



Lake Havasu City Fire Department

Fire Prevention Bureau

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**FD Specification #03
Portable Fire Extinguishers**

2018 IFC §906, NFPA 10

Rev. 9/01/2021

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OVERVIEW

Choosing the correct number, size, and type of fire extinguishers for any type of hazard to be protected, gives the operator a chance to suppress a small fire before it becomes too large to fight. Also, correct extinguisher placement is important so an operator can access and use it without delay.

PURPOSE

The purpose of this specification is to provide a uniform level of portable fire protection for all applicable occupancies, vehicles and other indoor and outdoor places where fire extinguishers are required.

SCOPE

This fire department specification covers both common and special applications of portable fire extinguishers required by the fire code.

DEFINITIONS

- Light (Low) Hazard** areas are locations where the quantity and combustibility of Class A combustibles and Class B flammables is low. In these areas, expected fires have relatively low rates of heat release. Light hazard areas may include offices, classrooms, meeting rooms etc.
- Ordinary (moderate) hazard** areas are locations where the quantity and combustibility of Class A combustible materials and Class B flammables is moderate. Fires with moderate rates of heat release are expected in these areas. Ordinary hazard locations could be offices, malls, light manufacturing or research operations, parking garages, workshops, or maintenance/service areas.
- Extra (high) hazard** areas are locations where the quantity and combustibility of Class A combustible material is high or where high amounts of Class B flammables are present. Quickly developing fires with high rates of heat release are expected. These locations could be sites for cars repair, aircraft and boat servicing, painting, dipping, and coating, storage areas (tanks, containers etc.).

TABLE 1: ADDITIONAL REQUIRED FIRE EXTINGUISHERS

IFC §	SUBJECT	IFC §	SUBJECT
303.5	1. Asphalt kettles	307.5	2. Open Burning
308.1.3	3. Open flames – torches	309.4	4. Powered industrial trucks
2005.2	5. Aircraft towing vehicles	2005.3	6. Aircraft welding apparatus
2005.4	7. Aircraft fuel-servicing tank vehicles	2005.5	8. Aircraft hydrant fuel-servicing vehicles
2005.6	9. Aircraft fuel-dispensing stations	2007.7	10. Heliports and helistops
2108.4	11. Dry cleaning plants	2305.5	12. Motor fuel-dispensing facilities

IFC §	SUBJECT	IFC §	SUBJECT
2310.6.4	13. Marine motor fuel-dispensing facilities	2311.6	14. Repair garages
2404.4.1	15. Spray-finishing operations	2405.4.2	16. Dip-tank operations
2406.4.2	17. Powder-coating areas	2804.3	18. Lumberyards/woodworking facilities
2808.8	19. Recycling facilities	2809.5	20. Exterior lumber storage
2903.5	21. Organic-coating areas	3006.3	22. Industrial ovens
3104.12	23. Tents and membrane structures	3206.10	24. High-piled storage
3315.1	25. Building under construction or demolition	3317.3	26. Roofing operations
3408.2	27. Tire rebuilding/storage	3504.2.6	28. Welding and other hot work
3604.4	29. Marinas	3703.6	30. Combustible fibers
5703.2.1	31. Flammable and combustible liquids, general	5704.3.3.1	32. Indoor storage of flammable and combustible liquids
5704.3.7.5.2	33. Liquid storage rooms for flammable & combustible liquids	5705.4.9	34. Solvent distillation units
5706.2.7	35. Farms and construction sites-flammable and combustible liquids storage	5706.4.10.1	36. Bulk plants and terminals for flammable and combustible liquids
5706.5.4.5	37. Commercial, industrial, governmental or manufacturing establishments-fuel dispensing	5706.6.4	38. Tank vehicles for flammable and combustible liquids
5906.5.7	39. Flammable solids	6108.2	40. LP-Gas

Note: This FD Specification is intended to be a guide only. For all installation fire-flow, location and distribution, and maintenance requirements refer to the references above. Where conflicts exist between this document and the applicable codes and standards, the above references must supersede.

REQUIREMENTS:

Where required: Portable fire extinguishers must be installed in new and existing Group A, B, E, F, H, I, M, R-1, R-2, R-4 & S occupancies. For an exception in Group R-2 occupancies, consult the fire code. For information on additional required portable fire extinguishers, see Table 1 below.

NOTE: The minimum size and type fire extinguisher must be a minimum **2-A:10-B:C**.

Selection, Installation, Inspection and Maintenance: Portable fire extinguishers shall be selected, inspected, installed, and maintained in accordance with IFC § 906 and NFPA 10 *Standard for Portable Fire Extinguishers*. For exception to the requirement for NFPA 10, consult the fire code.

1. **Selection:** Portable fire extinguishers must be properly selected for the hazard which they are designed to protect, and the amount of fire that they are capable of extinguishing by an untrained operator. The size and distribution of portable fire extinguishers must be in accordance with the following regulations:

- a. **Class A (Ordinary Combustibles) fire hazards:** Fire extinguishers for occupancies that involve primarily Class A fire hazards, the minimum sizes and distribution must comply with Table 2 below:

TABLE 2: FIRE EXTINGUISHERS FOR CLASS A FIRE HAZARDS

	LIGHT(Low) HAZARD OCCUPANCY	ORDINARY (Moderate) HAZARD OCCUPANCY	EXTRA (High) HAZARD OCCUPANCY
Minimum rated single extinguisher	2-A	2-A	4-A ^a
Maximum floor area per unit of A	3,000 square feet	1,500 square feet	1,000 square feet
Maximum floor area for extinguisher ^b	11,250 square feet	11,250 square feet	11,250 square feet
Maximum travel distance to extinguisher	75 feet	75 feet	75 feet

1. Two 2¹/₂-gallon water-type extinguishers shall be deemed the equivalent of one 4-A rated extinguisher.
2. Annex E.3.3 of NFPA 10 provides more details concerning application of the maximum floor area criteria.
3. Two water-type extinguishers each with a 1-A rating shall be deemed the equivalent of one 2-A rated extinguisher for Light (Low) Hazard Occupancies.

- b. **Class B (Combustible & Flammable Liquids) fire hazards:** Portable fire extinguishers for occupancies involving flammable or *combustible liquids* with depths of less than or equal to 0.25-inch must be selected and placed in accordance with Table 3 below:

TABLE 3: FLAMMABLE OR COMBUSTIBLE LIQUIDS WITH DEPTHS OF < / = TO 0.25-INCH^a

TYPE OF HAZARD	BASIC MINIMUM EXTINGUISHER RATING	MAXIMUM TRAVEL DISTANCE TO EXTINGUISHERS (feet)
Light (Low)	5-B	30
	10-B	50
Ordinary (Moderate)	10-B	30
	20-B	50
Extra (High)	40-B	30
	80-B	50

For requirements on water-soluble flammable liquids and alternative sizing criteria, see § 5.5 of NFPA 10.

- c. **Class C (Energized Electrical) fire hazards:** Portable fire extinguishers for Class C fire hazards shall be selected and placed on the basis of the anticipated Class A or B hazard.
- d. **Class D (Combustible Metals) fire hazards:** Portable fire extinguishers for occupancies involving combustible metals must be selected and placed in accordance with NFPA 10.
- e. **Class K (Cooking grease) fires hazards:** Fire extinguishers provided for the protection of cooking grease fires shall be of an *approved* type compatible with the automatic fire-extinguishing system agent and in accordance with the following:

Extinguishers shall be provided within a 30-foot travel distance of commercial-type cooking equipment. Cooking equipment involving solid fuels or vegetable or animal oils and fats shall be protected by a **Class K** rated portable extinguisher in accordance with the use as applicable:


1. **Solid fuel cooking appliances:** All solid fuel cooking appliances, whether or not under a hood, with fireboxes 5³ feet or less in volume shall have a minimum 2.5-gallon or two 1.5-gallon Class K wet-chemical extinguishers located in accordance with Item e above.
2. **Deep fat fryers:** When hazard areas include deep fat fryers, listed Class K portable fire extinguishers must be provided as follows:
 - a) For up to four fryers having a maximum cooking medium capacity of 80 pounds each: one Class K extinguisher of a minimum 1.5-gallon capacity.
 - b) For every additional group of four fryers having a maximum cooking medium capacity of 80 pounds each: one additional Class K extinguisher of a minimum 1.5-gallon capacity must be provided.
 - c) For individual fryers exceeding 6² feet in surface area: Class K extinguishers must be installed in accordance with the extinguisher manufacturer's recommendations.
2. **Installation:** The installation of portable fire extinguishers must be as follows:
 - a. **Extinguishers weighing 40 pounds or less** must be installed so that their tops are not more than 5 feet above the floor.
 - b. **Extinguishers weighing more than 40 pounds** must be installed so that their tops are not more than 3.5 feet above the floor.
 - c. **Floor clearance:** The clearance between the floor and the bottom of installed hand-held portable fire extinguishers must not be less than 4 inches.
 - d. **Wheeled fire extinguishers** must be conspicuously located in a designated location.
 - e. **Conspicuous location:** Extinguishers must be located in conspicuous locations where they will be readily accessible and immediately available for use. These locations must be along normal paths of travel, unless the *fire code official* determines that the hazard posed indicates the need for placement away from normal paths of travel. Locate near exit doors where feasible.
 - f. **Unobstructed and unobscured:** Extinguishers must not be obstructed or obscured from view. In rooms or areas in which visual obstruction cannot be completely avoided, means must be provided to indicate the locations of extinguishers.
 - g. **Hangers and brackets:** Where not housed in cabinets, extinguishers must be installed on the hangers or brackets supplied, which must be securely anchored to the mounting surface in accordance with the manufacturer's installation instructions.
 - h. **Cabinets** used to house portable fire extinguishers must not be locked except where portable fire extinguishers subject to malicious use or damage are provided with a means of ready access. In Group I-3 occupancies and in mental health areas in Group I-2 occupancies, access to portable fire extinguishers must be permitted to be locked or to be located in staff locations provided the staff has keys.
3. **Inspection:** Fire extinguishers must be inspected when initially placed in service and thereafter at approximately 30 day intervals and may be inspected, manually or by electronic monitoring, at more frequent intervals when circumstances require.

- a. **Procedure:** Periodic inspection of fire extinguishers shall include a check of at least the following items:
 1. Location in designated place
 2. No obstruction to access or visibility
 3. Operating instructions on nameplate legible and facing outward
 4. Safety seals and tamper indicators not broken or missing
 5. Fullness determined by weighing or "hefting"
 6. Examination for obvious physical damage, corrosion, leakage, or clogged nozzle
 7. Pressure gauge reading or indicator in the operable range or position
 8. Condition of tires, wheels, carriage, hose, and nozzle checked (for wheeled units)
- b. **Corrective action:** When an inspection of any fire extinguisher reveals a deficiency in any of the conditions listed above, immediate corrective action shall be taken.
- c. **Recordkeeping:**
 1. Personnel making inspections must keep records of all fire extinguishers inspected, including those found to require corrective action.
 2. At least monthly, the date the inspection was performed and the initials of the person performing the inspection are to be recorded.
 3. Records must be kept on a tag or label attached to the fire extinguisher, on an inspection checklist maintained on file, or by an electronic method, that provides a permanent record.
4. **Maintenance:** Certification of service personnel providing or conducting maintenance on portable fire extinguishers must possess a valid certificate issued by an *approved* governmental agency, or other *approved* organization for the type of work performed.
 - a. Fire extinguishers must be subjected to maintenance at intervals of not more than 1 year, at the time of hydrostatic test, or when specially indicated by an inspection or electronic notification.
 - b. Fire extinguishers removed from service for maintenance or recharge must be replaced by a fire extinguisher suitable for the type of hazard being protected and must be of at least equal rating.
 - c. If, at any time, a fire extinguisher shows evidence of dents, mechanical injury, or corrosion to the extent as to indicate weakness, it must be condemned or hydrostatically retested.
 - d. Every six years, stored pressure extinguishers must be emptied and subjected to the applicable maintenance procedures. Every 12 years, a hydrostatic test is required.
 - e. Hydrostatic test interval for extinguishers:

Extinguisher type	Test interval (years)
Stored-pressure water, loaded stream, and/or antifreeze	5
Wetting agent	5
AFFF (aqueous film-forming foam)	5
FFFP (film-forming fluoroprotein foam)	5
Dry chemical with stainless steel shells	5
Carbon dioxide	5
Wet chemical	5
Halogenated agents	12
Dry chemical, cartridge or cylinder operated, with mild steel shells	12
Dry powder, stored-pressure, cartridge or cylinder operated, with mild steel shells	12
Dry chemical, stored-pressure, with mild steel shells, brazed brass shells, or aluminum shells	12

REFERENCES

Source: 2018 International Fire Code § 906 *Portable Fire Extinguishers*

APPROVED:  DATE: 9/1/2021
Scott Hartman, Fire Marshal