AS/NZS 62841.1:2015
(Incorporating Amendments up to and including No. 2)

STANDARDS NEW ZEALAND
TE MANA TAUTĪKANGA O AOTEAROA

STANDARDS Australia

Australian/New Zealand Standard™

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

Part 1: General requirements (IEC 62841-1 Ed 1, MOD)

AS/NZS 62841.1:2015

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee EL-002, Safety of Household and Similar Electrical Appliances and Small Power Transformers and Power Supplies. It was approved on behalf of the Council of Standards Australia on 27 April 2015 and by the Council of Standards New Zealand on 18 June 2015.

This Standard was published on 30 June 2015.

The following are represented on Committee EL-002:

Australian Industry Group
National Retailers Association (Australia)
Business New Zealand
Consumer Electronic Suppliers Association, Australia
Consumers' Federation of Australia
Electrical Regulatory Authorities, Australia
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This Standard was issued in draft form for comment as DR 14912.

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Australian/New Zealand Standard™

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

Part 1: General requirements (IEC 62841-1 Ed 1, MOD)

Originated as AS/NZS 62841.1:2015.
Reissued incorporating Amendment No 1 (December 2016).
Reissued incorporating Amendment No 2 (June 2021).

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

AS/NZS 62841.1:2015

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

Part 1: General requirements

Foreword

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-002- Safety of Household and Similar Electrical Appliances and Small Power Transformers.

The objective of this Standard is to provide manufacturers, designers, regulatory authorities, testing laboratories and similar organizations with safety requirements designed to give the user protection against hazards that might occur during normal operation and abnormal operation of the tool or machine and which may be used as the basis for approval for sale or for connection to the electricity supply mains in Australia and New Zealand

The text of IEC 62841-1 Ed 1, prepared by IEC Technical Committee TC116, was submitted to the Standards Australia/Standards New Zealand Combined Procedure (dual public comment and committee vote) for adoption of the IEC standard as a Standards Australia/Standards New Zealand joint standard.

A2 This standard incorporates Amendment No.1 (December 2016) and Amendment No. 2 June 2021). The changes introduced by amendments are indicated in the text by a marginal bar and amendment number against the part affected. Where an application date other than immediate is applicable to an amendment the date of application (DOA) and the date of withdrawal (DOW) if relevant, is indicated by the marginal bar against the part affected.

NOTE Amendment No. 1 (December 2016) applies to Clause 5 of the IEC text in the “including IEC text” version of the standard only. This change is not indicated by a marginal bar.

This Standard is an adoption with national modifications of the first edition of IEC 62841-1, *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 1: General requirements*. It has been varied as indicated to take account of Australian and New Zealand conditions.

This part is to be used in conjunction with the appropriate Part 2, 3 or 4 of the AS/NZS 62841 series of standards. The Parts 2, 3 and 4 contain clauses to supplement or modify the corresponding clauses in this part to provide the relevant requirements for each type of tool or machine.

NOTE The following numbering system is used:

- subclauses, tables and figures that are numbered starting from 101 are additional to those in Part 1;
- unless notes are in a new subclause or involve notes in Part 1, they are numbered starting from 101, including those in a replaced clause or subclause;
- additional annexes are lettered AA, BB, etc.;
- subclauses, notes and annexes that are additional to those in the IEC standard are prefixed with the letters AZ.

NOTE 2 The following print types are used:

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

Words in **bold** in the text are defined in Clause 3.

p NOTE 3 In this document, p is used in the margin to indicate instructions for preparing a consolidated version.

The essential safety requirements in AS/NZS 3820[1] that could be applicable to tools or machines within the scope of the AS/NZS 62841.1 series of standards are covered by this series of standards taken in conjunction with any other relevant requirements affecting safety.

The national variations to IEC 62841-1 Ed 1 form the Australian and New Zealand national variations for purposes of the IECEE scheme for recognition of results of testing to standards for safety of electrical equipment (the CB scheme).

1 AS/NZS 3820 *Essential safety requirements for electrical equipment*

The text of the International Standard IEC 62841-1 Ed 1 was approved as a joint Australia/New Zealand Standard with the agreed national variations as given below.

AUSTRALIAN NATIONAL VARIATIONS

p **2** *Insert* the following normative references

IEC 60309-1	*Plugs, socket-outlets and couplers for industrial purposes - Part 1: General requirements*	
	Approval and test specification – Plugs and socket-outlets	AS/NZS 3112
	Approval and test specification – Residual current devices (current-operated earth-leakage devices	AS/NZS 319[illegible]

p *Replace* Clause 5.7.1 with the following variation:

5.7.1 ***Tools*** *for a.c. only are tested with a.c. at 50 Hz and tools for a.c./d.c. are tested at a.c. 50 Hz or d.c., whichever is the more unfavourable supply.*

p After Clause 5.20 *add* the following variation:

5.201 *For* ***tools*** *that are intended for connection to the supply mains and that are not marked with*

– *a* ***rated voltage*** *of at least 240 V for single-phase* ***tools*** *and at least 415 V for three-phase* ***tools****, or*

– *a* ***rated voltage range*** *that includes 240 V for single-phase* ***tools*** *and 415 V for three-phase* ***tools****,*

the ***rated voltage*** *is equal to 240 V for single-phase* ***tools*** *and 415 V for three-phase* ***tools****, and the upper limit of the* ***rated voltage range*** *is equal to 240 V for single-phase* ***tools*** *and 415 V for three-phase* ***tools****.*

For ***tools*** *that are intended to be supplied from a transformer, this general condition of test applies to the input side of the transformer.*

For Clause 17, the ***rated voltage*** *is the marked* ***rated voltage****.*

p **8.1** After the first paragraph *insert* the following variation:

Tools intended for connection to the supply mains other than **class III tools** and **tools** that are required by the standard to be supplied from a transformer, shall be marked with

– a **rated voltage** of at least:

- 230 V for single-phase **tools**;
- 400 V for poly-phase **tools**.

or

– a **rated voltage range** that includes:

- 230 V for single-phase **tools**;
- 400 V for poly-phase **tools**.

p **8.14** *Replace* the second paragraph with the following variation:

They shall be written in English.

p **8.14.1.1** In item 2) f) *delete* the Note

p **8.14.2** After item b) 5) *insert* the following variation:

301) Recommendation that the **tool** always be supplied via a residual current device having a rated residual current of 30 mA or less

p **14.5** *Replace* the first paragraph of the requirement by the following:

Residual current devices used to provide protection from shock in the case of failure of the **liquid system** shall comply with IEC 61540:1999 and the additional requirements for PRCD in AS/NZS 3190 and shall meet the following requirements a) to c):

p In item c) *insert* in the third paragraph the following variation:

*Where fitted in the **supply cord**, the **residual current device** shall be within a distance of 0,5 m from the plug or it shall be fitted in the supply plug.*

p **21.15** In the second paragraph, add the following variation to the third dash item:

The no-load output voltage of the isolating transformer shall not exceed 115 V.

p After 23.5 *insert* the following variations:

23.301 Residual current devices supplied with the tool shall comply with AS/NZS 3190, and have a rated residual current not exceeding 30 mA.

Compliance is checked by inspection.

23.302 Supply cords for single-phase **tools** that are intended to be directly connected to the electricity supply mains and that have a rated current not exceeding 10 A shall be fitted with an appropriate plug complying with AS/NZS 3112.

Other **tools** that are intended to be directly connected to the electricity supply mains shall be fitted with an appropriate plug complying with AS/NZS 3112 or IEC 60309-1.

Compliance is checked by inspection.

p **24.6** *Replace* the requirement by the following variation:

For **class I tools**, the **supply cord** shall be provided with a green/yellow core; it shall be connected to the internal earthing terminal of the **tool**, and to the earthing contact of the plug.

NEW ZEALAND NATIONAL VARIATIONS

p **2** *Insert* the following normative references

IEC 60309-1	*Plugs, socket-outlets and couplers for industrial purposes - Part 1: General requirements*	
	Approval and test specification – Plugs and socket-outlets	AS/NZS 3112
	Approval and test specification – Residual current devices (current-operated earth-leakage devices	AS/NZS 3190

p *Replace* Clause 5.7.1 with the following variation:

5.7.1 ***Tools*** *for a.c. only are tested with a.c. at 50 Hz and those for a.c./d.c. are tested at a.c. 50 Hz or d.c., whichever is the more unfavourable supply.*

p **8.1** After the first paragraph *insert* the following variation:

Tools intended for connection to the supply mains other than **class III tools** and **tools** that are required by the standard to be supplied from a transformer, shall be marked with

A2 – a **rated voltage** of:

- 230 V for single-phase **tools**;
- 400 V for poly-phase **tools**.

or

– a **rated voltage range** that includes:

- 230 V for single-phase **tools**;
- 400 V for poly-phase **tools**.

p **8.14** *Replace* the second paragraph with the following variation:

They shall be written in English.

p **8.14.1.1** In item 2) f) *delete* the Note

p **8.14.2** After item b) 5) *insert* the following variation:

5A1) Recommendation that the **tool** always be supplied via a residual current device having a rated residual current of 30 mA or less

p **8.14.5** *Replace* the first paragraph of the requirement by the following:

Residual current devices used to provide protection from shock in the case of failure of the **liquid system** shall comply with IEC 61540:1999 and the additional requirements for PRCD in AS/NZS 3190 and shall meet the following requirements a) to c):

p In item c) *insert* in the third paragraph the following variation:

*Where fitted in the **supply cord**, the **residual current device** shall be within a distance of 0,5 m from the plug or it shall be fitted in the supply plug.*

p **21.15** In the second paragraph, *add* the following variation to the third dash item:

The no-load output voltage of the isolating transformer shall not exceed 115 V.

p After 23.5 *insert* the following variations:

23.301 Residual current devices supplied with the tool shall comply with AS/NZS 3190, and have a rated residual current not exceeding 30 mA.

The **residual current device** shall be type FS and type A in accordance with AS/NZS 3190.

Compliance is checked by inspection.

23.302 Supply cords for single-phase **tools** that are intended to be directly connected to the electricity supply mains and that have a rated current not exceeding 10 A shall be fitted with an appropriate plug complying with AS/NZS 3112.

Other **tools** that are intended to be directly connected to the electricity supply mains shall be fitted with an appropriate plug complying with AS/NZS 3112 or IEC 60309-1.

Compliance is checked by inspection.

p **24.6** *Replace* the requirement by the following variation:

For **class I tools**, the **supply cord** shall be provided with a green/yellow core; it shall be connected to the internal earthing terminal of the tool, and to the earthing contact of the plug.

Annex ANZ
(normative)
Normative references to international publications with their corresponding joint Australia/New Zealand publications

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

NOTE When an international publication has been modified by national variations the relevant joint Australia/New Zealand publications applies if the national variations are needed to ensure the safety of the appliance for Australia/New Zealand conditions. These international publications are indicated by (mod). If an international publication is not so indicated, then either it or the listed Australia/New Zealand publication may be used.

Publication	Year	Title	AS/NZS	Year
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 Amendment 1 Amendment 2	2001 2005 2010	*Audio, video and similar electronic apparatus – Safety requirements*[2]	60065	2012
IEC 60068-2-75	1997	*Environmental testing – Part 2-75: Tests – Test Eh: Hammer test*		
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*	60238	
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*	60320.1	

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

		similar general purposes – Part 1: General requirements		
IEC 60335-1	2010	*Household and similar electrical appliances – Safety – Part 1: General requirements*	60335.1	2011
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*		
IEC 60417		*Graphical symbols for use on equipment,* available at http://www.graphical-symbols.info/graphical-symbols/equipment/db1.nsf/$enHome?OpenForm		
IEC 60529 Amendment 1 Amendment 2:	1989 1999 2013	*Degrees of protection provided by enclosures (IP Code)*[3]		
IEC 60664-1		*Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests*		
IEC 60695-2-11	2000	*Fire hazard testing – Part 2-11: Glowing/hot-wire based test methods – Glow-wire flammability test method for end-products*		
IEC 60695-2-13	2010	*Fire hazard testing – Part 2-13: Glowing/hot-wire based test methods – Glow-wire ignition temperature (GWIT) test method for materials*		
IEC 60695-10-2	2003	*Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test*		
IEC 60695-11-10	2013	*Fire hazard testing – Part 11-10: Test flames – 50 W horizontal and vertical flame test methods*		
IEC 60730-1	2010	*Automatic electrical controls for household and similar use – Part 1: General requirements*		
IEC 60825-1	2007	*Safety of laser products – Part 1: Equipment classification and requirements*		
IEC 60884 (all parts)		*Plugs and socket-outlets for household and similar purposes*		

[3] There exists a consolidated version (Edition 2.2:2013) which includes IEC 60529:1989 and its Amendment 1 (1999) and Amendment 2 (2013).

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.*
IEC 60990	1999	*Methods of measurement of touch current and protective conductor current*
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*
IEC 60998-2-2		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*
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)*
IEC 61000-4-2	2008	*Electromagnetic compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test*
IEC 61000-4-3 Amendment 1 Amendment 2	2006 2007 2010	*Electromagnetic compatibility (EMC) – Part 4-3: Testing and measurement techniques – Radiated, radio-frequency, electromagnetic field immunity test* [4]
IEC 61000-4-4	2012	*Electromagnetic compatibility (EMC) – Part 4-4: Testing and measurement techniques – Electrical fast transient/burst immunity test*
IEC 61000-4-5	2005	*Electromagnetic compatibility (EMC) – Part 4-5: Testing and measurement techniques – Surge immunity test*
IEC 61000-4-6	2008	*Electromagnetic compatibility (EMC) – Part 4-6: Testing and measurement techniques – Immunity to conducted disturbances, induced by radio-frequency fields*

4 There exists a consolidated version (Edition 3.2:2010) which includes IEC 61000-4-3:2006 and its Amendment 1 (2007) and Amendment 2 (2010).

IEC 61000-4-11	2004	*Electromagnetic compatibility (EMC) – Part 4-11: Testing and measurement techniques – Voltage dips, short interruptions and voltage variations immunity tests*	
IEC 61032	1997	*Protection of persons and equipment by enclosures – Probes for verification*	
IEC 61056-1		*General purpose lead-acid batteries (valve-regulated types) – Part 1: General requirements, functional characteristics – Methods of test*	
IEC 61058-1 Amendment 1 Amendment 2	2000 2001 2007	*Switches for appliances – Part 1: General requirements* [5]	
IEC 61210		*Connecting devices – Flat quick-connect terminations for electrical copper conductors – Safety requirements*	
IEC 61540	1997	*Electrical accessories – Portable residual current devices without integral overcurrent protection for household and similar use (PRCDs)*[6]	
IEC 61558-1		*Safety of power transformers, power supplies, reactors and similar products – Part 1: General requirements and tests*	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*	61558.2.4

5 There exists a consolidated version (Edition 3.2:2008) which includes IEC 61058-1:2000 and its Amendment 1 (2001) and Amendment 2 (2007).

6 There exists a consolidated version (Edition 1.1:1999) which includes IEC 61540:1997 and its Amendment 1 (2001).

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*	61558.2.6
IEC 61558-2-16		*Safety of transformers, reactors, power supply units and similar products for supply 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*	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*	
IEC 61951-2		*Secondary cells and batteries containing alkaline or other non-acid electrolytes – Portable sealed rechargeable single cells – Part 2: Nickel-metal hydride*	
IEC 61960		*Secondary cells and batteries containing alkaline or other non-acid electrolytes – Secondary lithium cells and batteries for portable applications*	
IEC 61984		*Connectors – Safety requirements and tests*	
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*	
IEC 62233		*Measurement methods for electromagnetic fields of household appliances and similar apparatus with regard to human exposure*	
IEC 62471		*Photobiological safety of lamps and lamp systems*	
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*
ISO 2178		*Non-magnetic coatings on magnetic substrates – Measurement of coating thickness – Magnetic method*
ISO 2768-1		*General tolerances – Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*
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*
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*
ISO 5347 (all parts)		*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*
ISO 5349-2		*Mechanical vibration – Measurement and evaluation of human exposure to hand-transmitted vibration – Part 2: Practical guidance for measurement in the workplace*
ISO 7000	2012	*Graphical symbols for use on equipment – Index and synopsis*
ISO 7010		*Graphical symbols – Safety colours and safety signs – Registered safety signs*
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*

ISO 8041		*Human response to vibration – Measuring instrumentation*
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*
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*
ISO 12100		*Safety of machinery – General principles for design – Risk assessment and risk reduction*
ISO 13849-1		*Safety of machinery – Safety-related parts of control systems – Part 1: General principles for design*
ISO 13850		*Safety of machinery – Emergency stop – Principles for design*
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*
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*
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*

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.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

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;

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).