



UL 62841-2-7

STANDARD FOR SAFETY

Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery – Safety – Part 2-7: Particular Requirements for Hand-Held Spray Guns

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UL Standard for Safety for Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery – Safety – Part 2-7: Particular Requirements for Hand-Held Spray Guns, UL 62841-2-7

First Edition, Dated December 20, 2024

Summary of Topics

Adoption of the First Edition of IEC 62841-2-7, Standard for Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery – Safety – Part 2-7: Particular Requirements for Hand-Held Spray Guns, as the First Edition of UL 62841-2-7 dated December 20, 2024.

UL 62841-2-7 is an adoption of IEC 62841-2-7, First Edition, issued by the IEC April 2024. Please note that the National Difference document incorporates all of the U.S. national differences for UL 62841-2-7.

The requirements are substantially in accordance with Proposal(s) on this subject dated October 18, 2024.

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CSA Group
CSA C22.2 No. 62841-2-7:24
First Edition
(IEC 62841-2-7:2024, MOD)



ULSE Inc.
UL 62841-2-7
First Edition

Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery – Safety – Part 2-7: Particular Requirements for Hand-Held Spray Guns

December 20, 2024

This national standard is based on publication IEC 62841-2-7, First Edition (2024).



ANSI/UL 62841-2-7-2024



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Preface

This is the harmonized CSA Group and ULSE Standard for Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery – Safety – Part 2-7: Particular Requirements for Hand-Held Spray Guns. It is the First edition of CSA C22.2 No. 62841-2-7 and the First edition of UL 62841-2-7.

This harmonized standard is based on IEC Publication 62841-2-7: First edition, Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery – Safety – Part 2-7: Particular Requirements for Hand-Held Spray Guns, issued April 2024. IEC 62841-2-7 is copyrighted by the IEC.

This harmonized standard was prepared by CSA Group and ULSE. The efforts and support of the International Harmonization Committee (IHC) for the adoption of the IEC series of standards for Hand-Held, Motor-Operated, and Transportable Tools and Lawn and Garden Machinery, are gratefully acknowledged.

This standard is considered suitable for use for conformity assessment within the stated scope of the standard.

This standard was reviewed by the CSA Subcommittee on Safety of Hand-Held Motor-Operated Electric Tools, under the jurisdiction of the CSA Technical Committee on Consumer and Commercial Products and the CSA Strategic Steering Committee on requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee. This standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

Application of Standard

Where reference is made to a specific number of samples to be tested, the specified number is to be considered a minimum quantity.

Note: Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

CSA C22.2 No. 62841-2-7 is to be used in conjunction with the First edition of CAN/CSA-C22.2 No. 62841-1. The requirements for hand-held spray guns are contained in this Part 2 Standard and CAN/CSA-C22.2 No. 62841-1. Requirements of this Part 2 Standard, where stated, amend the requirements of CAN/CSA-C22.2 No. 62841-1. Where a particular subclause of CAN/CSA-C22.2 No. 62841-1 is not mentioned in CSA C22.2 No. 62841-2-7, the CAN/CSA-C22.2 No. 62841-1 subclause applies.

UL 62841-2-7 is to be used in conjunction with the First edition of UL 62841-1. The requirements for hand-held spray guns are contained in this Part 2 Standard and UL 62841-1. Requirements of this Part 2 Standard, where stated, amend the requirements of UL 62841-1. Where a particular subclause of UL 62841-1 is not mentioned in UL 62841-2-7, the UL 62841-1 subclause applies.

Level of harmonization

This standard adopts the IEC text with national differences.

This standard is published as an equivalent standard for CSA Group and ULSE.

An equivalent standard is a standard that is substantially the same in technical content, except as follows: Technical national differences are allowed for codes and governmental regulations as well as those recognized as being in accordance with NAFTA Article 905, for example, because of fundamental climatic,

geographical, technological, or infrastructural factors, scientific justification, or the level of protection that the country considers appropriate. Presentation is word for word except for editorial changes.

All national differences from the IEC text are included in the CSA Group and ULSE versions of the standard. While the technical content is the same in each organization's version, the format and presentation may differ.

Reasons for Differences From IEC

National differences from the IEC are being added in order to address safety and regulatory situations present in the US and Canada.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard is based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision is to be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

IEC Copyright

For CSA Group, the text, figures, and tables of International Electrotechnical Commission Publication 62841-2-7, Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 2-7: Particular requirements for hand-held spray guns, copyright 2024, are used in this standard with the consent of the International Electrotechnical Commission. The IEC Foreword is not a part of the requirements of this standard but are included for information purposes only.

These materials are subject to copyright claims of IEC and ULSE. No part of this publication may be reproduced in any form, including an electronic retrieval system, without the prior written permission of ULSE. All requests pertaining to the Electric Motor-Operated Hand-Held Tools, Transportable Tools and Lawn and Garden Machinery – Safety – Part 2-7: Particular Requirements for Hand-Held Spray Guns, UL 62841-2-7 Standard should be submitted to ULSE.

NATIONAL DIFFERENCES

National Differences from the text of International Electrotechnical Commission (IEC) Publication 62841-2-7, Electric motor-operated hand-held tools, transportable tools and lawn and garden machinery – Safety – Part 2-7: Particular requirements for hand-held spray guns, copyright 2024, are indicated by notations (differences) and are presented in bold text. The national difference type is included in the body.

There are five types of National Differences as noted below. The difference type is noted on the first line of the National Difference in the standard. The standard may not include all types of these National Differences.

DR – These are National Differences based on the **national regulatory requirements**.

D1 – These are National Differences which are based on **basic safety principles and requirements**, elimination of which would compromise safety for consumers and users of products.

D2 – These are National Differences from IEC requirements based on existing **safety practices**. These requirements reflect national safety practices, where empirical substantiation (for the IEC or national requirement) is not available or the text has not been included in the IEC standard.

DC – These are National Differences based on the **component standards** and will not be deleted until a particular component standard is harmonized with the IEC component standard.

DE – These are National Differences based on **editorial comments or corrections**.

Each national difference contains a description of what the national difference entails. Typically one of the following words is used to explain how the text of the national difference is to be applied to the base IEC text:

Addition / Add - An addition entails adding a complete new numbered clause, subclause, table, figure, or annex. Addition is not meant to include adding select words to the base IEC text.

Modification / Modify - A modification is an altering of the existing base IEC text such as the addition, replacement or deletion of certain words or the replacement of an entire clause, subclause, table, figure, or annex of the base IEC text.

Deletion / Delete - A deletion entails complete deletion of an entire numbered clause, subclause, table, figure, or annex without any replacement text.

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FOREWORD

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY – Part 2-7: Particular requirements for hand-held spray guns

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

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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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at <https://patents.iec.ch>. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 62841-2-7 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
116/740/FDIS	116/762/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 is to be used in conjunction with IEC 62841-1:2014.

This document supplements or modifies the corresponding clauses in IEC 62841-1, so as to convert it into the IEC Standard: Particular requirements for hand-held spray guns.

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

The following print types are used:

- requirements: in roman type;
- test specifications: in italic type;
- **terms defined in Clause 3: in bold type**
- notes: in small roman type.

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

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

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

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/standardsdev/publications.

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

- reconfirmed,
- withdrawn, or
- revised.

NOTE 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.

101.DV DE Modification: Add the following to the IEC Foreword:

The numbering system in the standard uses a space instead of a comma to indicate thousands and uses a comma instead of a period to indicate a decimal point. For example, 1 000 means 1,000 and 1,01 means 1.01.

102.DV DE Modification: Add the following to the IEC Foreword:

For this Standard, all references to "IEC 62841-1:2014" refer to CAN/CSA-C22.2 No. 62841-1 and UL 62841-1.

IMPORTANT – The "colour inside" logo on the cover page of this document indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

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ELECTRIC MOTOR-OPERATED HAND-HELD TOOLS, TRANSPORTABLE TOOLS AND LAWN AND GARDEN MACHINERY – SAFETY – Part 2-7: Particular requirements for hand-held spray guns

1 Scope

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

Addition:

This document applies to hand-held **spray guns** for **non-flammable materials**.

2 Normative references

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

Addition:

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

3 Terms and definitions

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

Addition:

3.101

non-flammable material

material having a flash-point above 55 °C

3.102

spray gun

tool incorporating the motor in a hand-held unit with an unpressurized material container intended for the mechanical spraying of liquid, paste or powdery substances

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, except as follows:

5.7.3 *Replacement:*

*For tests that require a value for **rated current** and with **spray guns** where there is no marked **rated current**, the value of the **rated current** is determined by measuring the current of the **spray gun** when operated and loaded as specified in [12.2](#) and [12.2.1](#).*

5.17 Addition:

The mass of a **spray gun** includes the heaviest nozzle and the heaviest material container in accordance with 8.14.2 a) 101), but does not include any material to be sprayed.

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, except as follows:

8.14.1 Replacement of the second paragraph:

As the term "power tool" or "tool" is not appropriate for **spray guns**, for these products an appropriate term such as "sprayer" or "paint sprayer" may be used.

8.14.1.1 General power tool safety warnings

Modification:

For **spray guns**,

- Items 3) d), 3) g), and 4) f) may be omitted; and
- item 4) a) may be modified as follows:

Use the correct sprayer for your application. The correct sprayer will do the job better and safer at the rate for which it was designed.

8.14.2 a) Addition:

101) Information on recommended nozzles and material containers to be used with the **spray gun**;

102) Instruction not to use **spray guns** for spraying flammable materials;

103) Warning to be aware of any hazards presented by the material being sprayed and instruction to consult the markings on the container or the information supplied by the manufacturer of the material to be sprayed.

8.14.2 b) Addition:

101) Instruction to use appropriate personal protective equipment, such as a respirator.

8.14.2 c) Addition:

101) Instruction not to clean **spray guns** with flammable solvents.

9 Protection against access to live parts

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

10 Starting

IEC 62841-1:2014, Clause 10 is applicable.

11 Input and current

Replacement:

The **rated input** or **rated current** shall be at least the measured power input or current under load.

*Compliance is checked by measuring the power input or current of the **spray gun** when operated and loaded as specified in [12.2](#) and [12.2.1](#). If the **spray gun** is only marked with **rated input**, the current of the **spray gun** should also be measured and recorded for the test condition of [5.7.3](#).*

12 Heating

IEC 62841-1:2014, Clause 12 is applicable, except as follows:

12.2 Replacement:

*For **spray guns** with one or more **rated voltages**: The **spray gun** is operated at each **rated voltage**, under the load conditions specified in [12.2.1](#).*

The temperatures are measured at the most unfavourable of the two voltage settings. The temperatures that are measured by means of thermocouples are taken while the spray gun is operating.

*For **spray guns** with a **rated voltage range**: The **spray gun** is operated*

- at the lower limit of the **rated voltage range**; and*
- at the upper limit of the **rated voltage range**.*

The temperatures are measured at the most unfavourable of the two voltage settings. The temperature rises are measured at the end of the last "on" period.

12.2.1 Replacement:

*The **spray gun** is fitted with the smallest nozzle recommended by the manufacturer in accordance with [8.14.2](#) a) 101). The **spray gun** is operated through continuous cycles spraying for 1 h or until temperatures stabilise, whichever is achieved first. Each cycle consists of spraying water, paint or hydraulic fluid until the volume of the largest recommended material container in accordance with [8.14.2](#) a) 101) is empty followed by a maximum 1 min "off" period in order to refill the material container before the test is continued. The combination of controls, if any, is adjusted so as to achieve maximum input during the periods of operation. At the manufacturer's option, the **spray gun** may also be operated continuously until thermal stabilisation.*

13 Resistance to heat and fire

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

14 Moisture resistance

IEC 62841-1:2014, Clause 14 is applicable.

15 Resistance to rusting

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

16 Overload protection of transformers and associated circuits

IEC 62841-1:2014, Clause 16 is applicable.

17 Endurance

IEC 62841-1:2014, Clause 17 is applicable, except as follows:

17.2 Replacement:

The **spray gun** is fitted with the smallest nozzle recommended by the manufacturer in accordance with [8.14.2 a\) 101](#)). The **spray gun** is operated for 12 h of operation at a voltage equal to 1,1 times the highest **rated voltage** or 1,1 times the upper limit of the **rated voltage range**, and then for 12 h at a supply voltage equal to 0,9 times the lowest **rated voltage** or 0,9 times the lower limit of the **rated voltage range**. The **spray gun** is operated through continuous cycles spraying. Each cycle consists of spraying water, paint or hydraulic fluid until the volume of the largest recommended container in accordance with [8.14.2 a\) 101](#)) is empty followed by a 5 min "off" period. The combination of controls, if any, is adjusted so as to achieve maximum input during the periods of operation.

The **spray gun** may be switched on and off by means of a switch other than that incorporated in the **spray gun**.

During this test, if applicable, replacement of the carbon brushes is allowed, and the **spray gun** is oiled and greased as in **normal use**.

If the temperature rise of any part of the **spray gun** exceeds the temperature rise determined during the test of [12.2](#), forced cooling or rest periods are applied, the rest periods being excluded from the specified operating time.

During these tests, overload protection devices shall not operate.

18 Abnormal operation

IEC 62841-1:2014, Clause 18 is applicable, except as follows:

18.8.1 Replacement of [Table 4](#):

Table 4
Required performance levels

Type and purpose of SCF	Minimum performance level (PL)
Power switch – prevent unwanted switch-on	a
Power switch – provide desired switch-off	a
Any electronic control to pass the test of 18.3	a
Prevent exceeding thermal limits as in 18.4 and 18.5.3	a
Prevent self-resetting as required in 23.3	a

19 Mechanical hazards

IEC 62841-1:2014, Clause 19 is applicable, except as follows:

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

19.101 **Spray guns** that operate at 10 bar or greater shall be guarded at the nozzle to prevent inadvertent contact with the orifice.

The nozzle **guard** shall

- ensure an axial distance between body tissue and discharge point of the nozzle of at least 8 mm when the **spray gun** operates between 10 bar and 50 bar;
- ensure an axial distance between body tissue and discharge point of the nozzle of at least 25 mm when the **spray gun** operates at 50 bar or greater;
- be an integral part of the equipment necessary for operation; and
- have a minimum radial distance.

Compliance is checked by inspection and by measurement.

20 Mechanical strength

IEC 62841-1:2014, Clause 20 is applicable, except as follows:

20.1 *Addition:*

A breakage of the container is disregarded.

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

21 Construction

IEC 62841-1:2014, Clause 21 is applicable, except as follows:

21.15 *Replacement:*

Spray guns shall be so constructed that, in any position of the gun, their electrical insulation cannot be affected by liquids which might leak from containers, hoses, couplings and the like.

Compliance is checked by inspection.

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

21.35 Dust collection

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

22 Internal wiring

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

23 Components

IEC 62841-1:2014, Clause 23 is applicable, except as follows:

23.1.10 Addition:

For **spray guns**, reed-switches are allowed as **power switches**.

23.3 Replacement of the first paragraph:

Protection devices or circuits shall be of the non-self-resetting type unless the tool is equipped with a **momentary power switch** with no provision for being locked in the "on" position.

24 Supply connection and external flexible cords

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

25 Terminals for external conductors

IEC 62841-1:2014, Clause 25 is applicable.

26 Provision for earthing

IEC 62841-1:2014, Clause 26 is applicable.

27 Screws and connections

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

28 Creepage distances, clearances and distances through insulation

IEC 62841-1:2014, Clause 28 is applicable, except as follows:

28.1 Addition:

The values specified in Table 12 do not apply to reed-switches.

Annexes

The annexes of IEC 62841-1:20144 are applicable except as follows.

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Annex I (informative)

Measurement of noise and vibration emissions

NOTE In Europe (EN IEC 62841-2-7), Annex I is normative.

I.2 Noise test code (grade 2)

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

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

Addition:

Spray guns are suspended in such a way as to correspond to **normal use**, with the axis of the spray nozzle oriented in a horizontal direction.

I.2.5 Operating conditions

Addition:

The temperature requirements of IEC 62841-1:2014, 5.6 are not applicable.

Spray guns are tested with the material container filled to 50 % capacity at the beginning of the test.

Spray guns are tested whilst spraying water, paint or hydraulic fluid.

I.3 Vibration

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

I.3.3.2 Location of measurement

Addition:

[Figure I.101](#) shows the position for spray guns.