISO 9772	2012	Cellular plastics - Determination of horizontal burning characteristics of small specimens subjected to a small flame	-	-
ISO 11201	-	Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections	EN ISO 11201	-
ISO 11203	-	Acoustics - Noise emitted by machinery and equipment - Determination of emission sound pressure levels at a work station and at other specified positions from the sound power level	EN ISO 11203	-
ISO/TR 11690-3	-	Acoustics - Recommended practice for the design of low noise workplaces containing machinery Part 3: Sound propagation and noise prediction in workrooms	EN ISO/TR 11690-3	-
ISO 12100	-	Safety of machinery - General principles for design - Risk assessment and risk reduction	EN ISO 12100	-
ISO 13849-1	-	Safety of machinery - Safety-related parts of control systems Part 1: General principles for design	EN ISO 13849-1	-
ISO 13850	-	Safety of machinery - Emergency stop - Principles for design	EN ISO 13850	-
ISO 16063-1	-	Methods for the calibration of vibration and shock transducers Part 1: Basic concepts	-	-
EN 12096	-	Mechanical vibration - Declaration and verification of vibration emission values	-	- 

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
ASTM B 258		Standard specification for standard nominal diameters and cross-sectional areas of AWG sizes of solid round wires used as electrical conductors	-	-
UL 969		Standard for marking and labeling systems	-	- 

**Ⓒ Annex ZZ**  
(informative)

**Coverage of Essential Requirements of Directive 2006/42/EC**

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and within its scope the standard covers all relevant Essential Requirements as given in EU Directive 2006/42/EC (Machinery Directive).

Compliance with this standard provides one means of conformity with the specified essential requirements of the Directives concerned.

**WARNING:** Other requirements and other EU Directives may be applicable to the products falling within the scope of this standard.

**NOTE** Compliance with Part 1 and a relevant machine specific part of EN 62841-2, EN 62841-3 or EN 62841-4 is required to achieve presumption of conformity with the Essential Requirements as given in EU Directive 2006/42/EC. Ⓒ

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# INTERNATIONAL ELECTROTECHNICAL COMMISSION

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## **ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY –**

### **Part 1: General requirements**

#### FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as “IEC Publication(s)”). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62841-1 has been prepared by IEC technical committee 116: Safety of motor-operated electric tools.

This standard is scheduled to cancel and replace the fourth edition of IEC 60745-1, published in 2006, the first edition of IEC 61029-1, published in 1990, and the fifth edition of IEC 60335-1, published in 2010, only with respect to requirements concerning lawn and garden machinery. The latter publications remain valid until they are withdrawn. This standard constitutes a technical revision.

This edition includes the following significant technical changes with respect to the fourth edition of IEC 60745-1:

- requirements in various clauses introduced or modified in order to include the requirements for transportable tools and lawn and garden machinery (formerly covered by IEC 61029-1 and IEC 60335-1);

- leakage current test and electric strength test moved from former Clauses 13 and 15 to Annexes C and D;
- former Clauses 29, 30 and 31 renumbered to become Clauses 6, 13 and 15;
- requirements for electronic **safety critical functions** added to Clause 18;
- requirements for switches revised and moved from Annex I to Clause 23;
- clarifications in respect to soft materials (elastomers) added to Clauses 9, 19 and 13;
- test finger in Figure 1 of IEC 60745-1 and test probe in Figure 2 of IEC 60745-1 replaced by references to basic IEC standards;
- requirements for Li-Ion battery systems added to Annexes K and L;
- Annex M removed.

The text of this standard is based on the following documents:

FDIS	Report on voting
116/156/FDIS	116/163/RVD

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

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

This Part 1 is to be used in conjunction with the appropriate parts of IEC 62841-2, IEC 62841-3 or IEC 62841-4 which contain clauses that supplement or modify the corresponding clauses in Part 1 to provide the relevant requirements for each type of product.

NOTE 1 In this standard, the following print types are used:

- requirements: in roman type
- *test specification: in italic type*
- Notes: in smaller roman type

Words in **bold** in the text are defined in Clause 3. When a definition concerns an adjective, the adjective and the associated noun are also in bold.

NOTE 2 In Annexes B, K and L, subclauses which are additional to those in the main body of the text are numbered starting from 201.

A list of all parts of the IEC 62841 series, under the general title: *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability 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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

NOTE 3 The attention of National Committees is drawn to the fact that equipment manufacturers and testing organizations may need a transitional period following publication of a new, amended or revised IEC publication in which to make products in accordance with the new requirements and to equip themselves for conducting new or revised tests.

It is the recommendation of the committee that the content of this publication be adopted for implementation nationally not earlier than 36 months from the date of publication.

The contents of the corrigenda 1 (May 2014) and 2 (October 2015) have been included in this copy.

#### Rationale for corrigendum 2

The maximum parallel capacitance for instruments for measuring voltage was increased from 25 pF to 150 pF. A 25 pF maximum parallel capacitance is not typical for voltage measuring equipment, and would require highly specialized and expensive equipment. This was not the intention of TC 116. A maximum value of 150 pF will allow the continued use of voltage measuring equipment currently being used by testing laboratories.

## INTRODUCTION

Individual countries may wish to consider the application of this Part 1 of IEC 62841, so far as is reasonable, to tools not mentioned in an individual part of IEC 62841-2, IEC 62841-3 or IEC 62841-4 and to tools designed on new principles.

Examples of standards dealing with non-safety aspects of **hand-held tools, transportable tools and lawn and garden machinery** are

- standards dealing with EMC aspects;
- standards dealing with environmental aspects.

# ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY –

## Part 1: General requirements

### 1 Scope

This International Standard deals with the safety of electric motor-operated or magnetically driven:

- **hand-held tools** (IEC 62841-2);
- **transportable tools** (IEC 62841-3);
- **lawn and garden machinery** (IEC 62841-4).

The above listed categories are hereinafter referred to as “tools” or “machines”.

The **rated voltage** is not more than 250 V for single-phase a.c. or d.c. tools, and 480 V for three-phase a.c. tools. The **rated input** is not more than 3 700 W.

The limits for the applicability of this standard for battery tools are given in K.1 and L.1.

This standard deals with the hazards presented by tools which are encountered by all persons in the **normal use** and reasonably foreseeable misuse of the tools.

Tools with electric heating elements are within the scope of this standard.

Requirements for motors not isolated from the supply, and having **basic insulation** not designed for the **rated voltage** of the tools, are given in Annex B. Requirements for rechargeable battery-powered motor-operated or magnetically driven tools and the battery packs for such tools are given in Annex K. Requirements for such tools that are also operated and/or charged directly from the mains or a non-isolated source are given in Annex L.

Hand-held electric tools, which can be mounted on a support or working stand for use as fixed tools without any alteration of the tool itself, are within the scope of this standard and such combination of a **hand-held tool** and a support is considered to be a **transportable tool** and thus covered by the relevant Part 3.

This standard does not apply to:

- tools intended to be used in the presence of explosive atmosphere (dust, vapour or gas);
- tools used for preparing and processing food;
- tools for medical purposes;

NOTE 1 IEC 60601 series covers a variety of tools for medical purposes.

- tools intended to be used with cosmetics or pharmaceutical products;
- heating tools;

NOTE 2 IEC 60335-2-45 covers a variety of heating tools.

- electric motor-operated household and similar electrical appliances;

NOTE 3 IEC 60335 series covers a variety of electric motor-operated household and similar electrical appliances.

- electrical equipment for industrial machine-tools;