



SLOVENSKI STANDARD

SIST EN 62841-1:2015

01-december-2015

Nadomešča:

SIST EN 60335-1:2012

SIST EN 60745-1:2009

SIST EN 60745-1:2009/A11:2010

SIST EN 61029-1:2009

SIST EN 61029-1:2009/A11:2011

**Električna motorna ročna orodja, prenosna orodja ter stroji za trato in vrt - Varnost
- 1. del: Splošne zahteve**

iTeh STANDARD PREVIEW

Electric Motor-Operated Hand-Held, Transportable Tools and Lawn and Garden Machinery - Safety - Part 1: General requirements

[SIST EN 62841-1:2015](https://standards.iteh.ai/catalog/standards/sist/2e7d9645-b1c7-4e37-87ca-b6abe87607aa/sist-en-62841-1-2015)

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Ta slovenski standard je istoveten z: EN 62841-1:2015

ICS:

25.140.20	Električna orodja	Electric tools
65.060.70	Vrtnarska oprema	Horticultural equipment

SIST EN 62841-1:2015

en

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EUROPEAN STANDARD

EN 62841-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

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

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.

[SIST EN 62841-1:2015](https://standards.iteh.ai/catalog/standards/sist/2e7d9645-b1c7-4e37-87ca-87667e5c910e/sist-en-62841-1-2015)

[https://standards.iteh.ai/catalog/standards/sist/2e7d9645-b1c7-4e37-87ca-](https://standards.iteh.ai/catalog/standards/sist/2e7d9645-b1c7-4e37-87ca-87667e5c910e/sist-en-62841-1-2015)

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".

EN 62841-1:2015 (E)

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.

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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.

<https://standards.iteh.ai/catalog/standards/sist/2e7d9645-b1c7-4e37-87ca-b6abe87607aa/sist-en-62841-1-2015>

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 μ Pa).

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- 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

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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.

[SIST EN 62841-1:2015](https://standards.iteh.ai/catalog/standards/sist/2e7d9645-b1c7-4e37-87ca-b6abe87607aa/sist-en-62841-1-2015)

<https://standards.iteh.ai/catalog/standards/sist/2e7d9645-b1c7-4e37-87ca-b6abe87607aa/sist-en-62841-1-2015>

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.

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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.

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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

<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)	2001	Audio, video and similar electronic apparatus - Safety requirements	EN 60065	2002 ¹⁾
+ corr. August	2002		+ corr. August	2007 ¹⁾
+ A1 (mod)	2005		+ A1	2006 ¹⁾
+ A2 (mod)	2010		+ A2	2010 ¹⁾
-	-		+ A11	2008 ¹⁾
-	-		+ A12	2011 ¹⁾
IEC 60068-2-75	1997	Environmental testing - Part 2-75 Tests - Test En: 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.

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<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 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.	-	-

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.

<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 ² up to 35 mm ² (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

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.

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<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 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	-

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

9) 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	-