



UL 8

STANDARD FOR SAFETY

Water Based Agent Fire Extinguishers

UL Standard for Safety for Water Based Agent Fire Extinguishers, UL 8

Seventh Edition, Dated November 25, 2016

Summary of Topics

This revision of ANSI/UL 8 dated January 28, 2025 includes the revisions to salt spray corrosion test, [46.1](#) – [46.1C](#), [46.3](#), and [46.5](#).

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 new and revised requirements are substantially in accordance with Proposal(s) on this subject dated June 21, 2024 and November 1, 2024.

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Water Based Agent Fire Extinguishers

November 25, 2016

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I This harmonized standard has been jointly revised on January 28, 2025 to reflect updates to the standard.

Commitment for Amendments

This Standard is issued jointly by ULSE Inc. (ULSE) and ULC Standards. Amendments to this Standard will be made only after processing according to the Standards writing procedures by ULSE and ULC Standards.

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The most recent designation of ANSI/UL 8 as an American National Standard (ANSI) occurred on January 28, 2025. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the Preface.

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Preface

This is the harmonized ULSE and ULC Standard for Water Based Agent Fire Extinguishers. It is the Third edition of CAN/ULC 554, and the Seventh edition of ANSI/UL 8.

This harmonized Standard was prepared by UL Standards & Engagement Inc. (ULSE), ULC Standards and the Extinguisher Technical Harmonization Committee.

This Standard was formally approved by the ULC Standards Committee on Portable Fire Extinguishers.

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.

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.

Annexes [A](#) and [B](#) are identified as Normative, forms mandatory parts of this Standard.

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 users of the standard to judge its suitability for their particular purpose.

Level of Harmonization

This Standard used an ISO format, but is not based on, nor shall it be considered equivalent to, an ISO standard. This Standard is published as an identical standard.

An identical standard is a standard that is the same in technical content except for conflicts in Codes and Governmental Regulations. Presentation shall be word for word except for editorial changes.

Interpretations

The interpretation by the standards development organization of an identical or equivalent standard shall be based on the literal text to determine compliance with the standard in accordance with the procedural rules of the standards development organization. If more than one interpretation of the literal text has been identified, a revision shall be proposed as soon as possible to each of the standards development organizations to more accurately reflect the intent.

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INTRODUCTION

1 Scope

1.1 These requirements cover the construction and performance, exclusive of performance during fire tests, of portable water based agent fire extinguishers. These fire extinguishers are intended to be utilized in accordance with the Standard for Portable Fire Extinguishers, NFPA 10 and with the National Fire Code of Canada.

1.2 The requirements for performance during fire testing of water based agent fire extinguishers are specified in the Binational Standard for Rating and Fire Testing of Fire Extinguishers, ANSI/UL 711 CAN/ULC-S508.

1.3 As used in these requirements, the term "extinguisher" refers to all extinguishers or any part thereof covered by these requirements, unless specifically noted otherwise.

2 Units of Measurement

2.1 The metric unit shall be designated as the official unit for purposes of this standard. Where values of measurement are specified in both SI and English units, either unit is used. In cases of dispute, the metric unit shall be used.

3 Reference Publications

3.1 See Annex A for a list of publications referenced in this standard. 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. When the latest edition of a standard is not the applicable standard, the appropriate edition is indicated accordingly in Annex A.

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. A component shall comply with both the Underwriters Laboratories Inc. and the Underwriters' Laboratories of Canada standards for the 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 Glossary

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

5.2 AGENT CONCENTRATE – A concentrated agent that is intended to be diluted with water to form a mixture used to extinguish fires.

5.3 AGENT SOLUTION – A mixture of the agent concentrate with water.

5.4 CARTRIDGE OPERATED EXTINGUISHER – A fire extinguisher in which the extinguishing agent and expellant gas are in separate cylinders.

5.5 DISPOSABLE (NONRECHARGEABLE) FIRE EXTINGUISHER – A fire extinguisher not capable of nor intended to undergo complete maintenance including internal inspection of cylinder, replacement of parts and seals and hydrostatic testing.

5.6 EFFECTIVE DISCHARGE – The time of discharge of extinguishing agent from the extinguisher until gas point.

5.7 EXPELLANT GAS – A compressed or pressurized gas used to propel the extinguishing agent from a single cylinder.

5.8 EXTINGUISHER, DRY CHARGE TYPE – An extinguisher in which the foam concentrate or additive concentrate is not mixed with the water until the extinguisher is activated. The water is stored in the extinguisher cylinder, and the concentrate is stored in a separate part of the extinguisher.

5.9 EXTINGUISHER, LIQUID CHARGE TYPE – An extinguisher in which a mixture of the foam concentrate or additive concentrate and water is stored in the extinguisher cylinder.

5.10 GALVANIC COMPATIBILITY – Fire extinguisher cylinder and component parts which are not susceptible to 10-day stress corrosion cracking, or corrosion from combination of dissimilar materials.

5.11 GAS POINT – The point in time when the discharge changes from extinguishing agent to a gas and extinguishing agent combination.

5.12 PORTABLE FIRE EXTINGUISHER – A fire extinguisher carried or on wheels and operated by hand.

5.13 PRESSURE GAUGE – A gauge that shows the pressure in the cylinder and the operating range of the extinguisher based upon the operating temperature-pressure relationship in appropriate pressure units.

5.14 PRESSURE INDICATOR – An indicator that shows that the extinguisher is pressurized with its rated expellant gas pressure.

5.15 RECHARGEABLE (REFILLABLE) FIRE EXTINGUISHER – A fire extinguisher capable of undergoing complete maintenance including internal inspection of cylinder, replacement of parts and seals and hydrostatic testing.

5.16 STORED PRESSURE TYPE FIRE EXTINGUISHER – A fire extinguisher in which both the extinguishing agent and expellant gas are in a single cylinder.

5.17 WATER BASED AGENT– Water or water agent solution.

CONSTRUCTION

6 General

6.1 The construction of an extinguisher shall be such that the method of operation is obvious after observing the operating instructions.

6.2 The construction of an extinguisher shall be such that after discharge of the agent is initiated, the operator of the extinguisher is not required to take further manual actions to maintain the maximum flow of agent, other than holding the operating device in the fully opened position. The extinguisher shall be usable by one operator, without assistance from a second individual.

6.3 A disposable extinguisher shall not be rechargeable.

6.4 An extinguisher having a volume in excess of 2.3 L (140 in³) shall stand in the upright position without support.

6.5 A material for an extinguisher part, the deterioration of which causes the extinguisher to become inoperable or cause risk of injury to persons, shall not be susceptible to stress corrosion.

6.6 A polymeric or other nonmetallic part, other than an "O" ring or gasket, shall be evaluated on the basis of:

- a) Mechanical strength, including resistance to impact, see Handle and Mounting Device Test, Clause [29](#); Hydrostatic Pressure Test, Clause [40](#); Vibration Test, Clause [41](#); Roadability and Rough Usage Tests, Clause [42](#); Burst Strength Test – Gauges and Indicators, Clause [52](#); Nameplate Exposure Tests, Clause [60](#);
- b) Moisture absorption; see Salt Spray Corrosion Test, Clause [46](#); One-Year Time Leakage Test, Clause [50](#), Nameplate Exposure Tests, Clause [60](#);
- c) Flammability, see [6.7](#);
- d) Resistance to deterioration due to aging, see Aging Tests – Polymeric Materials, Clause [44](#); One-Year Time Leakage Test, Clause [50](#); Nameplate Exposure Tests, Clause [60](#);
- e) Exposure to light and water, see [44.3](#) and Nameplate Exposure Tests, Clause [60](#); and
- f) Exposure to the extinguishing agent, see [44.2](#).

6.7 With reference to flammability, polymeric materials shall be classified as type HB, V-0, V-1, V-2, 5VA, or 5VB, in accordance with the Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94. Other nonmetallic materials shall have equivalent characteristics.

6.8 An extinguisher shall operate as intended from the minimum storage temperature to 49°C (120°F), inclusive. Currently recognized minimum storage temperatures are 4°C (40°F) or lower. See Operating Temperature Limits Test, Clause [35](#).

6.9 The edges and surfaces of a valve, cap, closure, hose, cylinder, handle, or mounting device shall not be sufficiently sharp to constitute a risk of injury to persons in intended maintenance and use.

6.10 Whenever reference measurements are required to determine that a part as described in [6.9](#) is not sufficiently sharp to constitute a risk of injury to persons, the method described in the Standard for Test for Sharpness of Edges on Equipment, UL 1439, is to be employed.

6.11 A hand portable extinguisher shall have a gross weight not exceeding 27 kg (60 lb).

6.12 A pressurizing adaptor for a rechargeable stored pressure type extinguisher shall have threads or other mechanical means for securement to the valve assembly.

7 Cylinders

7.1 The requirements in this clause do not apply to a cylinder marked as complying with U.S. Department of Transportation (DOT), or Canada Transportation of Dangerous Goods Regulations (TDGR), or ASME specifications, unless otherwise specifically indicated.

7.2 An extinguisher cylinder under the jurisdiction of the DOT or TDGR shall comply with the appropriate DOT or TDGR specifications for shipping containers.

7.3 An extinguisher cylinder shall be fabricated of a material having rigidity, durability, and resistance to corrosion equivalent to:

- a) An aluminum alloy such as 6061-T6 or 6351-T6, see the Specification for Aluminum and Aluminum-Alloy Sheet and Plate, ASTM B209, having a minimum thickness of 0.71 mm (0.028 in);
- b) An aluminum alloy, such as 1100, 1170, or 3003 having a minimum thickness of 0.71 mm (0.028 in);
- c) A mild steel alloy, such as SAE 1010, having a minimum thickness of 0.71 mm (0.028 in); or
- d) An austenitic stainless steel alloy having a maximum of 0.03 percent carbon content and a minimum thickness of 0.63 mm (0.025 in).

7.4 A cylinder assembled complete with permanently attached fittings shall be resistant to any corrosive influence of the extinguishing agent. See Agent Exposure Test, Clause [48](#).

7.5 The material of the dome and bottom of a metal cylinder shall be of the same material as the cylinder.

7.6 All joints in metal cylinders shall be threaded, brazed, or welded.

Exception: Brazed joints shall not be used on stainless steel cylinders.

7.7 For the purpose of these requirements, thickness measurements of the sidewall are to be measured on uncoated metal. The thickness of the dome and of the bottom is to be measured at several points after forming and before coating.

8 Joints

8.1 The minimum width of a brazed joint on a cylinder wall shall be at least four times the thickness of the sidewall.

9 Caps, Valves, Closures, and Pressure Relief

9.1 The inside diameter of a fill opening of a rechargeable-type extinguisher shall be:

- a) A minimum 19 mm (3/4 in) for an extinguisher having a capacity of 19 L (5 gal) or less;

Exception: For coated cylinders, a minimum 38 mm (1-1/2 in) fill opening is required.

- b) A minimum 64 mm (2-1/2 in) for an extinguisher having a capacity above 19 L (5 gal).