

Fire extinguishers

All fires start as small fires. Small fires can be controlled by effective use of portable fire extinguishers.

To get the job completed consider the following:

- Type and use of fire extinguishers for the expected fire
- Number and distribution throughout the premises for quick access

Adequate training of personnel in the use of extinguishers (visit www.sentrysafetytrainer.com for interactive internet based training for your employees)

- Proper maintenance of equipment
- Proper installation of the extinguisher to permit ease of operation

An adequate fire extinguisher program may prevent loss of life—and can save you money in your fire insurance premium.

TYPES OF FIRES



Class A fires

Ordinary combustible materials, such as wood, cloth, paper, rubber, and many plastics. Water and other extinguishing agents with large amounts of water are effective.



Class B fires

Flammable liquids like chemicals, greases, gasoline, and oils where a blanketing effect is essential.



Class C fires

Electrical equipment fires where the use of a non-conducting extinguishing agent is of first importance.



















Class D fires

Fires in combustible metals like magnesium, titanium, zirconium, sodium, and potassium where a smothering effect is needed.

Class K fires

Fires in combustible cooking media like vegetable or animal oils and fats.

EXTINGUISHING MATERIAL	TYPE OF FIRE	
Water		Basically tap water, protect from freezing
Antifreeze		Calcium chloride solution, nonfreezing
Pump tank-water		Basically tap water, protect from freezing
Dry chemical	 	Sodium bicarbonate, potassium bicarbonate, potassium chloride, nonfreezing
Multi-purpose dry chemical	  	Ammonium phosphate, nonfreezing
Carbon dioxide	 	Inert gas, nonfreezing
Halon 1211 ¹	  	Halogenated hydrocarbon, bromochlorodifluoromethane, nonfreezing
Halon 1301 ²	 	Halogenated hydrocarbon, bromotrifluoromethane, nonfreezing
Dry powder special compound		Sodium chloride or graphite materials, nonfreezing

1. Since 1971, fire extinguishers of the investing type (soda-acid, foam, loaded stream cartridge) have not been manufactured. Because of their poor performance record, existing units should be replaced with approved extinguishers – indicated above.

2. As of 1995, halon is no longer available for recharge. Halon has been found to contribute to atmosphere ozone depletion. All manufacturing of this agent ceased in 1995.

DISTRIBUTION OF FIRE EXTINGUISHERS

The number of fire extinguishers needed to protect the property should be determined considering the following: area, arrangement of building, severity of the hazard, classes of fires and the distances a person must travel to reach a fire extinguisher. Fire extinguishers should be provided for the protection of both the building structure, if combustible, and the occupancy hazards.

Combustible buildings having an occupancy hazard subject to Class B and/or C fires, shall have an adequate number and size Class A fire extinguishers for building protection, plus added Class B and/or Class C extinguishers. Distribution also varies according to severity of occupancy hazard, i.e., light (offices, churches, etc.); ordinary (mercantile, auto showrooms, light manufacturing, etc.) extra hazard (woodworking, auto repairs, painting, etc.).

CLASS A

EXTINGUISHER RATING	MAXIMUM TRAVEL Distance to Extinguisher	AREAS TO BE PROTECTED		
		Light hazard	Ordinary hazard	Extra hazard
2A	75 Feet	6,000 sq. ft.	3,000 sq. ft.	--
3A	75 Feet	9,000 sq. ft.	4,500 sq. ft.	--
4A	75 Feet	11,250 sq. ft.	6,000 sq. ft.	4,000 sq. ft.

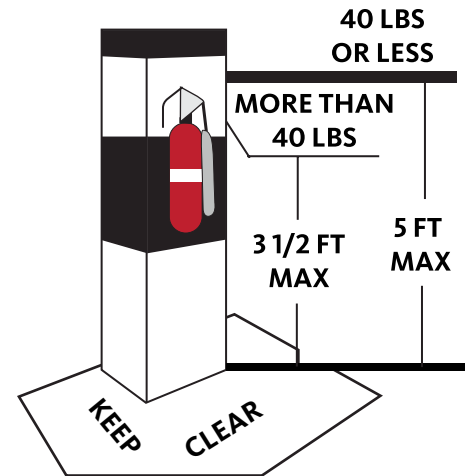
CLASS B

EXTINGUISHERS LABELED AFTER 6-1-69

Type of hazard	Minimum extinguisher rating	Maximum travel distance to extinguishers
Light	5 B	30 ft.
	10 B	50 ft.
Ordinary	10 B	30 ft.
	20 B	50 ft.
Extra	40 B	30 ft.
	80 B	50 ft.

Class B fire extinguishers should not be installed as the sole protection for flammable liquid hazards of appreciable depth where surface areas exceed 10 sq. ft.

HEIGHT PLACEMENT OF EXTINGUISHER



CLASS C

Required where fire involves energized electrical equipment. Since the fire itself is either a Class A or Class B hazard, the extinguishers are sized and located on the basis of the anticipated Class A or Class B hazard.

CLASS D

Size and determination shall be on the basis of specific combustible metal, particle size and area to be covered. Extinguishing equipment shall be located not more than 75 feet from the Class D hazard.

CLASS K

Class K extinguishers are designed for the potential ignition of combustible cooking oils and fats. Distance should not exceed 30 feet.

TRAINING EMPLOYEES

Although it is quite apparent from the design of most extinguishers as to their method of operation, employees should be given definite instruction and drilled in their use so that they are capable of confidently handling them in the excitement of a fire.

Be sure to document this training.

NFPA-10 DEFINITIONS:

Inspection (Monthly): Inspection is a quick check that an extinguisher is available and will operate. It is intended to give reasonable assurance that the extinguisher is fully charged and operable. This is done by seeing that it is in its designated place, that it has not been actuated or tampered with, and that there is no obvious or physical damage to condition to prevent operation.

Maintenance (Annual): Maintenance is a thorough check of the extinguisher. It is intended to give maximum assurance that an extinguisher will operate effectively and safely. It includes a thorough examination and any necessary repair or replacement. It will normally reveal the need for hydrostatic testing. Maintenance, servicing and recharging shall be done by trained persons having the appropriate servicing manuals.

Recharging: Recharging is the replacement of the extinguishing agent and also includes the expellant for certain types of extinguishers.

Internal Maintenance: Extinguisher unit is to be emptied, visually inspected and subject to the recharge maintenance procedure.



Hydrostatic Test: This is a pressure test of the extinguisher cylinder or container; test pressure to be determined by manufacturer.

Extinguishers should be hydrostatically tested if, at any time, they show evidence of corrosion or mechanical injury, and otherwise at the following intervals:

HYDROSTATIC TEST INTERVAL	EXTINGUISHER TYPE
Five years	Water and/or antifreeze, stored pressure water and/or antifreeze, wetting agent, dry chemical with stainless steel or soldered brass shells, carbon dioxide
12 years	Stored pressure dry chemical with mild steel brazed brass or aluminum shells; cartridge operated dry chemical with mild steel shells; cartridge operated dry powder with mild steel shells

OBsolete FIRE EXTINGUISHERS SHOULD BE REPLACED

Since 1971, fire extinguishers of the inverting type have not been manufactured in the United States. Included in this category are the following types:

- Soda-acid
- Foam
- Water cartridge
- Loaded steam cartridge

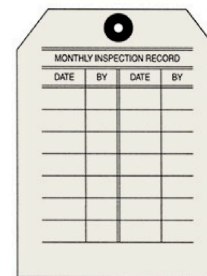
When last made, all of these discontinued types were 2 ½ gallon capacity, although some were produced at one time in 1 ½ and 5-gallon sizes. Various metals and fabricating methods were employed. Several million of these obsolete extinguishers still remain in service. They should be removed from service because experience shows they perform poorly.

Because such inverting extinguishers are not under constant pressure, they were not defined as pressure vessels. Thus, they were not designed to meet pressure vessel codes. To meet pressure vessel codes, a soda-acid extinguisher is required to be rated at 900 psi. In practice, most soda-acid units were rated only at 350 psi. Since it is not unusual for such extinguishers to generate internal pressures of 300 psi when they are operated, they are being stressed very close to their yield point.

Because of this, there have been a number of fatal accidents caused by such obsolete extinguishers exploding while being used. An additional indication of the hazard is the current 22 percent average failure rate being experienced when such units are hydrostatically tested.

OBTAINING FIRE EXTINGUISHERS

Fire extinguishers can be found at a variety of stores or through the internet. All extinguishers should be approved by Underwriters Laboratories, Inc. (UL).



Typical monthly inspection record



Typical service company annual maintenance tag

Safety services are provided by a member of the Sentry Insurance Group, Stevens Point, WI. For a complete listing of companies, visit sentry.com.

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