



CAN/ULC-S639:2018

STANDARD FOR STEEL LINER ASSEMBLIES FOR SOLID-FUEL BURNING MASONRY FIREPLACES



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STANDARD FOR STEEL LINER ASSEMBLIES FOR SOLID-FUEL BURNING MASONRY FIREPLACES

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STANDARD FOR STEEL LINER ASSEMBLIES FOR SOLID-FUEL BURNING MASONRY FIREPLACES

PREFACE

This is the Second Edition of the Standard for Steel Liner Assemblies for Solid-Fuel Burning Masonry Fireplaces, CAN/ULC-S639.

This Edition of the Standard has been formally approved by the ULC Standards Committee on Factory Built Fireplaces, Chimneys and Vents.

This Standard has been developed in compliance with the requirements of SCC for accreditation of a Standards Development Organization.

Only metric SI units of measurement are used in this Standard. If a value for measurement is followed by a value in other units in parentheses, the second value may be approximate. The first stated value is the requirement.

Appendices A, B and C, identified as informative, are for informational purposes only.

In Canada, there are two official languages, English and French. All safety warnings must be in French and English. Attention is drawn to the possibility that some Canadian authorities may require additional markings and/or installation instructions to be in both official languages.

The Second Edition National Standard of Canada is based on, and supersedes, the First Edition.

Attention is drawn to the possibility that some of the elements of this Canadian standard may be the subject of patent rights. ULC Standards shall not be held responsible for identifying any or all such patent rights.

Requests for interpretation of this Standard should be sent to ULC Standards. The requests should be worded in such a manner as to permit a “yes” or “no” answer based on the literal text of the requirement concerned.

The review and action to revise or reaffirm this Standard will not exceed 5 years from the date of publication, unless the Standard is identified as fitting within a stabilized category, whereby the review will commence within the appropriate time frame set out by ULC Standards.

This Standard is intended to be used for conformity assessment.

1 SCOPE

1.1 These requirements cover prefabricated steel liner assemblies incorporating a flue damper, smoke chamber and associated accessories for masonry fireplaces. They are intended as an alternate form of construction to conventional fire brick liners and metal dampers.

1.2 Steel liners, as covered by this Standard, are intended to be capable of installation in accordance with the requirements of the applicable building codes and with the manufacturer's Installation Instructions as required herein.

1.3 These requirements do not cover factory built fireplaces, inserts or space heaters

2 REFERENCE PUBLICATIONS

2.1 The documents shown below are referenced in the text of this Standard. Unless otherwise stated elsewhere in this Standard such reference shall be considered to indicate the edition and/or revisions of the document available at the date on which the Committee approved this ULC Standard.

Documents Published by CSA Group
178 Rexdale Boulevard, Toronto, ON M9W 1R3
Telephone: 1-800-463-6727
www.csagroup.org

- CSA C22.2 NO. 113-15, Fans and Ventilators
- CSA C22.2 No. 0.15-15, Adhesive Labels
- CAN/CSA C22.2 No. 60335-2-102:16, Household and Similar Electrical Appliances – Safety – Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections
- CSA W59-13, Welded Steel Construction (Metal Arc Welding)

Documents Published by the National Research Council of Canada
Institute for Research in Construction, Ottawa, ON K1A 0R6
Telephone: (613) 993-2463

- National Building Code of Canada, 2015

Documents published by Underwriters Laboratories Inc. (UL)
333 Pfingsten Road, Northbrook, IL 60062-2096, U.S.A.
Telephone: (888) 853-3503
www.ul.com

- UL 969-17, Marking and Labelling Systems

3 GLOSSARY

3.1 *CIRCULATING WARM AIR TYPE FIREPLACE* – A fireplace incorporating a gravity or forced air circulating system which may include an air duct system attached to the chamber surrounding the firebox.

3.2 *FIRE CHAMBER* –The section of a fireplace in which fuel is burned, including the entire volume bounded by the *hearth*, chamber walls or screens and the chamber ceiling.

3.3 **FIREPLACE** – A fireplace for the purpose of this Standard is a device for burning solid fuels having the major portion of one or more essentially vertical sides open or openable for refuelling and intended to permit visual observation of the flames while the fuel is burning.

3.4 **FIREPLACE LINER** – Metal fire chamber incorporating a flue damper and smoke chamber.

3.5 **FLUE DAMPER** – A valve or plate for regulating draft or flow of flue gases with an accessible hand actuated control and providing a closed and one or more open positions.

3.6 **FORCED AIR HEATING SYSTEM** – An air heating system equipped with a blower which provides the primary means for circulation of air.

3.7 **GLASS** – Any transparent or translucent material employed in the construction of a heat producing appliance or intended as an accessory for such an appliance.

3.8 **GRAVITY SYSTEM** – An air heating system in which the circulation of air is primarily by convection.

3.9 **HEARTH** – The floor area within the fire chamber of a fireplace or fireplace liner.

3.10 **HEARTH EXTENSION** – The noncombustible surface or surfacing applied to the floor area extending in front of and at the sides of a fireplace hearth.

3.11 **LINER ASSEMBLY** – The fire chamber and its associated accessories supplied by the manufacturer.

3.12 **TEST ASSEMBLY** – The sample liner assembly product subjected to testing.

3.13 **TEST INSTALLATION** – The test assembly installed in the test structure.

3.14 **TEST STRUCTURE** – The test facility in which the test assembly is installed, including a floor, walls, a chimney and enclosures.

4 CONSTRUCTION

4.1 ASSEMBLY

4.1.1 Each steel fireplace liner assembly shall be shipped from the point of manufacture with all the components necessary for its complete installation. Such components shall include a steel firebox, flue damper assembly and associated accessory parts, insulation for maintaining an expansion space between the liner and surrounding masonry, and suitable material to provide a firestop between the front masonry surround, sides and top of the fireplace liner.

4.1.2 Each assembly shall include a complete set of clear, fully illustrated installation instructions. The instructions shall include the manufacturer's part description and the manufacturer's name and address.

4.2 MATERIALS

4.2.1 The strength of the materials used in the assembly shall be such as to support a mass of 180 kg applied to the top of the liner.

4.2.2 Except for the damper, which may be made of steel or cast iron, a fireplace liner shall be made of steel. Materials employed in the construction shall be of such quality and shall possess properties and characteristics which may be expected to provide a service life comparable to that expected of a permanent portion of the building.

4.2.3 The steel plates forming the fire chamber shall be joined by a continuous weld or of equivalent construction. All welding shall conform to CSA W59, Welded Steel Construction (Metal Arc Welding).

4.2.4 Minimum steel thicknesses shall be as follows:

Fire Chamber; back, sides and (if provided) bottom	4.8 mm
Damper	3.0 mm
Parts in contact with flue gases	2.0 mm
Other parts	1.6 mm

NOTE: Thicknesses specified are nominal SI material sizes.

4.2.5 Air ducting, if provided, shall be corrosion resistant and noncombustible.

4.2.6 Subsequent to Test Nos. 1, 2 and 3, insulating material (if used for thermal insulation) shall retain sufficient strength to remain in its intended position and shall not show evidence of softening, melting, change in physical structure, increase in thermal conductivity or other evidence of failure.

4.3 FLUE DAMPERS

4.3.1 A flue damper mechanism, if furnished, shall be so arranged that breakage of a part will not cause the damper to close. An operating mechanism shall be arranged to prevent accidental closure, and to enable the operator to open the damper without being exposed to excessive temperatures from the hearth or doors, as applicable.

4.3.2 A flue damper setting mechanism shall be designed to provide a fully open and fully closed position of the flue damper and may provide for intermediate settings.

4.3.3 A flue damper setting mechanism providing for intermediate settings shall be so designed that when adjusted to its minimum opening position, other than the closed position, spillage of combustion products into the living space will not occur when the fireplace is fired in accordance with Subsections 5.4 and 5.5 with the front doors fully open. Damper/door interlocks, if provided, shall be disconnected during tests determining compliance with this condition.

4.4 DOORS

4.4.1 A fireplace liner may be equipped with integral door(s) or shutter(s) designed to close off the fire chamber from the living space.

4.4.2 Those portions of a handle or knob that are subjected to contact on a fireplace liner shall be smooth and rounded.

4.4.3 All doors or removable screens incorporating glass components shall be provided with means to positively secure the door or screen in the closed position.

5 PERFORMANCE

5.1 GENERAL

5.1.1 The insulating and heat dissipation qualities of the assembly, when installed in accordance with the manufacturer's instructions, shall prevent the development of hazardous temperatures on adjacent combustible construction. This requirement shall be evaluated on the basis of tests involving fires of the radiant, brand and flash type.