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Responsible committee: CPL/116 Safety of motor-operated electric tools

Interested committees:

Title: BS EN IEC 62841-4-9 Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety

Part 4-9: Particular requirements for battery-powered chain saws for tree service

Please notify the secretary if you are aware of any keywords that might assist in classifying or identifying the standard or if the content of this standard

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- ii) affects other national standard(s)
- iii) requires additional national guidance or information

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



116/673/CDV

COMMITTEE DRAFT FOR VOTE (CDV)

PROJECT NUMBER: IEC 62841-4-9 ED1	
DATE OF CIRCULATION: 2023-09-01	CLOSING DATE FOR VOTING: 2023-11-24
SUPERSEDES DOCUMENTS: 116/644/NP, 116/657/RVN	

IEC TC 116 : SAFETY OF MOTOR-OPERATED ELECTRIC TOOLS	
SECRETARIAT: United States of America	SECRETARY: Mr Joseph Harding
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☒ SAFETY	
☒ SUBMITTED FOR CENELEC PARALLEL VOTING Attention IEC-CENELEC parallel voting The attention of IEC National Committees, members of CENELEC, is drawn to the fact that this Committee Draft for Vote (CDV) is submitted for parallel voting. The CENELEC members are invited to vote through the CENELEC online voting system.	☐ NOT SUBMITTED FOR CENELEC PARALLEL VOTING

This document is still under study and subject to change. It should not be used for reference purposes.

Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any relevant "In Some Countries" clauses to be included should this proposal proceed. Recipients are reminded that the CDV stage is the final stage for submitting ISC clauses. (SEE [AC/22/2007](#) OR [NEW GUIDANCE DOC](#)).

TITLE:

Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery - Safety - Part 4-9: Particular requirements for battery-powered chain saws for tree service

PROPOSED STABILITY DATE: 2028

NOTE FROM TC/SC OFFICERS:

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE
TOOLS AND LAWN AND GARDEN MACHINERY –
SAFETY –****Part 4-9: Particular requirements for battery-powered chain saws for tree
service****FOREWORD**

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- IEC 62841-4-9 has been prepared by IEC technical committee 116: Safety of motor-operated electric tools. It is an International Standard.

The text of this International Standard is based on the following documents:

Draft	Report on voting
116/XX/FDIS	116/XX/RVD

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

The language used for the development of this International Standard is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

138 This document is to be used in conjunction with IEC 62841-1:2014.

139 This document supplements or modifies the corresponding clauses in IEC 62841-1:2014, so as
140 to convert it into the IEC Standard: Particular requirements for battery-powered chain saws for
141 tree service.

142 Where a particular subclause of IEC 62841-1:2014 is not mentioned in this document, that
143 subclause applies as far as reasonable. Where this document states "addition", "modification"
144 or "replacement", the relevant text in IEC 62841-1 is to be adapted accordingly.

145 The following print types are used:

- 146 – requirements: in roman type;
- 147 – *test specifications: in italic type;*
- 148 – **terms defined in Clause 3: in bold type;**
- 149 – notes: in small roman type.

150 Subclauses, notes, tables and figures which are additional to those in IEC 62841-1:2014 are
151 numbered starting from 101.

152 Subclauses, notes, tables and figures in Annex K which are additional to those in the main body
153 of this document are numbered starting from 301.

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

157 The committee has decided that the contents of this document will remain unchanged until the
158 stability date indicated on the IEC website under webstore.iec.ch in the data related to the
159 specific document. At this date, the document will be

- 160 • reconfirmed,
- 161 • withdrawn,
- 162 • replaced by a revised edition, or
- 163 • amended.

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

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

170

171

172

INTRODUCTION

173 The International Electrotechnical Commission (IEC) draws attention to the fact that it is claimed
174 that compliance with this document may involve the use of patents concerning prevention of
175 inadvertent starting given in Subclause 21.18.102.

176 IEC takes no position concerning the evidence, validity and scope of this patent right.

177 The holders of these patent rights have assured the IEC that they are willing to negotiate
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194 patents relevant to their standards. Users are encouraged to consult the data bases for the
195 most up to date information concerning patents.

196

197

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

Part 4-9: Particular requirements for battery-powered chain saws for tree service

1 Scope

Replacement:

This document applies to rechargeable **battery**-powered motor-operated or magnetically driven **chain saws for tree service**, hereinafter referred to as chain saws or machines, having a maximum mass of 5,0 kg with the heaviest **detachable battery pack(s)**, if any, as described in IEC 62841-1:2014, K.8.14.2 e) 2) installed but without a **guide bar** or **saw chain** fitted and with the lubrication tank, if any, empty. Chain saws covered by this document are intended to be used for pruning and dismantling standing tree crowns.

The chain saws covered by this document are designed only to be operated with the right hand on the **rear handle** and the left hand on the **front handle**.

This document does not apply to

- chain saws supplied by mains power or power from non-isolated sources that permit the machine to be used while connected to such power supplies; or
- chain saws supplied by **integral batteries**; or
- chain saws for cutting wood as covered by IEC 62841-4-1; or
- chain saws for forest service as covered by ISO 11681-1; or
- chain saws designed for use in conjunction with a guide-plate and riving knife or in any other way such as with a support or as a stationary or transportable machine; or
- pole-mounted pruners; or
- pruning saws.

NOTE 1 Pole-mounted pruners will be covered by a future part of IEC 62841-4.

NOTE 2 Pruning saws will be covered by a future part of IEC 62841-4.

The maximum **rated voltage** for machines and **battery** packs is 75 V d.c.

Battery machines covered by this document are not considered to be **class I tools**, **class II tools** or **class III tools** and therefore are not required to have **basic insulation**, **supplementary insulation** or **reinforced insulation**. Electric shock hazard is considered to exist only between parts of opposite polarity.

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

When evaluating a rechargeable **battery** pack for protection against electric shock during charging, **creepage distances**, **clearances** and distances through insulation, the relevant requirements of this document are applicable with the **battery** pack fitted to the intended **charger**.

Since rechargeable **battery** packs for machines are submitted to different use patterns (such as rough use, high charging and discharging currents) their safety can be evaluated only by this document and not by using other standards for rechargeable **battery** packs, such as IEC 62133-1:2017 or IEC 62133-2:2017, unless otherwise indicated in this document. All relevant aspects related to the safety of rechargeable **batteries** are addressed in this document, such that the requirements of IEC 62133-1:2017 or IEC 62133-2:2017 need not be separately applied.

When evaluating the risk of **fire** associated with rechargeable **battery** packs for machines, consideration has been given to the fact that these **battery** packs are unattended energy sources and have been evaluated as such in this document. Requirements in other standards regarding the risk of **fire** due to the charging of these **battery** packs are therefore considered to be fulfilled.

This document also addresses requirements covering the use of lithium-ion **cells** employed in **battery systems** in machines. The following is considered within the context of these requirements:

- These requirements address the risk of **fire** or **explosion** of these **batteries** and not any possible hazards associated with toxicity nor potential hazards associated with transportation or disposal.

NOTE 3 IEC 62281:2019 covers the safety aspects of lithium-ion **batteries** during transport.

- **Battery systems** covered by these requirements are not intended to be serviced by the end user.

- These requirements are intended to provide comprehensive evaluation of a **battery** only if used in products covered by this document.

- These requirements address the safety of **lithium-ion battery systems** during storage and use including discharge and charge. These requirements are only considered to be supplementary requirements in regards to battery **charger** fire and electric shock.

- These requirements refer to and require parameters supplied in reference to the **cells** that establish conditions for safe use of those **cells**. Those parameters form the basis of acceptance criteria for a number of tests contained herein. This document does not independently evaluate the safety of **cells**. These parameters, taken as a set, constitute the “**Specified Operating Region**” for a **cell**. There may be several sets of **specified operating region(s)**.

This document does not apply to machines using **general purpose batteries** installed by the user and this document alone will not be sufficient to ensure all hazards are considered for these products.

This document does not apply to the safety of battery **chargers** themselves.

NOTE 4 IEC 60335-2-29 covers a variety of **chargers**.

2 Normative references

IEC 62841-1:2014, Clause 2 is applicable, except as follows:

Replacement of undated normative reference for ISO 3744:

ISO 3744:2010, *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*

Replacement of undated normative reference for ISO 11203:

ISO 11203:1995, *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*
Amendment 1:2020

Addition:

IEC 62841-1:2014, *Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 1: General requirements*

ISO 354:2003, *Acoustics – Measurement of sound absorption in a reverberation room*

ISO 3864-3:2012, *Graphical symbols – Safety colours and safety signs – Part 3: Design principles for graphical symbols used in safety signs*

- 293 ISO 6533:2020, *Forestry machinery – Portable Chain saw front hand-guard – Dimensions and*
294 *clearances*
- 295 ISO 6534:2007, *Forestry machinery - Portable Chain saw hand-guards – Mechanical strength*
296 *Amendment 1:2012*
- 297 ISO 7914:2002, *Forestry machinery – Portable Chain saws – Minimum handle clearance and*
298 *sizes*
299 *Amendment 1:2012*
- 300 ISO 7915:2021, *Forestry machinery – Portable Chain saws – Determination of handle strength*
- 301 ISO 8334:2007, *Forestry machinery – Portable Chain saws – Determination of balance and*
302 *maximum holding moment*
- 303 ISO 9518:2018, *Forestry machinery – Portable Chain saws – Kickback test*
- 304 ISO 10726:2020, *Portable Chain saws – Chain catcher – Dimensions and mechanical strength*
- 305 ISO 11681-2:2022, *Machinery for forestry – Portable Chain saw safety requirements and testing*
306 *– Part 2: Chain saws for tree service*
- 307 ISO 13772:2018, *Forestry machinery - Portable Chain saws - Non-manually actuated chain*
308 *brake performance*
309 *Amendment 1:2020*
- 310 ISO 17080:2005, *Manually portable agricultural and forestry machines and powered lawn and*
311 *garden equipment - Design principles for single-panel product safety labels*
- 312 ISO 22868:2021, *Forestry and gardening machinery - Noise test code for portable hand-held*
313 *machines with internal combustion engine - Engineering method (Grade 2 accuracy)*

314 **3 Terms and definitions**

315 IEC 62841-1:2014, Clause 3 is applicable, except as follows:

316 **3.101**

317 **bar tip guard**

318 shield that prevents contact with the **saw chain** at the tip of the **guide bar**

319 **3.102**

320 **chain brake**

321 function or device for stopping the **saw chain** activated manually or non-manually when
322 **kickback** occurs

323 **3.102.1**

324 **manually activated chain brake**

325 braking function triggered by the hand of the operator

326 **3.102.2**

327 **non-manually activated chain brake**

328 braking function triggered by **kickback** motion independent of operator activation

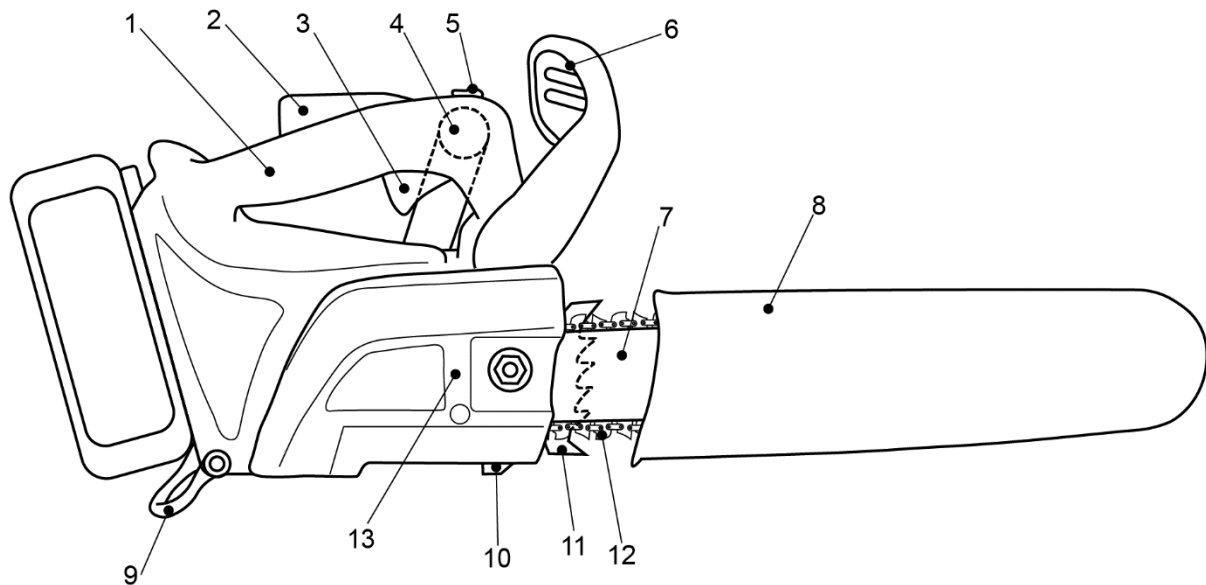
329 **3.103**

330 **chain catcher**

331 device for restraining the **saw chain** if it breaks or derails (see Figure 101)

332

- 333 **3.104**
334 **chain saw for tree service**
335 specialized machine of limited mass for cutting wood with a **saw chain**, designed for pruning
336 and dismantling standing tree crowns and consisting of an integrated unit of handles, motor,
337 **guide bar** and **saw chain**, designed to be supported with two hands (see Figure 101)
- 338 **3.105**
339 **cutting length**
340 approximate effective length of cut of the chain saw
- 341 Note 101 to entry: The method for determining cutting length is specified in K.21.102
- 342 **3.106**
343 **drive sprocket**
344 chain drive wheel with teeth
- 345 **3.107**
346 **front hand-guard**
347 guard between the **front handle** and the **saw chain** for protecting the hand from injuries if the
348 hand slips off the handle (see Figure 101)
- 349 **3.108**
350 **front handle**
351 support handle located at or towards the front of the machine (see Figure 101)
- 352 **3.109**
353 **guide bar**
354 **attachment** that supports and guides the **saw chain** (see Figure 101)
- 355 **3.110**
356 **kickback**
357 rapid upward and/or backward motion of the chain saw which can occur when the moving **saw**
358 **chain** contacts an object such as a log or branch near the tip of the **guide bar** or when the
359 wood closes in and pinches the moving **saw chain**
- 360 **3.111**
361 **maximum speed**
362 highest steady-state **saw chain** speed attainable under all conditions of **normal use**, including
363 no-load, when adjusted in accordance with the manufacturer's specifications and/or instructions
- 364 Note 101 to entry: The steady-state **saw chain** speed excludes transients such as overshoot that may occur before
365 attaining a steady-state condition.
- 366 **3.112**
367 **operator presence sensor**
368 device to detect the presence of an operator's hand
- 369 **3.113**
370 **rear hand-guard**
371 extension on the lower part of the **rear handle** for protecting the hand from the **saw chain** if it
372 breaks or derails (see Figure K.302)
- 373 **3.114**
374 **rear handle**
375 support handle located at or towards the rear of the machine (see Figure 101)
- 376 **3.115**
377 **saw chain**
378 **attachment** serving as a cutting tool, consisting of drive links and cutters (see Figure 101 and
379 Figure K.307)
- 380 **3.116**
381 **spiked bumper**
382 device fitted in front of the **guide bar** mounting point, acting as a pivot when in contact with a
383 tree or log (see Figure 101)

**Key**

- 1 rear handle
- 2 operator presence sensor
- 3 power switch
- 4 front handle
- 5 lock-off device
- 6 front hand-guard
- 7 guide bar
- 8 guide bar cover
- 9 attachment device
- 10 chain catcher
- 11 spiked bumper
- 12 saw chain
- 13 drive sprocket cover

Figure 101 – Chain saw nomenclature**4 General requirements**

IEC 62841-1:2014, Clause 4 is applicable.

5 General conditions for the tests

IEC 62841-1:2014, Clause 5 is applicable.

6 Radiation, toxicity and similar hazards

IEC 62841-1:2014, Clause 6 is applicable.

7 Classification

IEC 62841-1:2014, Clause 7 is applicable.

8 Marking and instructions

IEC 62841-1:2014, Clause 8 is applicable.

9 Protection against access to live parts

IEC 62841-1:2014, Clause 9 is applicable.

413 10 Starting

414 IEC 62841-1:2014, Clause 10 is not applicable.

415 11 Input and current

416 IEC 62841-1:2014, Clause 11 is not applicable.

417 12 Heating

418 IEC 62841-1:2014, Clause 12 is applicable.

419 13 Resistance to heat and fire

420 IEC 62841-1:2014, Clause 13 is applicable.

421 14 Moisture resistance

422 IEC 62841-1:2014, Clause 14 is not applicable.

423 15 Resistance to rusting

424 IEC 62841-1:2014, Clause 15 is applicable.

425 16 Overload protection of transformers and associated circuits

426 IEC 62841-1:2014, Clause 16 is not applicable.

427 17 Endurance

428 IEC 62841-1:2014, Clause 17 is not applicable.

429 18 Abnormal operation

430 IEC 62841-1:2014, Clause 18 is applicable.

431 19 Mechanical hazards

432 IEC 62841-1:2014, Clause 19 is applicable.

433 20 Mechanical strength

434 IEC 62841-1:2014, Clause 20 is applicable.

435 21 Construction

436 IEC 62841-1:2014, Clause 21 is applicable.

437 22 Internal wiring

438 IEC 62841-1:2014, Clause 22 is applicable.

439 23 Components

440 IEC 62841-1:2014, Clause 23 is applicable.

441 24 Supply connection and external flexible cords

442 IEC 62841-1:2014, Clause 24 is applicable.

443 25 Terminals for external conductors

444 IEC 62841-1:2014, Clause 25 is not applicable.

445 **26 Provision for earthing**

446 IEC 62841-1:2014, Clause 26 is not applicable.

447 **27 Screws and connections**

448 IEC 62841-1:2014, Clause 27 is applicable.

449 **28 Creepage distances, clearances and distances through insulation**

450 IEC 62841-1:2014, Clause 28 is not applicable.

451

452

Annexes

The annexes of Part 1 are applicable except as follows.

Annex I (informative)

Measurement of noise and vibration emissions

NOTE In Europe (EN IEC 62841-4-9), Annex I is normative.

I.2 Noise test code (grade 2)

This clause of IEC 62841-1:2014 is applicable, except as follows.

I.2.2.1 General

Replacement:

The sound power level shall be measured using a hemispherical measurement surface according to Figure I.101 and ISO 3744:2010. The acoustic environment, instrumentation, quantities to be measured, quantities to be determined, and the measurement procedure are specified in ISO 3744:2010.

The sound power level shall be given as A-weighted sound power level in dB reference 1 pW. The A-weighted sound pressure levels, from which the sound power is to be determined, shall be measured directly, and not calculated from frequency band data. Measurements shall be made outdoors or indoors in an essentially free field.

NOTE In Europe, for chain saws, the determination of the sound power level in accordance with I.2.2.4 also provides the basis for the determination of the A-weighted measured and guaranteed sound power level L_{WA} required by the European Directive 2000/14/EC and its amendments.

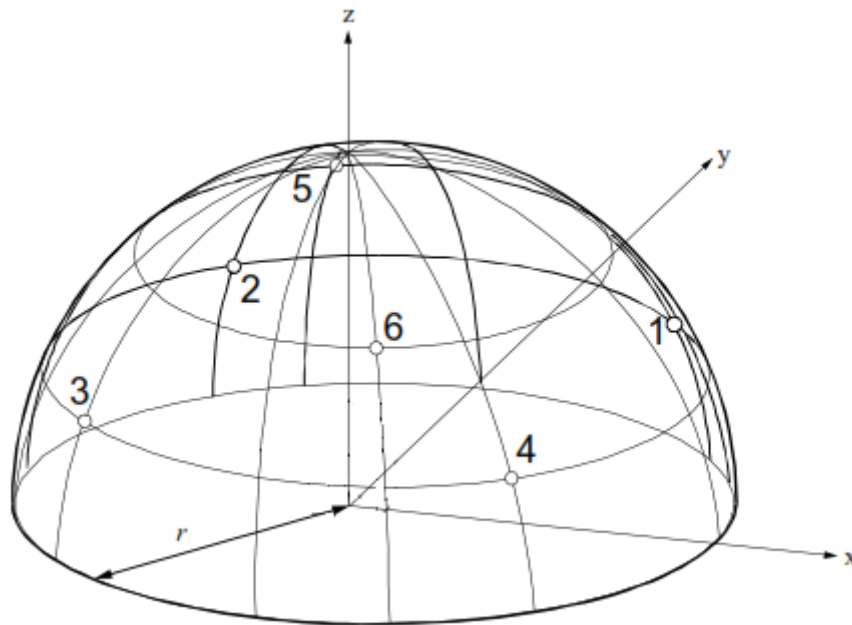


Figure I.101 - Microphone positions on the hemisphere

I.2.2.2 This subclause of IEC 62841-1:2014 is not applicable.

I.2.2.3 This subclause of IEC 62841-1:2014 is not applicable.

I.2.2.4 Lawn and garden machinery

482 *Replacement:*

483 The test environment outdoors shall be a flat open space (a slope, if any, not exceeding 5/100),
 484 visibly free of sound-reflecting objects (buildings, trees, poles, sign boards, etc.) within a
 485 circular area with a radius equal to approximately three times the radius of the hemispherical
 486 measurement surface used.

487 For the determination of sound power level, ISO 3744:2010 shall be used subject to the
 488 following modifications:

- 489 – the microphone array shall be six microphone positions according to Figure I.101 and Table
 490 I.101;
- 491 – for outdoor and indoor measurements the reflecting surface shall be replaced by an artificial
 492 surface according to I.2.2.101 or a natural ground surface according to I.2.2.102.
 493 Reproducibility of results using natural grass or other organic material is likely to be worse
 494 than that required for Grade 2 of accuracy. In case of dispute, measurements shall be
 495 carried out in the open air and on the artificial surface according to I.2.2.101;
- 496 – the measurement surface shall be a hemisphere with a radius $r = 4$ m;
- 497 – for measurements outdoors, $K_{2A} = 0$;
- 498 – for measurements outdoors the environmental conditions shall be within the limits specified
 499 by the manufacturers of the measuring equipment. The ambient air temperature shall be in
 500 the range from -10 °C to 30 °C and the wind speed shall be less than 5 m/s. A wind screen
 501 shall be used whenever the wind speed exceeds 1 m/s;
- 502 – for measurements indoors the environment shall be according to ISO 3744:2010 and the
 503 value of K_{2A} , determined without artificial surface and in accordance with Annex A of ISO
 504 3744:2010, shall be ≤ 2 dB, in which case K_{2A} shall be disregarded.

505

506 The A-weighted sound power level, L_{WA} , in dB, shall be calculated in accordance with
 507 ISO 3744:2010, 8.2.5, as follows:

$$508 \quad L_{WA} = \overline{L_{pA}} + 10 \lg \left(\frac{S}{S_0} \right) \text{ dB} \quad (\text{I.101})$$

509 with $\overline{L_{pA}}$ determined from

$$510 \quad \overline{L_{pA}} = 10 \lg \left[\frac{1}{6} \sum_{i=1}^6 10^{0,1 L'_{pA,i}} \right] - K_{1A} - K_{2A} \text{ dB}$$

511 where

- $\overline{L_{pA}}$ is the A-weighted surface sound pressure level according to ISO 3744:2010,
8.2.4, in dB;
- $L'_{pA,i}$ is the A-weighted sound pressure level measured at the i^{th} microphone
position, in dB;
- K_{1A} is the background noise correction in dB, A-weighted;
- K_{2A} is the environmental correction in dB, A-weighted according to the
requirements of this noise test code $K_{2A} = 0$ dB;
- S is the area of the measurement surface, in m^2 ;
- $S_0 = 1 \text{ m}^2$.

512 For the hemispherical measurement surface, the area S of the measurement surface is
 513 calculated as follows:

$$514 \quad S = 2\pi r^2$$

where the radius of the hemisphere, $r = 4$ m

from equation (I.101)

$$L_{WA} = \overline{L_{pA}} + 20 \text{ dB}$$

Table I.101 – Co-ordinates of microphone positions

Position No.	x	y	z
1	$+0,6555 r$	$+0,6555 r$	1,5 m
2	$-0,6555 r$	$+0,6555 r$	1,5 m
3	$-0,6555 r$	$-0,6555 r$	1,5 m
4	$+0,6555 r$	$-0,6555 r$	1,5 m
5	$-0,27 r$	$+0,65 r$	$0,71 r$
6	$+0,27 r$	$-0,65 r$	$0,71 r$

I.2.2.101 Requirements for an artificial surface

The artificial surface shall have absorption coefficients as given in Table I.102, measured in accordance with ISO 354:2003.

Table I.102 – Absorption coefficients

Frequencies Hz	Absorption coefficients	Tolerance
125	0,1	$\pm 0,1$
250	0,3	$\pm 0,1$
500	0,5	$\pm 0,1$
1 000	0,7	$\pm 0,1$
2 000	0,8	$\pm 0,1$
4 000	0,9	$\pm 0,1$

The artificial surface shall be placed on a hard, reflecting surface and have a size of at least $3,6 \text{ m} \times 3,6 \text{ m}$. It shall be placed so that its geometrical centre coincides with the origin of the coordinate system of the microphone positions. The construction of the supporting structure shall be such that the requirements for the acoustic properties are also met with the absorptive material in place. The structure shall support the weight of an operator when positioning the machine on the structure and the weight of the machine to avoid compression of the absorbing material.

NOTE 101 See Annex CC for an example of a material and construction which can be expected to fulfil these requirements.

I.2.2.102 Requirements for natural ground surface

The test environment, within a circular area with a radius equal to approximately the radius of the hemisphere measurement surface used, shall be covered with high-quality natural grass. Before the measurements are taken, the grass shall be cut with a lawnmower to a height of cut as near as possible to 30 mm. The surface shall be clean of grass clippings and debris and shall be visibly free of moisture, frost, or snow.

I.2.3 Emission sound pressure level determination

I.2.3.1 Hand-held tools

Replacement:

544 The A-weighted emission sound pressure level at the workstation, L_{pA} , shall be determined in
545 accordance with ISO 11203 as follows:

546
$$L_{pA} = L_{WA} - Q$$

547 where $Q = 8$ dB.

548 NOTE 1 This value of Q has been determined, during experimental investigations, to be applicable to chain saws.
549 The resulting A-weighted emission sound pressure level at the workstation is equivalent to the value of the surface
550 sound pressure level at a distance of 0,7 m from the power tool. This distance has been chosen to give satisfactory
551 reproducibility of results, and to permit comparison of the acoustic performance of different chain saws which do not,
552 in general, have uniquely defined workstations. Under free field conditions, where it may be required to estimate the
553 emission sound pressure level, $L_{pA,r1}$, at a distance r_1 in m from the geometric centre of the power tool, this can be
554 done by applying the formula:

555
$$L_{pA,r1} = L_{pA} + 20 \lg\left(\frac{0,7}{r_1}\right) \text{ dB}$$

556 NOTE 2 At any given position in relation to a particular machine, and for given mounting and operating conditions,
557 the emission sound pressure levels determined by the method of this standard will in general be lower than the
558 directly measured sound pressure levels for the same machine in the typical workroom where it is used. This is due
559 to the influence of sound reflecting surfaces in the workroom compared to the free field conditions of the test specified
560 here. A method of calculating the sound pressure levels in the vicinity of a machine operating alone in a workroom
561 is given in ISO/TR 11690-3. Commonly observed differences are 1 dB to 5 dB, but in extreme cases the difference
562 might be even greater.

563 NOTE 3 The C-weighted peak emission level is not expected to exceed 130 dB on these machines, since these
564 machines are relatively small and do not generate impulse noise.

565 I.2.3.2 Transportable power tools

566 IEC 62841-1:2014, Subclause I.2.3.2 is not applicable.

567 I.2.3.3 Lawn and garden machinery

568 *Replacement:*

569 The emission sound pressure for the chain saw shall be determined in accordance with I.2.3.1.

570 NOTE A chain saw is used in a similar way to **hand-held tools**, without a uniquely defined workstation. The sound
571 pressure at a distance of 0,7 m from the machine is applicable.

572 I.2.4 Installation and mounting conditions of the power tools during noise tests

573 *Replacement:*

574 The machine under test shall be new and equipped with attachments which affect the acoustic
575 properties, as specified in 8.14.2.

576 The installation and mounting conditions for A-weighted sound power level measurement shall
577 be in accordance with ISO 22868:2021, Clause A.1 and Clause A.2, as far as applicable to
578 electric chain saws.

579 Tests shall be conducted without the use of an operator.

580 I.2.5 Operating conditions

581 *Replacement:*

582 I.2.5.1 General

583 Measurements shall be carried out on a new machine.

584 Before starting the test, the machine shall be operated under the conditions of I.2.5.2 for a
585 period of at least 10 min.

586 Care shall be taken that the location of the test timber on its support in accordance with
587 ISO 22868:2021, Figure A.1 does not adversely affect the result of the test.

588 During measurements, the machine shall operate under stable conditions. Once the noise
589 emission is steady, the measurement time interval shall be at least 15 s. If measurements are