CSA GROUP™

CSA C22.2 No. 130:16
National Standard of Canada
(reaffirmed 2021)

Requirements for electrical resistance trace heating and heating device sets

Standards Council of Canada
Conseil canadien des normes

REVISED JUNE 2020

Legal Notice for Standards

Canadian Standards Association (operating as "CSA Group") develops standards through a consensus standards development process approved by the Standards Council of Canada. This process brings together volunteers representing varied viewpoints and interests to achieve consensus and develop a standard. Although CSA Group administers the process and establishes rules to promote fairness in achieving consensus, it does not independently test, evaluate, or verify the content of standards.

Disclaimer and exclusion of liability

This document is provided without any representations, warranties, or conditions of any kind, express or implied, including, without limitation, implied warranties or conditions concerning this document's fitness for a particular purpose or use, its merchantability, or its non-infringement of any third party's intellectual property rights. CSA Group does not warrant the accuracy, completeness, or currency of any of the information published in this document. CSA Group makes no representations or warranties regarding this document's compliance with any applicable statute, rule, or regulation.

IN NO EVENT SHALL CSA GROUP, ITS VOLUNTEERS, MEMBERS, SUBSIDIARIES, OR AFFILIATED COMPANIES, OR THEIR EMPLOYEES, DIRECTORS, OR OFFICERS, BE LIABLE FOR ANY DIRECT, INDIRECT, OR INCIDENTAL DAMAGES, INJURY, LOSS, COSTS, OR EXPENSES, HOWSOEVER CAUSED, INCLUDING BUT NOT LIMITED TO SPECIAL OR CONSEQUENTIAL DAMAGES, LOST REVENUE, BUSINESS INTERRUPTION, LOST OR DAMAGED DATA, OR ANY OTHER COMMERCIAL OR ECONOMIC LOSS, WHETHER BASED IN CONTRACT, TORT (INCLUDING NEGLIGENCE), OR ANY OTHER THEORY OF LIABILITY, ARISING OUT OF OR RESULTING FROM ACCESS TO OR POSSESSION OR USE OF THIS DOCUMENT, EVEN IF CSA GROUP HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, INJURY, LOSS, COSTS, OR EXPENSES.

In publishing and making this document available, CSA Group is not undertaking to render professional or other services for or on behalf of any person or entity or to perform any duty owed by any person or entity to another person or entity. The information in this document is directed to those who have the appropriate degree of experience to use and apply its contents, and CSA Group accepts no responsibility whatsoever arising in any way from any and all use of or reliance on the information contained in this document.

CSA Group is a private not-for-profit company that publishes voluntary standards and related documents. CSA Group has no power, nor does it undertake, to enforce compliance with the contents of the standards or other documents it publishes.

Intellectual property rights and ownership

As between CSA Group and the users of this document (whether it be in printed or electronic form), CSA Group is the owner, or the authorized licensee, of all works contained herein that are protected by copyright, all trade-marks (except as otherwise noted to the contrary), and all inventions and trade secrets that may be contained in this document, whether or not such inventions and trade secrets are protected by patents and applications for patents. Without limitation, the unauthorized use, modification, copying, or disclosure of this document may violate laws that protect CSA Group's and/or others' intellectual property and may give rise to a right in CSA Group and/or others to seek legal redress for such use, modification, copying, or disclosure. To the extent permitted by licence or by law, CSA Group reserves all intellectual property rights in this document.

Patent rights

Attention is drawn to the possibility that some of the elements of this standard may be the subject of patent rights. CSA Group shall not be held responsible for identifying any or all such patent rights. Users of this standard are expressly advised that determination of the validity of any such patent rights is entirely their own responsibility.

Authorized use of this document

This document is being provided by CSA Group for informational and non-commercial use only. The user of this document is authorized to do only the following:

If this document is in electronic form:

- load this document onto a computer for the sole purpose of reviewing it;
- search and browse this document; and
- print this document if it is in PDF format.

Limited copies of this document in print or paper form may be distributed only to persons who are authorized by CSA Group to have such copies, and only if this Legal Notice appears on each such copy.

In addition, users may not and may not permit others to

- alter this document in any way or remove this Legal Notice from the attached standard;
- sell this document without authorization from CSA Group; or
- make an electronic copy of this document.

If you do not agree with any of the terms and conditions contained in this Legal Notice, you may not load or use this document or make any copies of the contents hereof, and if you do make such copies, you are required to destroy them immediately. Use of this document constitutes your acceptance of the terms and conditions of this Legal Notice.

Revision History

C22.2 No. 130:16, Requirements for electrical resistance trace heating and heating device sets

Errata — June 2020	**Revision symbol (in margin)**
Clause Figures 15, 16, 17, 18, and 19	Δ

Update No. 2 — April 2020	**Revision symbol (in margin)**
Clauses 4.3.1, 5.1, 5.2, 5.3.1, and 8.1	②

Update No. 1 — March 2019	**Revision symbol (in margin)**
Preface Clauses 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2, 4.2, 4.3.1, 6.2.6.1, 6.2.6.4.1, 6.2.6.4.6, 6.2.6.4.7, 6.2.6.4.8.2, 6.2.6.4.8.3, 6.2.6.4.8.4, 6.2.6.4.8.5, 6.2.6.4.9, 6.2.11.2, 8.4, B.2, B.2.1, B.2.2.3, C.2.3, C.2.4, and C.2.8.2 Annexes C and D Table E.1 Figures 7 and C.2	①

Standards Update Service

CSA C22.2 No. 130:16
February 2016

Title: *Requirements for electrical resistance trace heating and heating device sets*

To register for e-mail notification about any updates to this publication
- go to **www.csagroup.org/store/**
- click on **Product Updates**

The **List ID** that you will need to register for updates to this publication is **2423611**.

If you require assistance, please e-mail **techsupport@csagroup.org** or call 416-747-2233.

Visit CSA Group's policy on privacy at **www.csagroup.org/legal** to find out how we protect your personal information.

Canadian Standards Association (operating as "CSA Group"), under whose auspices this National Standard has been produced, was chartered in 1919 and accredited by the Standards Council of Canada to the National Standards system in 1973. It is a not-for-profit, nonstatutory, voluntary membership association engaged in standards development and certification activities.

CSA Group standards reflect a national consensus of producers and users — including manufacturers, consumers, retailers, unions and professional organizations, and governmental agencies. The standards are used widely by industry and commerce and often adopted by municipal, provincial, and federal governments in their regulations, particularly in the fields of health, safety, building and construction, and the environment.

Individuals, companies, and associations across Canada indicate their support for CSA Group's standards development by volunteering their time and skills to Committee work and supporting CSA Group's objectives through sustaining memberships. The more than 7000 committee volunteers and the 2000 sustaining memberships together form CSA Group's total membership from which its Directors are chosen. Sustaining memberships represent a major source of income for CSA Group's standards development activities.

CSA Group offers certification and testing services in support of and as an extension to its standards development activities. To ensure the integrity of its certification process, CSA Group regularly and continually audits and inspects products that bear the CSA Group Mark.

In addition to its head office and laboratory complex in Toronto, CSA Group has regional branch offices in major centres across Canada and inspection and testing agencies in eight countries. Since 1919, CSA Group has developed the necessary expertise to meet its corporate mission: CSA Group is an independent service organization whose mission is to provide an open and effective forum for activities facilitating the exchange of goods and services through the use of standards, certification and related services to meet national and international needs.

For further information on CSA Group services, write to
CSA Group
178 Rexdale Boulevard
Toronto, Ontario, M9W 1R3
Canada

A National Standard of Canada is a standard developed by a Standards Council of Canada (SCC) accredited Standards Development Organization, in compliance with requirements and guidance set out by SCC. More information on National Standards of Canada can be found at www.scc.ca.

SCC is a Crown corporation within the portfolio of Innovation, Science and Economic Development (ISED) Canada. With the goal of enhancing Canada's economic competitiveness and social well-being, SCC leads and facilitates the development and use of national and international standards. SCC also coordinates Canadian participation in standards development, and identifies strategies to advance Canadian standardization efforts.

Accreditation services are provided by SCC to various customers, including product certifiers, testing laboratories, and standards development organizations. A list of SCC programs and accredited bodies is publicly available at www.scc.ca.

Standards Council of Canada
600-55 Metcalfe Street
Ottawa, Ontario, K1P 6L5
Canada

Cette Norme Nationale du Canada n'est disponible qu'en anglais.

National Standard of Canada

CSA C22.2 No. 130:16

Requirements for electrical resistance trace heating and heating device sets

Published in February 2016 by CSA Group
A not-for-profit private sector organization
178 Rexdale Boulevard, Toronto, Ontario, Canada M9W 1R3

*To purchase standards and related publications, visit our Online Store at **www.csagroup.org/store/***
or call toll-free 1-800-463-6727 or 416-747-4044.

ICS 29.060.20; 97.100
ISBN 978-1-77139-900-5

Contents

① Preface

This is the fourth edition of CSA C22.2 No. 130, *Requirements for electrical resistance trace heating and heating device sets*. It supersedes the previous edition published in 2003 under the title *Requirements for electrical resistance heating cable and heating device sets,* two previous standards, CAN/CSA-C22.2 No. 130.1,*Heat tracing cable systems for use in industrial locations,* published in 1990, and C22.2 No. 130.2,*Heat cable systems for use in other than industrial locations,* published in 1993, and previous editions published in 1985 and 1974 under the title *Heating cables and heating cable sets*. This Standard is issued by the CSA Group under Part II of the *Canadian Electrical Code*.

For general information on the Standards of the *Canadian Electrical Code, Part II*, see the Preface of CAN/CSA-C22.2 No. 0.

This fourth edition modifies the test method for the verification of sheath temperature (including the addition of an alternate test for sheath temperature test method, heat loss calculations, and an update of Annex C for hazardous locations). Testing for surface heaters used for space heating is aligned with the changes made in the *Canadian Electrical Code* (2015), and the reference standards have also been updated.

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

This Standard was prepared by the Integrated Committee on Trace Heating, under the jurisdiction of the Technical Committee on Wiring Products and the Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the 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.

Interpretations: The Strategic Steering Committee on Requirements for Electrical Safety has provided the following direction for the interpretation of standards under its jurisdiction: "The literal text shall be used in judging compliance of products with the safety requirements of this Standard. When the literal text cannot be applied to the product, such as for new materials or construction, and when a relevant committee interpretation has not already been published, CSA's procedures for interpretation shall be followed to determine the intended safety principle."

Notes:

1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
2) *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.*
3) *This Standard was developed by consensus, which is defined by* CSA Policy governing standardization — Code of good practice for standardization *as "substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity". It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Standard.*
4) *To submit a request for interpretation of this Standard, please send the following information to* ***inquiries@csagroup.org*** *and include "Request for interpretation" in the subject line: define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;*
   a) *provide an explanation of circumstances surrounding the actual field condition; and*
   b) *where possible, phrase the request in such a way that a specific "yes" or "no" answer will address the issue.*

Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization *and are available on the Current Standards Activities page at* ***standardsactivities.csa.ca****.*

5) *This Standard is subject to review five years from the date of publication, and suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to* ***inquiries@csagroup.org*** *and include "Proposal for change" in the subject line: Standard designation (number);*
   a) *relevant clause, table, and/or figure number;*
   b) *wording of the proposed change; and*
   c) *rationale for the change.*

Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization *and are published in CSA's periodical* Info Update*, which is available on the CSA Web site at* ***www.csa.ca****.*

CSA C22.2 No. 130:16
Requirements for electrical resistance trace heating and heating device sets

1 Scope

① **1.1**

This Standard specifies the requirements for trace heaters, surface heaters, and heating device sets for use on system voltages not exceeding 750 V that are intended to be installed in accordance with the *Canadian Electrical Code, Part I*. It applies to heating devices installed on or in metal and non-metallic pipes, tanks, vessels, and related equipment and to various surface heating applications. Typical applications include

a) the protection of pipes, tanks, and vessels, including fire protection systems, from freezing;
b) maintaining required temperatures on process equipment, including pipes, tanks, and vessels;
c) earth thermal storage;
d) hot water temperature maintenance;
e) surface heating, including floor, ceiling, and wall-heating;
f) snow melting; and
g) de-icing of roofs and gutters.

① **1.2**

This Standard does not apply to devices intended to heat or to stress relieve pipes or vessels using eddy current, induction, skin effect, or electric current passed directly through the pipe or vessel wall (impedance).

① **1.3**

This Standard does not apply to heating elements using carbon ink dispersion.

Note: *Carbon ink dispersion does not include an extruded polymer material.*

① **1.4**

This Standard does not apply to heating devices that are for use in hazardous locations.

Note: *The requirements for heating devices used in hazardous locations are now in CAN/CSA-C22.2 No 60079-30-1.*

① **1.5**

The values given in SI units are the units of record for the purposes of this Standard. The values given in parentheses are for information and comparison only.

① **1.6**

In CSA standards, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the standard.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.