

# MAINTENANCE AND TESTING OF PORTABLE FIRE EXTINGUISHERS

## Introduction

In order to ensure that they are available and operate properly when needed, both federal certification requirements and state licensure requirements mandate that healthcare facilities properly inspect, test and maintain their portable fire extinguishers [see NFPA 101(00), Sections 18/19.3.5.6 and 9.7.4.1; MSFC(07), Sec. 906.2]. Unless otherwise indicated, this guide will focus on federal certification requirements.

## Applicable standards

NFPA 101(00), Sec. 9.7.4.1 and MSFC(07), Sec. 906.2 require that portable fire extinguishers be inspected and maintained in accordance with NFPA 10, *Standard for Portable Fire Extinguishers*. NFPA 101(00), Sec. 2.1.1 references the 1998 edition of NFPA 10. MSFC(07), Chapter 45, on the other hand, references the 2002 edition of the standard. For purposes of this guide, all code references will be based on the 1998 edition of NFPA 10.

## Visual inspections

Portable fire extinguishers are required to be visually inspected when initially placed in service and at least monthly thereafter [see NFPA 10(98), Sections 4-3.1]. These visual inspections, intended to help ensure that each extinguisher is in its designated place and will operate if needed, can be performed by facility staff.

A pressure gauge in the “normal” or “operable” range is not a 100 percent guaranty that the extinguisher will perform as intended. A broken seal, for example, may be an indication that someone has used the extinguisher and discharged a portion of the contents too small to affect the pressure gauge. NFPA 10(98), Sec. 4-3.2, therefore, requires that the monthly inspection verify a number of things including:

- Extinguishers are in their designated places
- There are no obstructions to access or visibility
- Safety seals are not broken or missing
- There is no evidence of physical damage, corrosion, leakage or clogged nozzle
- Pressure gauge readings are in the proper range or position
- Operating instructions are legible and facing outward
- Fullness – confirmed by weighing or lifting

Where circumstances warrant, some fire extinguishers may have to be inspected more frequently. Examples of such circumstances might include extinguishers that are oftentimes found obstructed during monthly inspections or extinguishers located in areas where they are subject to tampering, theft or mechanical injury.

Obviously, any problems found during the monthly inspection must be corrected immediately. Some problems trigger a need for full maintenance or even replacement of the extinguisher. For example:

1. Full maintenance procedures must be performed whenever an inspection of a rechargeable fire extinguisher reveals any of the following problems [see NFPA 10(98), Sec. 4-3.3.1]:
  - Operating instructions are not legible
  - Safety seals are broken or missing
  - Fullness can't be confirmed (as determined by weighing or lifting)
  - There is evidence of physical damage, corrosion, leakage or a clogged nozzle
  - Pressure gauge readings are not in the operable range or position

2. When any of the conditions noted in Item 1 on the previous page, with the exception of a broken or missing safety seal, are found during an inspection of a nonrechargeable dry chemical extinguisher, the extinguisher must be removed from use [see NFPA 10(98), Sec. 4-3.3.2].
  - Nonrechargeable extinguishers can be identified by looking for markings similar to the following: “Discharge and Dispose of After Any Use”, “Discharge and Return to Manufacturer After Any Use”, or simply “Nonrechargeable”.

### **Maintenance**

“Maintenance” is a thorough examination and repair, as needed, of your facility’s portable fire extinguishers and is covered in NFPA 10(98), Sec. 4-4. Maintenance is required at least once a year – more frequently when indicated by a routine monthly inspection, as discussed earlier. Maintenance is also required whenever extinguishers undergo hydrostatic testing.

Because maintenance is required to include a thorough examination of the mechanical parts, extinguishing agent and expelling means of each portable fire extinguisher, it must be performed by an approved extinguisher servicing company. A more detailed look at what annual maintenance entails can be found in NFPA 10(98), Tables A-4-4.4.2(a) and A-4-4.4.2(b). It should be noted that new tamper seals are required to be installed whenever maintenance is performed on rechargeable fire extinguishers [see NFPA 10(98), Sec. 4-4.2.1].

### **Six-Year Maintenance**

Every 6 years, stored pressure fire extinguishers that require a 12-year hydrostatic test (e.g. dry chemical extinguishers) must be emptied and proper maintenance procedures performed [see NFPA 10(98), Sec. 4-4.3]. The exception to this rule is nonrechargeable extinguishers, which are required to be removed from service 12 years from the date of manufacture. Again, this maintenance must be performed by an approved extinguisher servicing company.

### **Hydrostatic testing**

At certain intervals, fire extinguishers are required to be pressure tested using water or some other noncompressible fluid to help prevent unwanted failure or rupture of the cylinder [see NFPA 10(98), Chapter 5]. This is called hydrostatic testing and includes both an internal and external examination of the cylinder. Because this testing requires special training and equipment, it needs to be performed by an approved extinguisher servicing company.

Hydrostatic testing intervals for fire extinguishers are outlined in NFPA 10(98), Sec. 5-2 and Table 5-2. Test intervals for some of the most commonly found extinguishers are as follows:

- Pressurized water, carbon dioxide and wet chemical extinguishers – every 5 years
- Dry chemical extinguishers – every 12 years

As mentioned earlier, the exception to the rule for hydrostatic testing is nonrechargeable stored pressure extinguishers (e.g. dry chemical extinguishers), which are required to be removed from service 12 years from the date of manufacture.

**Information only:**

**Some of you may have heard...**

The 2007 edition of NFPA 10 contains a new requirement for the removal of dry chemical extinguishers manufactured prior to October, 1984 [see NFPA 10(07), Sec. 4.4.1]. Removal is to occur at the time of the next 6-year maintenance interval or next hydro test interval, whichever comes first.

This requirement came about as the result of significant changes made to UL Standard 299, *Dry Chemical Fire Extinguishers*, based on fire testing conducted by UL, FEMA and NFPA. This edition of NFPA 10 is **not** currently referenced by either the 2000 LSC or the 2007 MSFC, so it doesn't carry the effect of law. This is mentioned in this guide only for informational purposes, as some insurance carriers may be applying this requirement to the properties they insure.

***Documentation Requirements***

Almost as important as conducting required inspection, testing and maintenance is documenting the fact that it occurred. NFPA 10 requires that these services be properly recorded. What follows is a brief synopsis of some of the major documentation requirements you need to be aware of.

**Monthly inspections**

NFPA 10(98), Section 4-3.4 requires that records be kept of all extinguishers inspected, including those needing corrective action. The date the inspection was performed and the initials of the person performing the inspection must be recorded on a tag or label attached to each extinguisher. As an alternate, the monthly inspections can be recorded on an inspection checklist maintained on file or in an electronic system that provides a permanent record.

**Maintenance**

Annual maintenance is also required to be recorded on a tag or label attached to each extinguisher that indicates the month and year the maintenance was performed and the name of the person or company performing the service [see NFPA 10(98), Section 4-4.4]. In addition to the tag or label, it is recommended that a permanent record be kept for each extinguisher that indicates at least the following:

- The date maintenance was last performed and by whom
- The date the extinguisher was recharged and by whom
- The date 6-year maintenance was last performed and by whom
- The date the extinguisher was hydrostatically tested and by whom

Six-year maintenance is required to be recorded on a metallic label, or similar durable material, affixed to each extinguisher that indicates the month and year the maintenance was performed, the initials or name of the person performing the service and the name of the company they represent [see NFPA 10(98), Section 4-4.4.1]. Old maintenance labels must be removed at the time any new labels are affixed to the extinguisher.

### **Recharging**

When extinguishers are recharged, a tag or label must be attached to each extinguisher that indicates the month and year recharging was performed and the name of the person or company performing the service [see NFPA 10(98), Section 4-5.5]. In addition, each extinguisher that has undergone maintenance that includes an internal examination or has been recharged is required to have a “Verification of Service” collar installed around the neck of the extinguisher [see NFPA 10(98), Section 4-4.4.2]. The exception to this rule is carbon dioxide extinguishers that have been recharged without removal of the valve assembly.

The “Verification of Service” collar, usually made of plastic, serves as visual proof that the extinguisher was disassembled and maintenance performed. It must be of a type that cannot be removed without the removal of the valve assembly and must include the month and year the service was performed.

### **Hydrostatic testing**

NFPA 10(98), Sec. 5-6.1 requires that a permanent record be maintained for each cylinder tested. In addition:

- High-pressure cylinders (e.g. carbon dioxide) that pass the hydrostatic test must be stamped with the tester’s identification number and the month and year of the test.
- Low-pressure cylinders (e.g. dry chemical, wet chemical, pressurized water) that pass the hydrostatic test must have the test information recorded on a metallic label, or similar durable material, affixed to each extinguisher that indicates the month and year the test was performed, the test pressure used, and the initials or name of the person performing the service and the name of the company they represent [see NFPA 10(98), Section 5-6.4].

### **Sample extinguisher record**

A sample *extinguisher record* has been developed to serve as a guide that you can use in creating your own record. A completed record is provided to serve as an example of how the record is expected to be filled out.

### **[Click Here for Sample Portable Fire Extinguisher Record](#)**

It’s important that at least two people in your facility know where the documentation on your facility’s fire extinguishers is kept to increase the likelihood that it can be readily provided if requested during an inspection. This documentation needs to be maintained for the life of the extinguishers.