



Code for the field approval of fuel-burning appliances and equipment



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Code for the field approval of fuel-burning appliances and equipment

IGAC

Interprovincial Gas Advisory Council



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Preface

This is the sixth edition of CSA B149.3, *Code for the field approval of fuel-burning appliances and equipment*. It supersedes the previous editions published in 2015, 2010, 2005, and 2000 by CSA Group (CSA) as CSA B149.3, and in 1989 by the Canadian Gas Association (CGA) as CAN/CGA-B149.3.

This Code brings together for the convenience of users the applicable requirements for appliances and equipment, originally published as part of the CSA B149.1 and CSA B149.2 Codes.

The major changes to this edition include the following:

- title changed from “Code for the Field Approval of Fuel-Related Components on Appliances and Equipment” to “Code for the field approval of fuel-burning appliances and equipment”;
- updated Scope (Clauses [1.2](#), [1.5](#), and [1.9](#));
- updated reference publications (Clause [2](#));
- updated definitions (Clause [3](#));
- updated requirements and restructured pressure regulators clause (Clause [4](#));
- updated requirements and restructured pilot supply clause (Clause [5](#));
- updated requirements and restructured manual shut-off valves, manual isolation valves, and test firing valves clause (Clause [6](#));
- updated requirements and restructured pilot burners clause (Clauses [7.2](#) and [7.3](#));
- updated requirements for additional requirements for liquid propane valve trains (Clauses [9.1](#), [9.5](#), [9.7](#), [9.8](#), and [9.9](#));
- updated requirements for applications, added section for liquid fuel burners (Clauses [10.1.6](#), [10.1.7](#), [10.1.8](#), [10.2](#), [10.3.1](#), [10.4](#), [10.9.3](#), [10.9.4](#), and [10.11](#));
- updated requirements for safety controls (Clauses [11.1.4](#), [12.1.5](#), [12.4.1](#), [12.5.5](#), and [12.7.2.3](#));
- updated requirements for rating plate (Clause [14](#));
- updated requirements for “Additional requirements for process ovens, process furnaces, and atmosphere generators” (Clause [16.1](#));
- added new Clause [17](#) for “Generators, compressors/pressure boosters, engines and turbines”;
- added new Clause [18](#) for “Flare pilot” removed Annex, “Guidelines for flare pilot systems”;
- added new Clause [19](#) for “Appliances in a complex and integrated facility”;
- added new Clause [20](#) for “Additional requirements for portable appliances and equipment”;
- revised recommended procedure for initial start-up of high input equipment (Clauses [A.2](#), [A.5](#), and [A.6](#));
- revised guidelines for electronic-type fuel air-ratio control (FARC) systems (Clause [D.2](#));
- added new Annex [I](#) for “Risk-based program for determining requirements for an appliance in a complex and integrated facility”;
- added new Annex [J](#) for “Mobile outdoor food service unit”; and
- added new Annex [K](#) for “Recommended requirements for automatic safety shutoff valves and automatic vent valves installed on gas turbines having capacities greater than 12.5 MMBtu/h (3.66 MW) and inlet pressures greater than 150 psi”.

This Code was prepared by the Technical Committee on Field Approval of Fuel Burning Equipment, under the Fuels and Appliances Strategic Steering Committee, and has been formally approved by the Technical Committee and the Interprovincial Gas Advisory Council.

This Code 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.

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 Code is stated in its Scope, it is important to note that it remains the responsibility of the users of the Code to judge its suitability for their particular purpose.*
- 3) *This Code 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 Code.*
- 4) *To submit a request for interpretation of this Code, please send the following information to inquiries@csagroup.org and include “Request for interpretation” in the subject line:*
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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.

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 - b) *relevant clause, table, and/or figure number;*
 - c) *wording of the proposed change; and*
 - d) *rationale for the change.*

CSA B149.3:20

Code for the field approval of fuel-burning appliances and equipment

1 Scope

1.1

This Code contains the requirements for fuel-related components and accessories and their assembly on an appliance utilizing gas, downstream of the manual shut-off valve specified in Clause 6.18.2 of CSA B149.1. Clause [16](#) of this Code contains additional requirements for process ovens, including bakery ovens, process furnaces, and atmosphere generators operating at approximately atmospheric pressure and used by industry for the processing of materials. Recommended requirements for liquid and solid fuel-burning appliances are located in Annex [G](#) (liquids) and Annex [H](#) (solids).

1.2

This Code does not apply to

- a) installations in marine pipeline terminals;
- b) gas where used as a feedstock in petroleum refineries or chemical plants;
- c) gas designated for storage or handling, or both, at propane gas bulk plants;
- d) gas where used for natural gas for vehicles;
- e) a new appliance for which there is an approved Standard;
- f) a manually operated appliance with an input not exceeding 20 000 Btu/h (6 kW) used for industrial applications; and
- g) other fuels not covered in this Code and used in combination with gas.

1.3

When another fuel is used in the installation and in combination with gas, the safe operation of that fuel shall be approved.

1.4

Requirements contained herein apply only to that portion of an appliance using gas as defined in Clause [1.7](#), atmosphere gas, and reaction gas.

1.5

The requirements contained in this Code apply

- a) to new non-certified appliances and equipment of all inputs for which there is no approved Standard;
- b) when the upgrading, conversion or changes to the control system of a certified or non-certified appliance is required, unless a certified conversion kit for that appliance is utilized; and
- c) to programmable logic controllers or microprocessor-based controls used for flame safety and fuel/air ratio control.

1.6

The requirements contained in this Code may be used to replace or supplement an approved Standard with the permission of the authority having jurisdiction.

1.7

When the term “gas” is used, the requirements of this Code include, and apply equally to, any of the following gases or mixtures of them: natural gas, manufactured gas, propane, propane air, propylene, butane (normal butane or isobutane), and butylene.

1.8

The values given in yard/pound units are the standard. The values given in parentheses are for information only.

1.9

When using digester gas, landfill gas or biogas, this Code is to be used in conjunction with CSA B149.6.

1.10

In this Code, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the Code; “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 Code.

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.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

2 Reference publications

This Code refers to the following publications, and where such reference is made, it shall be to the edition listed below, including all amendments published thereto.

Note: *CGA Standards, Recommended Practices, and Codes are now published by CSA Group.*

CSA Group

CAN1-6.4-M79 (R2016)

Automatic gas ignition systems and components

ANSI Z21.10.1-2017/CSA 4.1-2017

Gas water heaters, volume I, storage water heaters with input ratings of 75,000 Btu per hour or less

ANSI Z21.10.3-2017/CSA 4.3-2017

Gas-fired water heaters, volume III, storage water heaters with input ratings above 75,000 Btu per hour, circulating and instantaneous