Examination Standard for Hose Houses and Outdoor Hose Cabinets

Class Number 2151

September 2024

Foreword

This standard is intended to verify that the products and services described will meet stated conditions of performance, safety and quality useful to the ends of property conservation. The purpose of this standard is to present the criteria for examination of various types of products and services.

Examination in accordance with this standard shall demonstrate compliance and verify that quality control in manufacturing shall ensure a consistent and reliable product.

TABLE OF CONTENTS

1 INTRODUCTION

1.1. Purpose

1.1.1. This standard states testing and certification requirements for houses and outdoor cabinets designed to store fire hose and other firefighting equipment.

1.1.2. Testing and certification criteria may include performance requirements, marking requirements, examination of manufacturing facility(ies), audit of quality assurance procedures, and a surveillance program.

1.2. Scope

1.2.1. This standard sets performance requirements for the following product category and associated class number:

Class Number	Product Category
2151	Hose Houses and Cabinets

1.2.2. This standard is applicable to houses and outdoor hose cabinets which provide readily accessible, well-protected storage of fire hose and other firefighting equipment.

1.2.3. Requirements for the installation, use, inspection, service testing, and replacement for such fire hose storage devices are detailed in the following National Fire Protection Association standards:

NFPA 14, Standard for the Installation of Standpipe and Hose Systems.

NFPA 1962, Standard for the Care, Use, Inspection, Service Testing, and Replacement of Fire Hose, Couplings, Nozzles, and Fire Hose Appliances.

1.2.4. Hose houses and outdoor cabinets of unusual design may be subjected to special tests to determine their suitability.

1.3. Basis for Requirements

1.3.1. The requirements of this standard are based on experience, research and testing, and/or the standards of other national and international organizations. The advice of manufacturers, users, trade associations, jurisdictions and/or loss control specialists was also considered.

1.3.2. The requirements of this standard reflect tests and practices used to examine characteristics of hose houses or outdoor cabinets for the purpose of obtaining certification.

1.4. Basis for Certification

Certification is based upon satisfactory evaluation of the product and the manufacturer in the following major areas:

1.4.1. Examination and tests on production samples shall be performed to evaluate:

- the suitability of the product;
- the performance of the product as specified by the manufacturer and required for certification,
- the durability and reliability of the product.

1.4.2. An examination of the manufacturing facility(ies) and audit of quality control procedures shall be made to evaluate the manufacturer's ability to produce the product as examined and tested, and the marking procedures used to identify the product. Subsequent surveillance may be required by the certification agency in accordance with the certification scheme to ensure ongoing compliance.

1.5. Basis for Continued Certification

The basis for continual certification may include the following based upon the certification scheme and requirements of the certification agency:

- production or availability of the product as currently certified;
- the continued use of acceptable quality assurance procedures;
- compliance with the terms stipulated by the certification;
- satisfactory re-examination of production samples for continued conformity to requirements; and,
- satisfactory surveillance audits conducted as part of the certification agency's product surveillance program.

1.6. Effective Date

The effective date of this examination standard mandates that all products tested for certification after the effective date shall satisfy the requirements of this standard.

The effective date of this standard is eighteen (18) months after the publication date of the standard for compliance with all requirements.

1.7. System of Units

Units of measurement used in this standard are United States (U.S.) customary units. These are followed by their arithmetic equivalents in International System (SI) units, enclosed in parentheses. The first value stated shall be regarded as the requirement. The converted equivalent value may be approximate. Conversion of U.S. customary units is in accordance with ANSI/IEEE/ASTM SI 10.

1.8. Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the cited edition applies:

ANSI/IEEE/ASTM SI 10, *American National Standard for Metric Practice.*

ASTM B117, *Standard Practice for Operating Salt Spray (Fog) Apparatus*

NFPA 14, *Standard for the Installation of Standpipe and Hose Systems*

NFPA 1962, *Standard for the Care, Use, Inspection, Service Testing, and Replacement of Fire Hose, Couplings, Nozzles, and Fire Hose Appliances*

NFPA 1965, *Standard for Fire Hose Appliances*

1.9. Terms and Definitions

For purposes of this standard, the following terms apply:

Spanner Wrench – A special wrench designed to tighten/loosen fire hose couplings on water connections or other fire hose.

Standpipe – This term refers to the piping within a building that provides water supply to the hose connections and hose stations.

2 GENERAL INFORMATION

2.1. Product Information

2.1.1 Hose houses and outdoor cabinets provide readily accessible, well-protected storage of fire hose and other firefighting equipment. Houses are usually located over hydrants in a facility yard. Cabinets are suitable where space is limited, or where the usual hose house would not be desirable. Cabinets can be attached to a building wall, placed on legs, or fixed to a foundation near any hydrant.

2.1.2 In order to meet the intent of this standard, hose houses and outdoor cabinets must be examined on a model-by-model, type-by-type, manufacturer-by-manufacturer, and plant-by-plant basis. This is predicated on the basis that identical designs, fabricated in identical materials by different manufacturers or, even by different plants of the same manufacturer, have been seen to perform differently in testing. Sample hose houses and outdoor cabinets, selected in conformance to this criterion, shall satisfy all of the requirements of this standard.

2.2. Certification Application Requirements

The manufacturer shall provide the following preliminary information with any request for certification consideration:

- a complete list of all models, types, sizes, and options for the products or services being submitted for certification consideration;
- general assembly drawings, complete set of manufacturing drawings, materials list, anticipated marking format, piping and electrical schematics, nameplate format, brochures, sales literature, spec. sheets, installation, operation and maintenance procedures, etc... ; and
- the number and location of manufacturing facilities.

All documents shall identify the manufacturer's name, document number or other form of reference, title, date of last revision, and revision level. All documents shall be provided with English translation.

2.3. Requirements for Samples for Examination

2.3.1. Following authorization of a certification examination, the manufacturer shall submit samples for examination and testing based on the following:

- sample requirements to be determined by the certification agency.

2.3.2. Requirements for samples may vary depending on design features, results of prior or similar testing, and results of any foregoing tests.

2.3.3. The manufacturer shall submit samples representative of production.

2.3.4. It is the manufacturer's responsibility to provide any necessary test fixtures, such as those which may be required to evaluate the hose house or outdoor cabinet.

3 GENERAL REQUIREMENTS

3.1. Review of Documentation

3.1.1. During the initial investigation and prior to physical testing, the manufacturer's specifications and details shall be reviewed to assess the ease and practicality of installation and use. The certification examination results may further define the limits of the final certification.

3.2. Physical or Structural Features

3.2.1 Hose houses and outdoor cabinets shall:

- have capacity for storing the following equipment, at minimum:
  - 2 ½" nominal diameter fire hose – two, 100 ft. length
  - 1 ½" nominal diameter fire hose – one, 100 ft. length
  - Gated 2 ½" by 1 ½" by 1 ½" WYE valve
  - Adjustable spray nozzles – two 2 ½" size and one 1 ½" size
  - Adaptor fittings – two 2 ½" to 1 ½" adaptors
  - Two hydrant wrenches, two spanner wrenches for 1 ½" hose, and four spanner wrenches for 2 ½" hose
  - A hose house shall have room for the hydrant in addition to the equipment stated above
- be of practical design. Access to the hydrant and equipment and removal shall be easy and safe. A single operator should be able to open the structure and remove equipment.
- be of sufficient durability to resist damage from normal wear and abuse as well as expected snow and wind loads.
- be constructed of corrosion resistant materials or be treated with protective coatings.
- have means for secure anchorage.
- be weather-tight.
- have adequate vent openings for air circulation past stored hose.
- have a door or lid arrangement for closing and locking, and equipped with stops for keeping them in the open position.

3.2.1. In the case of a hose house accommodating a hydrant, it shall be possible to lay out 100 ft. of stored 2 ½" hose pre-connected to the hydrant with ease and without obstructions.

3.3. Materials

All materials shall be suitable for the intended application. Any materials used in these products shall have physical properties necessary to render them suitable for their intended use. When unusual materials are used, special tests may be necessary to verify their suitability.

3.4. Assemblies

Hose houses or outdoor cabinets may be certified as a stand-alone device or as an assembly including any or all of the firefighting equipment listed in Section 3.2.1. The manufacturer shall be able to supply the components included in the assembly. All components must be certified for the assembly to be eligible for certification. The manufacturer must specify the make and model of all components and the certification agency must be notified of any changes.

3.5. Markings

3.5.1. Each hose house or outdoor cabinet shall be permanently marked on its external surface with the following information:

- name and address of the manufacturer or marking traceable to the manufacturer;
- date of manufacture or code traceable to date of manufacture or lot identification;
- model number, size, rating, capacity,
- the words “FIRE HOSE” in letters at least 3 in. high,

3.5.2. The model or type identification shall correspond with the manufacturer's catalog designation and shall uniquely identify the certification agency’s mark of conformity.

3.5.3. The certification agency’s mark of conformity shall be displayed visibly and permanently on the product and/or packaging as appropriate and in accordance with the requirements of the certification agency. The manufacturer shall exercise control of this mark as specified by the certification agency and the certification scheme.

3.5.4. All markings shall be legible and durable.

3.6. Manufacturer’s Installation and Operation Instructions

3.6.1. The manufacturer shall:

- prepare instructions for the installation, maintenance, and operation of the product;
- provide facilities for repair of the product and supply replacement parts, if applicable; and
- provide services to ensure proper installation, inspection, or maintenance for the product where it is not reasonable to expect the average user to be able to provide the installation, inspection, or maintenance.

3.7. Calibration

3.7.1. Each piece of equipment used to verify the test parameters shall be calibrated within an interval determined on the basis of stability, purpose, and usage. A copy of the calibration certificate for each piece of test equipment is required. The certificate shall indicate that the calibration was performed against working standards whose calibration is certified and traceable to an acceptable reference standard and certified by an ISO/IEC 17025 accredited calibration laboratory. The test equipment shall be clearly identified by label or sticker showing the last date of the calibration and the next due date. A copy of the service provider’s accreditation certificate as an ISO/IEC 17025 accredited calibration laboratory should be available.

3.7.2. When the inspection equipment and/or environment is not suitable for labels or stickers, other methods such as etching of control numbers on the measuring device are allowed, provided documentation is maintained on the calibration status of this equipment.

3.8. Tolerances

Tolerance on units of measure shall be as described in Appendix A, unless otherwise specified.

4 PERFORMANCE REQUIREMENTS

4.1. Examination

4.1.1. Requirements

The hose house or outdoor cabinet shall conform to the manufacturer's specifications and to the certification agency's requirements.

4.1.2. Test/Verification

Samples shall be examined and compared to the specifications. It shall be verified that the sample conforms to the physical and structural requirements described in Section 3, General Requirements.

4.2. Equipment Load

4.2.1. Requirements

There shall be no damage or deformation to shelves or equipment brackets when subjected to an applied load of twice the manufacturer's rating.

4.2.2. Test/Verification

The hose house or outdoor cabinet shall be mounted as intended. A static load equal to twice the manufacturer's rating shall be applied to all shelves and equipment brackets within the hose house or outdoor cabinet. The load shall be applied for a minimum of 24 hours. Subsequently, observations of any damage or deformation to the hose house or outdoor cabinet shall be made.

4.3. Snow Load

4.3.1. Requirements

The roof of a hose house or outdoor cabinet shall be able to withstand a load of 20 psf (146 kg/m^2) without any damage or deformation.

4.3.2. Test/Verification

A static load equal to 20 lb_f per square foot (146 kg_f per square meter) of the roof surface area of the hose house or outdoor cabinet shall be applied for a minimum of 24 hours. The load shall be evenly distributed over the entire surface. Subsequently, observations of any damage or deformation to the hose house or outdoor cabinet shall be made.

4.4. Wind Load

4.4.1. Requirements

A hose house or outdoor cabinet shall not be damaged or deformed and shall be capable of remaining in place when subjected to a simulated load of 40 psf (195 kg/m^2) on its projected area.

4.4.2. Test/Verification

The hose house or outdoor cabinet shall be mounted as intended. A static load equal to 40 lbs_f per square foot (195 kg_f per square meter) of the wall surface shall be supplied. The force shall be applied for a duration of 5 minutes and in a direction perpendicular to the mounting means of the structure. The load

shall be evenly distributed over the entire surface. Subsequently, observations of any damage, deformation, or movement from the mounting position shall be made.

4.5. Weatherability

4.5.1. Requirements

A hose house or outdoor cabinet shall be water-tight and shall operate freely following exposure at a temperature of -40°F (-40°C).

4.5.2. Test/Verification

The hose house or cabinet shall be subjected to a water spray at a rate of 0.6 in./min (15mm/min) from above for 5 minutes. This is to simulate a heavy rainfall. Observations of any collection of water inside the hose house or cabinet shall be made. Subsequently, the hose house or cabinet shall be conditioned at -40°F (-40°C) for a period of 24 hours. Upon removal from the chamber, the hose house or cabinet doors and latches shall operate freely as intended.

4.6. Functionality Tests

4.6.1. Requirements

A. The arrangement of shelves and equipment brackets or hooks shall allow for items to be easily stored and accessed. It shall be possible for a single operator to store and access all equipment with ease and without any obstructions.
B. Hose houses or outdoor cabinets intended to accommodate a hydrant or standpipe connection, shall be capable of allowing a 100 ft. length, 2 ½" nominal diameter fire hose to be laid out quickly without any snagging, binding, or chafing.
C. Hose houses intended to accommodate a hydrant shall have sufficient working space to effectively operate the hydrant.

4.6.2. Test/Verification

A. A hose house or outdoor cabinet shall be fully equipped with all intended firefighting hardware. A single operator shall remove each item and restore it to its original position. Observations of any difficulty in accessing, removing, and/or storing any equipment shall be made.
B. A hose house or outdoor cabinet shall be fully equipped with all intended firefighting hardware. One end of a 100 ft. length, 2 ½" nominal diameter fire hose shall be secured inside the hose house or cabinet and the hose laid out by a single operator as quickly as possible. Observations of any snagging, binding, or chafing of the hose shall be made.
C. A fully equipped hose house shall be installed on a hydrant. Observations of sufficient working space to effectively operate the hydrant with a wrench shall be made.

4.7. Corrosion – Salt Spray

4.7.1. Requirements

Hose house or outdoor cabinet construction materials shall withstand a 240 hour exposure to the processes described in 4.5.2 without incurring excessive corrosion damage that would impair function.

4.7.2. Tests/Verification

Hose houses or outdoor cabinets shall be exposed to salt spray (fog) as specified in the latest version of ASTM B 117, *Standard Practice for Operating Salt Spray (Fog) Apparatus.* The salt solution shall consist of 20 percent (by weight) of common salt (NaCl) dissolved in deionized water with a pH between 6.5 and 7.2 and a specific gravity between 1.126 and 1.157.

Following the exposure period, the hose house or outdoor cabinet shall be inspected for corrosion damage that would impair proper function. Doors and latches shall operate freely as intended.

5 MANUFACTURER'S REQUIREMENTS

5.1. Demonstrated Quality Control Program

5.1.1. A quality assurance program is required to assure that subsequent products produced by the manufacturer shall present the same quality and reliability as the specific products examined. Design quality, conformance to design, and performance are the areas of primary concern.

- Design quality is determined during the examination and tests and may be documented in the certification report.
- Continued conformance to this standard is verified by the certifier's surveillance program.
- Quality of performance is determined by field performance and by periodic re-examination and testing.

5.1.2. The manufacturer shall demonstrate a quality assurance program which specifies controls for at least the following areas:

- existence of corporate quality assurance guidelines;
- incoming quality assurance, including testing;
- in-process quality assurance, including testing;
- final inspection and tests;
- equipment calibration;
- drawing and change control;
- packaging and shipping; and
- handling and disposition of non-conforming materials.

5.1.3. Documentation/Manual

There should be an authoritative collection of procedures/policies. It should provide an accurate description of the quality management system while serving as a permanent reference for implementation and maintenance of that system. The system should require that sufficient records are maintained to demonstrate achievement of the required quality and verify operation of the quality system.

5.1.4. Records

To assure adequate traceability of materials and products, the manufacturer shall maintain a record of all quality assurance tests performed, for a minimum period of two years from the date of manufacture.

5.1.5. Drawing and Change Control

- The manufacturer shall establish a system of product configuration control that shall allow no unauthorized changes to the product. Changes to critical documents, identified in the certification report, may be required to be reported to, and authorized by the certification agency prior to implementation for production.
- Records of all revisions to all certified products shall be maintained.

5.2. Surveillance Audit

5.2.1. An audit of the manufacturing facility may be part of the certification agency's surveillance requirements to verify implementation of the quality assurance program. Its purpose is to determine that the manufacturer's equipment, procedures, and quality program are maintained to ensure a uniform product consistent with that which was tested and certified.

5.2.2. Certified products or services shall be produced or provided at, or provided from, location(s) disclosed as part of the certification examination. Manufacture of products bearing a certification mark is not permitted at any other location prior to disclosure to the certification agency.

5.3. Product Modifications

5.3.1. The manufacturer shall notify the certification agency of changes in product construction, components, raw materials, physical characteristics, coatings, component formulation or quality assurance procedures prior to implementation.

6 BIBLIOGRAPHY

ISO/IEC 17025, *General Requirements for the Competence of Testing and Calibration Laboratories*.

APPENDIX A: Tolerances

Unless otherwise stated, the following tolerances shall apply:

Angle:	± 2°
Flow:	± 3% of value
Frequency (Hz):	± 5% of value
Length:	± 2% of value
Volume:	± 5% of value
Force:	± 2% of value
Torque:	± 2% of value
Rotation:	± 1 RPM
Pressure:	± 5% of value
Temperature:	± 5% of value
Time:	+ 5/-0 seconds + 0.1/-0 minutes + 0.1/-0 hours + 0.25/-0 days

Unless stated otherwise, all tests shall be carried out at a room (ambient) temperature of 68°F ± 18°F (20°C ± 10°C).