Irish Standard
I.S. EN 62841-1:2015&AC:2015

Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 1: General requirements

I.S. EN 62841-1:2015&AC:2015

Incorporating amendments/corrigenda/National Annexes issued since publication:

EN 62841-1:2015/AC:2015

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:	*Published:*
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NSAI	T +353 1 807 3800	Sales:
1 Swift Square,	F +353 1 807 3838	T +353 1 857 6730
Northwood, Santry	E standards@nsai.ie	F +353 1 857 6729
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National Foreword

I.S. EN 62841-1:2015&AC:2015 is the adopted Irish version of the European Document EN 62841-1:2015, Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 1: General requirements

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

Compliance with this document does not of itself confer immunity from legal obligations.

In line with international standards practice the decimal point is shown as a comma (,) throughout this document.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62841-1:2015/AC

October 2015

ICS 25.140.20

English version

Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 1: General requirements

Outils électroportatifs à moteur, outils portables et machines pour jardins et pelouses - Sécurité - Partie 1: Règles générales

Elektrische motorbetriebene handgeführte Werkzeuge, transportable Werkzeuge und Rasen- und Gartenmaschinen - Sicherheit - Teil 1: Allgemeine Anforderungen

This corrigendum becomes effective on 2015-10-30 for incorporation in the English language version of the EN.

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

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.

INTERNATIONAL ELECTROTECHNICAL COMMISSION

COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

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IEC 62841-1
Edition 1.0 2014-03

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

Part 1: General requirements

IEC 62841-1
Édition 1.0 2014-03

OUTILS ÉLECTROPORTATIFS À MOTEUR, OUTILS PORTABLES ET MACHINES POUR JARDINS ET PELOUSES – SÉCURITÉ –

Partie 1: Règles générales

CORRIGENDUM 2

Corrections to the French version appear after the English text.

Les corrections à la version française sont données après le texte anglais.

5 General conditions for the tests

Replace 5.19 with the following:

5.19 *All electrical measurements shall be made with a maximum measurement error of 5 %.*

Instruments for measuring voltage shall have an input resistance of at least 1 MΩ with a maximum parallel capacitance of 150 pF.

Rationale for this corrigendum:

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.

Corrections à la version française:

5 Conditions générales d'essai

Remplacer 5.19 comme suit:

5.19 *Toutes les mesures électriques doivent être effectuées avec une erreur de mesure maximale de 5 %.*

Les instruments de mesure de la tension doivent présenter une résistance d'entrée d'au moins 1 MΩ avec une capacité parallèle maximale de 150 pF.

Justification de ce corrigendum:

La capacité parallèle maximale pour les instruments de mesure de la tension a été augmentée de 25 pF à 150 pF. Une capacité parallèle maximale de 25 pF n'est pas typique pour un équipement de mesure de la tension, et nécessiterait un équipement hautement spécialisé et coûteux. Ce ne fut pas l'intention de TC 116. Une valeur maximale de 150 pF permettra l'utilisation de l'équipement de mesure de tension actuellement utilisée par les laboratoires d'essais.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62841-1

August 2015

ICS 25.140.20

Supersedes EN 60335-1:2012 (partially), EN 60745-1:2009, EN 61029-1:2009

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

Ref. No. EN 62841-1:2015 E

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

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.

COMMON MODIFICATIONS

2 Normative references

Add *the following normative references:*

CR 1030-1, *Hand-arm vibration – Guidelines for vibration hazards reduction – Part 1: Engineering methods by design of machinery*

EN ISO 11688-1, *Acoustics – Recommended practice for the design of low-noise machinery and equipment – Part 1: Planning (ISO/TR 11688-1)*

4 General requirements

Delete *the third paragraph.*

8 Marking and instructions

8.4

Replace *the 2nd paragraph with the following:*

Markings specified in 8.2 and 8.3 shall be clearly discernible from the outside of the tool. Other markings on the tool may be visible after removal of a cover, provided that the location of the markings is readily accessible.

8.14

Add *the following after the 2nd paragraph:*

The words "Original instructions" shall appear on the language version(s) verified by the manufacturer or his authorised representative. Where no "Original instructions" exist in the official language(s) of the country where the tool is to be used, a translation into that/those language(s) shall be provided by the manufacturer or his authorised representative or by the person bringing the tool into the language area in question. The translations shall bear the words "Translation of the original instructions", and they shall be accompanied by a copy of the "Original instructions".

8.14.2

Add *the following after d) 5):*

Za) Emissions

1) The noise emission, measured in accordance with I.2, as follows:
   - A-weighted emission sound pressure level L_{pA} and its uncertainty K_{pA}, where L_{pA} exceeds 70 dB(A).
     Where L_{pA} does not exceed 70 dB(A), this fact shall be indicated;
   - A-weighted sound power level L_{WA} and its uncertainty K_{WA}, where the A-weighted emission sound pressure level L_{pA} exceeds 80 dB(A);
   - C-weighted peak emission sound pressure level L_{pCpeak}, where this exceeds 63 Pa (130 dB in relation to 20 µPa).

2) Recommendation for the operator to wear hearing protection.

3) The vibration total value and its uncertainty measured in accordance with I.3.

   When the vibration total value does not exceed 2,5 m/s², this shall be stated.

   When the vibration total value exceeds 2,5 m/s², its value shall be given in the instructions.

4) The following information:

   - that the declared vibration total value(s) and the declared noise emission value(s) have been measured in accordance with a standard test method and may be used for comparing one tool with another;
   - that the declared vibration total value(s) and the declared noise emission value(s) may also be used in a preliminary assessment of exposure.

5) A warning:

   - that the vibration and noise emissions during actual use of the power tool can differ from the declared values depending on the ways in which the tool is used especially what kind of workpiece is processed; and
   - of the need to identify safety measures to protect the operator that are based on an estimation of exposure in the actual conditions of use (taking account of all parts of the operating cycle such as the times when the tool is switched off and when it is running idle in addition to the trigger time).

18 Abnormal operation

18.8.1

*In Table 4, **replace** the table footnote by the following:*

* Performance levels are to be specified in the relevant part of EN 62841-2, EN 62841-3 or EN 62841-4.

***Delete** the 5th paragraph and the subsequent NOTE 3.*

21 Construction

*In 21.18.1, **delete** the 2nd paragraph.*

***Add** the following new subclause after 21.18.1.2:*

21.18.1.Z1 Unless **hand-held tools** are equipped with a **momentary power switch** without lock-on device, voltage recovery following an interruption of the supply shall not give rise to a hazard. The relevant part of EN 62841-2 specifies if this subclause applies and gives specific requirements.

Compliance is checked by inspection.

***Replace** the existing Subclause 21.18.2.1 by the following:*

21.18.2.1 Unless transportable tools are equipped with a momentary power switch without lock-on device, voltage recovery following an interruption of the supply shall not give rise to a hazard. The relevant part of EN 62841-3 specifies if this subclause applies and gives specific requirements.

Compliance is checked by inspection.

Annexes

Replace *the existing Annex E by the following:*

Annex E

Void

Replace *the title of Annex I by the following:*

Annex I
(normative)

Measurement of noise and vibration emissions

Add *the following before I.2.1:*

I.2.Z1 Noise reduction

Noise reduction at tools is an integral part of the design process and shall be achieved by particularly applying measures at source to control noise, see for example EN ISO 11688-1. The success of the applied noise reduction measures is assessed on the basis of the actual noise emission values in relation to other machines of the same type with comparable non acoustical technical data.

The major sound sources of tools are: motor, fan, gear.

Add *the following before I.3.1:*

I.3.Z1 Vibration reduction

The vibration at the handles shall be kept as low as possible without unduly affecting the performance and the ergonomics (weight, handling, etc.) of the tool.

In particular vibration shall be reduced by the application of engineering measures as given in CR 1030-1. The success of the applied vibration measures is assessed by comparing the vibration levels for the tool with those for other tools of the same type and with a comparable specification and performance.

Replace *the 4th paragraph of I.3.5.1 with the following:*

When the test procedure is not provided in a relevant part of EN 62841-2, EN 62841-3 or EN 62841-4, an operating condition shall be specified that is reproducible and representative of the noisiest operation in typical usage of the tool. The vibration test may simulate a single phase of a task or a working cycle, consisting of a set of operations where the operator is being exposed to vibration. However, the operating condition for the noise emission test shall, if practicable, also be used for the vibration test.

Annex K
(normative)

Battery tools and battery packs

In K.8.14.2, item e), ***add*** *the following after 3):*

Z1) For battery tools with integral battery: instruction, how the integral battery can be removed safely from the tool after the tool's end of life, and information about the type of battery such as Li-Ion, NiCd and NiMH.

Annex L
(normative)

Battery tools and battery packs provided with mains connection or non-isolated sources

*In L.8.14.2, item e), **add** the following after 3):*

Z1) For battery tools with **integral battery**: instruction, how the **integral battery** can be removed safely from the tool after the tool's end of life, and information about the type of **battery** such as Li-Ion, NiCd and NiMH.

***Add** the following annexes:*

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

Publication	Year	Title	EN/HD	Year
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 + A11 + A12	2002 [1)] 2007 [1)] 2006 [1)] 2010 [1)] 2008 [1)] 2011 [1)]
IEC 60068-2-75	1997	Environmental testing Part 2-75: Tests - Test Eh: Hammer tests	EN 60068-2-75	1997 [2)]
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

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

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

Publication	Year	Title	EN/HD	Year
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 [3)]
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 [4)]
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 [5)]
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.	-	-

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

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

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

Publication	Year	Title	EN/HD	Year
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 mm² up to 35 mm² (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 [6)]
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 [7)]
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

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6) Superseded by EN 61000-4-5:2014 (IEC 61000-4-5:2014): DOW: 2017-06-19.

7) Superseded by EN 61000-4-6:2014 (IEC 61000-4-6:2014): DOW: 2016-11-27.

Publication	Year	Title	EN/HD	Year
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 [8)] - 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[9)] 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	-

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[8)] EN 61058-1 includes A1 to IEC 61058-1 (mod) + corr. January.

[9)] HD 639 S1 includes A1 to IEC 61540.

Publication	Year	Title	EN/HD	Year
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	-

Publication	Year	Title	EN/HD	Year
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	-	-

Publication	Year	Title	EN/HD	Year
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.

Bibliography

***Add** the following notes for the standards indicated:*

IEC 60127-3	NOTE	Harmonized as EN 60127-3.
IEC 60204 Series	NOTE	Harmonized as EN 60204 Series.
IEC 60335 Series	NOTE	Harmonized as EN 60335 Series.
IEC 60335-2-29	NOTE	Harmonized as EN 60335-2-29.
IEC 60335-2-45	NOTE	Harmonized as EN 60335-2-45.
IEC 60601 Series	NOTE	Harmonized as EN 60601 Series.
IEC 60664-3	NOTE	Harmonized as EN 60664-3.
IEC 62281	NOTE	Harmonized as EN 62281.

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IEC 62841-1
(First edition – 2014)

Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety –

Part 1: General requirements

CORRIGENDUM 1

28 Creepage distances, clearances and distances through insulation

Replace the first row of Table 12 with the following:

Table 12 – Minimum creepage distances and clearances

Dimensions in millimetres

Distances	Class III tools		Other tools					
			Working voltage ≤ 130 V		Working voltage > 130 V and ≤ 280 V		Working voltage > 280 V and ≤ 480 V	
	Creepage distance	Clearance	Creepage distance	Clearance	Creepage distance	Clearance	Creepage distance	Clearance
Between **live parts** of different polarity [a]:								
– if lacquered or enamelled windings or if protected against deposition of dirt [b]	1,0	1,0	1,0	1,0	2,0	2,0	2,0	2,0
– if not protected against deposition of dirt	2,0 [d]	1,5	2,0 [c]	1,5	3,0 [c]	2,5	8,0 [d]	3,0

IEC 62841-1
(Première édition – 2014)

Outils électroportatifs à moteur, outils portables et machines pour jardins et pelouses – Sécurité –

Partie 1: Règles générales

CORRIGENDUM 1

28 Lignes de fuite, distances d'isolement et distances à travers l'isolation

Remplacer la première ligne du Tableau 12 par la suivante:

Tableau 12 – Lignes de fuite et distances d'isolement minimales

Dimensions en millimètres

Distances	Outils de la classe III		Autres outils					
			Tension de service ≤ 130 V		Tension de service > 130 V et ≤ 280 V		Tension de service > 280 V et ≤ 480 V	
	Ligne de fuite	Distance d'isolement	Ligne de fuite	Distance d'isolement	Ligne de fuite	Distance d'isolement	Ligne de fuite	Distance d'isolement
Entre **parties actives** à polarité différente [a]:								
– si les parties actives sont des enroulements vernis ou émaillés ou protégées contre la pollution [b]	1,0	1,0	1,0	1,0	2,0	2,0	2,0	2,0
– si elles ne sont pas protégées contre la pollution	2,0 [d]	1,5	2,0 [c]	1,5	3,0 [c]	2,5	8,0 [d]	3,0

IEC 62841-1

Edition 1.0 2014-03

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 1: General requirements

Outils électroportatifs à moteur, outils portables et machines pour jardins et pelouses – Sécurité – Partie 1: Règles générales

IEC 62841-1:2014-03(en-fr)

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 1: General requirements

Outils électroportatifs à moteur, outils portables et machines pour jardins et pelouses – Sécurité – Partie 1: Règles générales

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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.

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;

NOTE 4 IEC 60204 series deals with electrical safety of machinery.

– small low voltage transformer operated bench tools intended for model making, e.g. the making of radio controlled model aircraft or cars, etc.

NOTE 5 In the United States of America, the following conditions apply:

This standard deals with tools used in non-hazardous locations in accordance with the National Electrical Code, NFPA 70.

NOTE 6 In Canada, the following conditions apply:

This standard deals with tools used in non-hazardous locations in accordance with the Canadian Electric Code, Part 1, CSA C22.1, and General Requirements – Canadian Electrical Code, Part II, CAN/CSA-C22.2 No. 0.

2 Normative references

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.

IEC 60061, *Lamp caps and holders together with gauges for the control of interchangeability and safety*, available at http://std.iec.ch/iec60061

IEC 60065:2001, *Audio, video and similar electronic apparatus – Safety requirements*[1]
Amendment 2:2010
Amendment 1:2005

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

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*

IEC 60127 (all parts), *Miniature fuses*

IEC 60227 (all parts), *Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V*

IEC 60238, *Edison screw lampholders*

IEC 60245 (all parts), *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*

IEC 60320 (all parts), *Appliance couplers for household and similar general purposes*

IEC 60320-1, *Appliance couplers for household and similar general purposes – Part 1: General requirements*

IEC 60335-1:2010, *Household and similar electrical appliances – Safety – Part 1: General requirements*

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1 There exists a consolidated version (Edition 7.2:2011) which includes IEC 60065:2001 and its Amendment 1 (2005) and Amendment 2 (2010).