UL 1777

STANDARD FOR SAFETY

Chimney Liners

UL Standard for Safety for Chimney Liners, UL 1777

Fifth Edition, Dated October 2, 2015

Summary of Topics

This revision of ANSI/UL 1777 dated April 2, 2024 is being issued to update the title page to reflect the most recent designation as a Reaffirmed American National Standard (ANS). No technical changes have been made.

Text that has been changed in any manner or impacted by ULSE's electronic publishing system is marked with a vertical line in the margin.

The requirements are substantially in accordance with Proposal(s) on this subject dated February 9, 2024.

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UL 1777

Standard for Chimney Liners

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Second Edition – April, 1995
Third Edition – February, 2004
Fourth Edition – November, 2007

Fifth Edition

October 2, 2015

This ANSI/UL Standard for Safety consists of the Fifth Edition including revisions through April 2, 2024.

The most recent designation of ANSI/UL 1777 as a Reaffirmed American National Standard (ANS) occurred on April 2, 2024. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

Comments or proposals for revisions on any part of the Standard may be submitted to ULSE at any time. Proposals should be submitted via a Proposal Request in the Collaborative Standards Development System (CSDS) at https://csds.ul.com.

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INTRODUCTION

1 Scope

1.1 These requirements cover metallic and nonmetallic chimney liners intended for field-installation into new or existing masonry chimneys that are used for the natural draft venting of Category I gas-fired, Type L vented oil-fired, and solid-fuel-fired residential-type appliances in which the maximum continuous flue-gas outlet temperatures do not exceed 1000°F (538°C).

1.2 Chimney liners are intended to be installed in existing masonry chimneys with or without a liner of fire-clay tile, or to be used as a substitute for masonry fire-clay tile flue liners in new chimneys.

1.3 Chimney liners are intended to be installed in accordance with the Standard for Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances, NFPA 211; National Fuel Gas Code, NFPA 54 and codes such as the International Building Code, International Gas Code, International Mechanical Code, International Residential Code, and the Uniform Mechanical Code.

1.4 Chimney liners as covered by these requirements are not intended for use with Category II, III, or IV gas burning appliances as defined by the National Fuel Gas Code, NFPA 54, or other appliances that result in condensation of corrosive acids on the liner of the chimney, or that create positive pressures in the chimney system.

1.5 Chimney liners with cementitious or refractory flue gas conveying conduits shall be evaluated and marked in accordance with the solid-fuel-fired-appliance sections of these requirements.

2 Units of Measurement

2.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

3 Glossary

3.1 For the purpose of this standard, the following definitions apply.

3.2 APPLIANCE, HEATING – A chimney-connected, fuel-burning device.

3.3 CATEGORY I GAS-FIRED APPLIANCE – A gas appliance that operates with a non-positive vent static pressure and with a vent gas temperature that avoids excessive condensate production in the vent.

3.4 CERTIFIED CHIMNEY SWEEP – A chimney sweep certified by a nationally endorsed chimney sweep organization.

3.5 CHIMNEY CONNECTOR – The flue pipe that connects a fuel-burning appliance to a chimney.

3.6 CHIMNEY, MASONRY – A field constructed chimney of solid masonry units, bricks, stones, or reinforced-portland-cement concrete, lined with chimney flue liners built in accordance with applicable building code requirements.

3.7 CHIMNEY, TEST – An assembly used to investigate chimney liners consisting of a single thickness of brick or other equivalent minimum construction, as specified in this standard.

3.8 DAMPER, FIREPLACE – A plate located at the top of a masonry fireplace, used to stop the flow of air or restrict the flow of flue-gas air mixtures from inside the structure in which the fireplace is located to the outside.

3.9 DIRECT CONNECTION SYSTEM – A means to route combustion products from the outlet of an appliance through the damper area and to the chimney liner.

3.10 FIREPLACE, MASONRY – A field-constructed assembly constructed in accordance with the Standard for Chimneys, Fireplaces, Vents, and Solid Fuel Burning Appliances, NFPA 211; National Fuel Gas Code, NFPA 54 and codes such as the International Building Code, International Gas Code, International Mechanical Code, International Residential Code, and the Uniform Mechanical Code.

3.11 LINER, CHIMNEY – A system to be used in conjunction with a chimney that is constructed from metallic or nonmetallic materials that are factory made or mixed, and that is assembled in the field to form a complete, functional means for conveying products of combustion to the outside.

3.12 NATURAL DRAFT – The draft created by an appliance that operates at neutral or negative pressure, as measured at the outlet of the appliance.

3.13 PRODUCT – The term "product" as used in these requirements refers to all chimney liners or any part thereof covered by these requirements, such as a wall penetration assembly, unless specifically noted otherwise.

3.14 QUALIFIED PERSON – A trained installer who has successfully completed a thorough, company-sponsored training course and who is familiar with the use of the product and the risks associated with improper installation procedures.

3.15 WALL PENETRATION ASSEMBLY – A device used to provide a means for routing a chimney connector through a combustible wall to a masonry chimney.

4 Components

4.1 Except as indicated in 4.2, a component of a product covered by this standard shall comply with the requirements for that component.

4.2 A component is not required to comply with a specific requirement that:

a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or

b) Is superseded by a requirement in this standard.

4.3 A component shall be used in accordance with its rating established for the intended conditions of use.

4.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

5 Undated References

5.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

CONSTRUCTION

6 Materials

6.1 Parts used in a chimney lining system shall be of noncombustible, corrosion-resistant materials. Metals shall not be used in combinations at any location within the assembly that results in galvanic action.

6.2 The minimum thickness of materials, including any coatings, shall be as specified in Table 6.1.

Exception No. 1: The minimum thickness of materials employed as a protective covering over insulation, not subject to contact with flue gases, is not required to be as specified in Table 6.1. See Abrasion Test, Section 28.

Exception No. 2: The minimum thickness of materials determined to comply with the Comparative Corrosion Exposure Test For Aluminum Liners, Section 32, or the Comparative Corrosion Exposure Test For Stainless Steel Liners, Section 33, is not required to be as specified in Table 6.1.

Table 6.1
Thickness of materials

Description	Minimum thickness	
	Inch	(mm)
Aluminum alloys (1100, 3003)	0.012	(0.30)
Aluminum-coated steel, Type T1-40 (regular [0.40 ounces per square foot (0.12 kg/m^2)])	0.018	(0.46)
Cast iron	0.125	(3.17)
Galvanized steel (G90 Coating designation)	0.018	(0.46)
Porcelain-enameled steel	0.032	(0.81)
Stainless steel	0.012	(0.30)
Steel, uncoated or painted	0.053	(1.35)
Cast or fired refractory	0.40	(10.2)

6.3 A flue-gas conveying conduit of a chimney liner intended for use with solid-fuel-fired or oil-fired appliances shall be Type 304, 316, 430, or 446 stainless steel or stainless steel having at least equivalent properties, porcelain-coated steel, or cast or fired refractory. Porcelain-coated steel and cast or fired refractory shall comply with the requirements in Sections 34, Resistance to Action of Acids Test for Nonmetallic Flue-Gas Conduits, and Section 35, Freezing and Thawing Test for Water Absorptive Nonmetallic Materials, as applicable.

6.4 A flue-gas conveying conduit of a chimney liner intended for use with Category I gas-fired appliances shall be 1100 or 3003 aluminum, Type 304, 316, 430 or 446 stainless steel or stainless steel having at least equivalent properties, porcelain-coated steel, or cast or fired refractory.

6.5 An unreinforced outer casing of a chimney liner shall be of galvanized steel, aluminum-coated steel, Series 300 or 400 stainless steel, or equivalent material. The minimum thickness of these materials shall be as specified in Table 6.1.

6.6 Other parts of a chimney liner subject to contact by flue gases or flue-gas air mixtures at or beyond the terminus of the flue-gas conveying conduit (such as caps) shall be of material equivalent to the flue-gas conveying conduit as specified in 6.3 and 6.4.