



UL 401

STANDARD FOR SAFETY

Portable Spray Hose Nozzles for Fire-Protection Service



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UL Standard for Safety for Portable Spray Hose Nozzles for Fire-Protection Service, UL 401

Fifth Edition, Dated October 16, 2014

Summary of Topics

This new edition of ANSI/UL 401 is being issued to include revised text throughout the standard to clarify, update and more closely align requirements with other spray nozzle standards.

The requirements are substantially in accordance with Proposal(s) on this subject dated July 18, 2014.

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The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

Future Effective Date	Reference
October 16, 2017	Paragraphs 5.7, 5.8, 5.9, 5.11, 6.4, 6.5, 6.6, 6.7, 7.4, 27.4, and 27.5; Sections 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 22, 25, and 26; Table 22.1

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OCTOBER 16, 2014

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Standard for Portable Spray Hose Nozzles for Fire-Protection Service

First Edition – May, 1978
Second Edition – August, 1986
Third Edition – August, 1993
Fourth Edition – April, 2004

Fifth Edition

October 16, 2014

This ANSI/UL Standard for Safety consists of the Fifth Edition.

The most recent designation of ANSI/UL 401 as an American National Standard (ANSI) occurred on October 16, 2014. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, or effective date information.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <http://csds.ul.com>.

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INTRODUCTION

1 Scope

1.1 These requirements cover portable hand line spray hose nozzles intended for general fire fighting or for use with fire hose mounted on standpipe systems.

1.2 Requirements for the installation and use of spray nozzles used in standpipe systems are intended to be in accordance with the Standard for Standpipe, and Hose Systems, NFPA 14.

1.3 Nozzles covered by this Standard are intended to be inspected and maintained in accordance with Standard for the Inspection, Care and Use of Fire Hose, Couplings and Nozzles and the Service Testing of Fire Hose, NFPA 1962, and the Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems, NFPA 25, when used in standpipe systems.

1.4 Nozzles covered by this Standard are intended for use on:

- a) Class A common combustibles such as wood and paper, and B flammable liquid fires; or
- b) Class A, B, and C, if suitable for use on electrically energized fires.

2 Components

2.1 Except as indicated in 2.2, a component of a product covered by this standard shall comply with the requirements for that component. See Appendix A for a list of standards covering components generally used in the products covered by this standard.

2.2 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.

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

2.4 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.

3 Units of Measurement

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

4 Undated References

4.1 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.

5 Glossary

5.1 For the purpose of these requirements, the following definitions apply.

5.2 **BASIC SPRAY NOZZLE** – An adjustable pattern spray nozzle in which the rated flow is delivered at a designated nozzle pressure and pattern setting. Due to its basic design, as the pattern is changed from straight stream through a wide spray pattern, the flow rate will vary as well as the nozzle pressure due to variations in area of the flow path.

5.3 **CONSTANT FLOW (GALLONAGE) SPRAY NOZZLE** – An adjustable pattern nozzle in which the flow is delivered at a designed nozzle pressure. At the rated pressure the nozzle will deliver a constant gallonage from straight stream through a wide spray pattern. This is accomplished by maintaining a constant orifice size during flow pattern adjustment.

5.4 **CONSTANT PRESSURE (AUTOMATIC) SPRAY NOZZLE** – An adjustable pattern nozzle in which the pressure remains constant through a range of flows. The constant pressure provides the velocity for an effective stream reach at various flow rates. This is accomplished by means of a pressure-activated, self-adjusting orifice.

5.5 **CONSTANT/SELECT FLOW (GALLONAGE) SPRAY NOZZLE** – A nozzle with a feature that allows the operator to manually adjust the orifice to change the flow rate to a predetermined flow. The flow remains constant throughout the range of pattern selection from straight stream to wide spray.

5.6 **FLUSH/CLOGGING FEATURE** – A feature in a nozzle that allows the orifice to be opened so that small debris (that might otherwise be trapped in the nozzle causing pattern disruptions and flow variation) can pass through. When the flush feature is engaged, the nozzle pressure may drop and pattern deteriorate.

5.7 **RATED INLET PRESSURE** – The maximum intended pressure at the nozzle inlet connection.

5.7 effective October 16, 2017

5.8 **RATED FLOW(S)** – The nominal flow or flows specified by the manufacturer at which a nozzle is intended to discharge water at the rated pressure.

5.8 effective October 16, 2017

5.9 **RATED OPERATING PRESSURE** – The pressure specified by the manufacturer at which a nozzle is designed to discharge the rated flow.

5.9 effective October 16, 2017

5.10 **SPRAY NOZZLE/SPRAY NOZZLE ASSEMBLY** – A nozzle that has a water flow control feature that will provide both full discharge and flow shutoff. This control device may be a permanently mounted valve or a break-apart shutoff butt assembly.

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5.11 WIDE OPEN POSITION – Nozzle setting that provides for the maximum flow through the nozzle.

5.11 effective October 16, 2017

CONSTRUCTION

6 General

6.1 A nozzle shall have inlet threads in accordance with the Standard for Screw Threads and Gaskets for Fire Hose Connections, NFPA 1963, unless otherwise specifically ordered to fit existing equipment. If the female ends are provided with threads other than those specified in NFPA 1963, there shall be a minimum of 2-1/2 threads.

6.2 The outer ends of all internal threads defined as "American National Fire Hose Connection Screw Threads" (also known as NST and NS) shall be terminated by the blunt start or "Higbee Cut" on the full thread to facilitate coupling and to avoid crossing and mutilation of thread.

6.3 Each nozzle shall be provided with a resilient gasket fitted in the recess in the nozzle. The gasket shall have dimensions in accordance with the Standard for Screw Threads and Gaskets for Fire Hose Connections, ANSI/NFPA 1963. Gaskets and washers shall not project into the waterway.

6.4 A nozzle shall have a nominal inlet size of 3/4 inch (19.1 mm) or larger with a rated flow of less than 350 gpm (1325 l/min) while discharging water at 100 psig (690 kPa).

6.4 effective October 16, 2017

6.5 Nozzles covered by these requirements shall have a rated operating pressure not less than 50 psig (345 kPa) for nozzles having a nominal inlet size of 1 1/2 inch (38.1 mm) or smaller, and not less than 85 psig (586 kPa) for nozzles having a nominal inlet size larger than 1 1/2 inch (38.1 mm).

6.5 effective October 16, 2017

6.6 Nozzles covered by these requirements shall have a rated inlet pressure of 200 psig (1380 kPa).

6.6 effective October 16, 2017

6.7 A nozzle rated for use on Class C fires shall be constructed to comply with the Discharge Pattern Test for Nozzles Rated for Class C Fires, Section 12.

6.7 effective October 16, 2017