



**CSA B140.9.3:M86**  
National Standard of Canada  
*(reaffirmed 2020)*



# Portable kerosine-fired heaters



Standards Council of Canada  
Conseil canadien des normes

# 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.



# *Standards Update Service*

*CSA B140.9.3:M86*

*February 1986*

**Title:** *Portable kerosine-fired heaters*

To register for e-mail notification about any updates to this publication

- go to [store.csagroup.org](http://store.csagroup.org)
- click on **Product Updates**

The **List ID** that you will need to register for updates to this publication is **2000611**.

If you require assistance, please e-mail [techsupport@csagroup.org](mailto:techsupport@csagroup.org) or call 416-747-2233.

Visit CSA Group's policy on privacy at [www.csagroup.org/legal](http://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



**Standards Council of Canada**  
**Conseil canadien des normes**

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](http://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](http://www.scc.ca).

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

Cette Norme Nationale du Canada est disponible en versions française et anglaise.

*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 to judge its suitability for their particular purpose.*

*®A trademark of the Canadian Standards Association, operating as “CSA Group”*

# *National Standard of Canada*

## *CSA B140.9.3:M86 Portable kerosine-fired heaters*



*®A trademark of the Canadian Standards Association,  
operating as "CSA Group"*



*Published in February 1986 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 [store.csagroup.org](http://store.csagroup.org)  
or call toll-free 1-800-463-6727 or 416-747-4044.*

*ICS 91.140.65  
ISSN 0317-5669*

*© 1986 Canadian Standards Association  
All rights reserved. No part of this publication may be reproduced in any form whatsoever  
without the prior permission of the publisher.*

# Contents

Technical Committee on Oil Burning Appliance Standards 4

Subcommittee on Portable Kerosine-Fired Heaters 5

Preface 7

Foreword 8

## 1. Scope 9

## 2. Reference Publications 9

## 3. Definitions 9

## 4. General Requirements 9

4.1 Carbon Monoxide/Carbon Dioxide Ratio 9

4.2 Unburned Hydrocarbons 10

4.3 Smoke 10

4.4 Electrical Features 10

## 5. Construction 10

5.1 General 10

5.2 Fuel Tank 11

5.3 Stability 11

5.4 Spillage on Upsetting 11

5.5 Flame Adjustment 11

5.6 Guards and Grilles 12

5.7 Levelling 12

5.8 Safety Devices for Wick Type Heaters 12

5.8.1 Tilt Shut-Off Device 12

5.8.2 Emergency Manual Shut-Off Device 13

5.9 Flame Flashback 13

5.10 Resistance to Wind 13

5.11 Glass Chimneys 13

5.12 Combustion System for Pressurized-Type Heaters 13

5.13 Heaters Intended for Cooking 16

## 6. Marking 16

6.1 General 16

6.2 Warnings 16

6.3 Identification and Markings 17

## 7. Instructions 17

## 8. Tests 17

8.1 General 17

8.2 Combustion Test 18

8.3 Flame Stability Test 18

8.4 Temperature Test 18

8.5 Draping Test 19

8.6 Stability of Heater 19

8.7 Spillage on Upsetting Test 19

8.8 Stress-Corrosion Cracking Test 20

8.9 Flame Flashback Test 20

8.10 Safety Device Test for Wick-Type Heaters 20

8.10.1 Tilt Shut-Off Device 20

8.10.2 Emergency Manual Shut-Off Device 20

8.11 Guard Test 20

8.12 Resistance to Wind Test 20

8.13 Operation in Off-Level Position 22

8.14 Fuel Creep Test 22

8.15 Burning Rate Test 22

8.16 Gasket Material 22

8.17 Boil-Over Test 22

8.18 Fuel Tank Capacity Test 22

8.19 Corrosion Resistance Test 22

8.20 Ignition Test 23

8.20.1 Test Requirements 23

8.20.2 Test Procedures 23

8.21 Abnormal Voltage Test 23

8.22 Abnormal Operation Test 23

8.23 Fuel Unit and Fuel Pump Endurance Test 24

8.24 Combustion Safety Controls Test 24

8.25 Flammability Test 25

# Preface

This is the second edition of CSA Standard B140.9.3 (now CAN3-B140.9.3), Portable Kerosine-Fired Heaters, and supersedes the first edition published in 1979.

This Standard covers minimum requirements for the safe operation, acceptable performance, design, construction, manufacture, marking, and testing of unvented, portable kerosine heaters.

This edition differs from the first edition in that additional safety features for guards, grilles, and flame adjustment have been included, and it covers requirements for heaters equipped with pressurized-type fuel delivery systems, automatic controls, and an emergency shut-off device.

Safe and satisfactory operation of kerosine heaters depends on the provision of adequate ventilation and use of the specified type of kerosine as the fuel.

This Standard was prepared by the CSA Subcommittee on Kerosine-Fired Heaters under the jurisdiction of the Technical Committee on Oil Burning Appliance Standards and the Standards Steering Committee on Fire Safety and Fuel Burning Equipment, and was formally approved by these Committees. It has been approved as a National Standard of Canada by the Standards Council of Canada.

February 1986

**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 user of the Standard to judge its suitability for his or her particular purpose.*

*CSA Standards are subject to periodical review and suggestions for their improvement will be referred to the appropriate committee. All enquiries regarding this Standard, including requests for interpretation, should be addressed to Canadian Standards Association, Standards Division, 178 Rexdale Boulevard, Rexdale (Toronto), Ontario M9W 1R3. Requests for interpretation should*

- (a) define the problem, making reference to a specific Clause, and, where appropriate, include an illustrative sketch;*
- (b) provide an explanation of circumstances surrounding the actual field condition; and*
- (c) be phrased, where possible, to permit a specific "yes" or "no" answer.*

*Interpretations are published in "CSA Information Update". For subscription details and a free sample copy, write to CSA Business Development Group or telephone (416) 747-2292.*

# Foreword

Certification organizations, as accredited by the Standards Council of Canada, have their own criteria and procedures for certification services. The following paragraphs define CSA Certification policies.

**The Canadian Standards Association provides certification services for manufacturers who, under license from CSA, wish to use the appropriate registered CSA Marks on certain products of their manufacture to indicate conformity with CSA Standards.**

CSA Certification for a number of products is provided in the interest of maintaining agreed-upon standards of quality, performance, interchangeability and/or safety, as appropriate. Where applicable, certification may form the basis for acceptance by inspection authorities responsible for enforcement of regulations. Where feasible, programs will be developed for additional products for which certification is desired by producers, consumers or other interests.

In performing its functions in accordance with its objectives, CSA does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of the Association represent its professional judgement given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed.

Products in substantial accord with this Standard but which exhibit a minor difference or a new feature may be deemed to meet the Standard providing the feature or difference is found acceptable utilizing appropriate CSA Certification Division Operating Procedures. Products which comply with this Standard shall not be certified if they are found to have additional features which are inconsistent with the intent of this Standard. Products shall not be certifiable if they are discovered to contravene applicable Federal laws or regulations.

Testing techniques, test procedures and instrumentation frequently must be prescribed by the CSA Certification Division in addition to the technical requirements contained in Standards of CSA. In addition to markings specified in the Standard the CSA Certification and Testing Division may require special cautions, markings and instructions that are not specified by the Standard.

**Some tests required by CSA Standards may be inherently hazardous. The Association neither assumes nor accepts any responsibility for any injury or damage that may occur during or as the result of tests, wherever performed, whether performed in whole or in part by the manufacturer or the Association, and whether or not any equipment, facility or personnel for or in connection with the test is furnished by the manufacturer or the Association.**

Manufacturers should note that, in the event of the failure of the CSA Certification and Testing Division to resolve an issue arising from the interpretation of requirements, there is an appeal procedure: the complainant should submit the matter, in writing, to the Secretary of the Canadian Standards Association.

If this Standard is to be used in obtaining CSA Certification please remember, when making application for certification, to request all current Amendments, Bulletins, Notices and Technical Information Letters that may be applicable and for which there may be a nominal charge. For such information or for further information concerning details about CSA Certification please address your inquiry to the Applications and Records Section, Canadian Standards Association, 178 Rexdale Boulevard, Rexdale (Toronto), Ontario M9W 1R3.



# CAN3-B140.9.3-M86

## Portable Kerosine-Fired Heaters

### 1. Scope

#### 1.1

This Standard applies to kerosine-fuelled appliances with capacities up to 4400 W that are primarily used as portable space heating appliances.

#### 1.2

Appliances with input capacities greater than 4400 W may be examined and tested in accordance with these requirements and with any additional requirements deemed necessary by the regulatory authority.

#### 1.3

This Standard applies to unvented heaters, in which the products of combustion are discharged into the space being heated.

#### 1.4

This Standard applies to those heaters in which only Type No. 1-K kerosine is intended to be used as a fuel.

#### 1.5

This Standard applies to heaters in which fuel is supplied to the burner by a wick under atmospheric pressure conditions, and to heaters in which fuel is fed to the burner under pressurized conditions.

#### 1.6

This Standard includes requirements for materials, construction, performance, durability, marking, and instructions.

### 2. Reference Publications

#### 2.1

This Standard refers to the following publications and where such reference is made it shall be to the edition listed below, including all revisions published thereto. Reference publications should be applied in the context of this Standard.

#### CSA Standards

B139-1976,  
Installation Code for Oil Burning Equipment;

B140.0-1972,  
General Requirements for Oil Burning Equipment;

B140.1-1966 (R1980),  
Vapourizing-Type Oil Burners;

B140.2.1-1973,  
Oil Burners, Atomizing Type;

C22.2 No. 3-1979,  
Electrical Features of Fuel-Burning Equipment;

C22.2 No. 100-M1985,  
Motors and Generators.

#### ASTM Standards

B154-82,  
Mercurous Nitrate Test for Copper and Copper Alloys;

D471-79,  
Rubber Property—Effect of Liquids.

#### CGSB\* Standards

CAN2-3.3-M78,  
Kerosine;

4-GP-81Ma-1981,  
Cloth, Cotton, Cheesecloth.

\*Canadian General Standards Board.

### 3. Definitions

#### 3.1

Definitions of terms used in this Standard are listed in CSA Standard B139.

### 4. General Requirements

#### 4.1 Carbon Monoxide/Carbon Dioxide Ratio

During the test described in Clause 8.2, the CO/CO<sub>2</sub> ratio shall not exceed 0.007 for wick type heaters and 0.003 for pressurized heaters.