AMEREX TECH Tip № 47

SELECTION OF PORTABLE FIRE EXTINGUISHERS FOR SPECIFIC CLASS B HAZARDS

Both the International Fire Code (IFC) and NFPA 1, Fire Code identify NFPA 10, *Standard for Portable Fire Extinguishers* as the authority for selecting, installing, and maintaining portable fire extinguishers. **The key factor in selecting the appropriate extinguisher is identifying the classification of the hazards present.**

This Tech Tip focuses on Class B hazards, which involve flammable or combustible liquids or flammable gases. Class B fires include several factors that influence the choice of the correct fire extinguisher for specific conditions. One factor is whether the room or area is classified as light, ordinary, or extra hazard, as defined in Section 5.4 of NFPA 10, *Standard for Portable Fire Extinguishers, 2026 edition*. These classifications establish the minimum Class B rating based on the expected total quantity of fuel in the hazard area.

UL Class B fire tests are conducted on a single type of fire—fuel in depth—using square steel pans of a specific size filled with water and commercial-grade heptane. The numerical rating is based on the pan size and a prerequisite discharge time of the extinguishing agent. Larger pans and longer discharge times result in a higher Class B rating. For extinguishers of equal size, a longer discharge time equates to a slower discharge rate (less agent released per pound per second), giving inexperienced users more time to fight a fire.

A faster discharge rate delivers more agent per second but results in a lower Class B rating due to the minimum UL discharge time requirements. This lower rating does not indicate reduced effectiveness; in fact, it's quite the opposite. When used on fuel in depth fires, units with higher flow rates are more effective than extinguishers with high UL ratings and low flow rates if they are being used by trained operators. The higher flow rate puts more chemical into the flame front and has greater flame "knock-down".

In most real-world situations requiring a Class B extinguisher, fires are not limited to fuel-in-depth or spill fires. Scenarios such as pressurized liquid or gas fires (such as a failed pump seal or flange), three-dimensional fires (where fuel flows from one level to another), and obstacle fires (where objects can create blind spots) usually develop. These hazards are much more difficult to extinguish and require high flow rates of dry chemical extinguishing agent in accordance with NFPA 10, Section 5.5 (with further explanation in the Annex material).

TYPE OF HAZARD	EXPECTED TOTAL QUANTITY OF CLASS B FLAMMABLES	BASIC MINIMUM EXTINGUISHER RATING	MAXIMUM TRAVEL DISTANCE TO EXTINGUISHERS
Light	1 gal	5-B	30 ft
		10-B	50 ft
Ordinary	1 gal - 5 gal	10-B	30 ft
		20-B	50 ft
Extra	5 gal or more	40-B	30 ft
		80-B	50 ft

- **NFPA 10 - 5.5.4.1 * Extinguishers for Pressurized Liquid and Pressurized Gas Fires** Large-capacity dry chemical extinguishers of 10 lb (4.54 kg) or greater and with a discharge rate of 1 lb/sec (0.45 kg/sec) or more shall be selected to protect these hazards.
- **NFPA 10 - 5.5.4.2 * Three-Dimensional Fires** Large-capacity dry chemical extinguishers of 10 lb (4.54 kg) or greater and with a discharge rate of 1 lb/sec (0.45 kg/sec) or more shall be selected to protect these hazards.
- **NFPA 10 - 5.5.4.3 Obstacle Fires** Selection of a fire extinguisher for this type of hazard shall be based on one of the following:
  (1) Extinguisher containing a vapor-suppressing foam agent
  (2)*Multiple extinguishers containing non-vapor-suppressing Class B agents intended for simultaneous application
  (3) Larger capacity extinguishers of 10 lb (4.54 kg) or greater and with a minimum discharge rate of 1 lb/sec (0.45 kg/sec).

Another important factor is the selection of portable extinguishers for specific occupancies referenced in other

continued on next page

TT47-1225

codes and standards. NFPA 10 provides a comprehensive list of these occupancy-specific standards in Section 5.5.5.1. Those standards may implement additional installation requirements, classifications, or ratings on a fire extinguisher, but those specifications cannot be less than what is specified in NFPA 10. A situation you are likely to encounter is when the occupancy standard only specifies the minimum class rating and installation requirements for a fire extinguisher. This does not mean you can ignore the other minimal requirements specified in NFPA 10 for selection of a portable extinguisher.

▶ **NFPA 10 - 5.5.5.2** In no case shall the requirements of the documents in 5.5.5.1 be less than those specified in this standard.

Chapter 9 of NFPA 30, *Flammable and Combustible Liquids* addresses the storage of ignitable liquids in containers. Section 9.10.2.2 requires that a fire extinguisher with a minimum rating of 40:B be installed outside the storage room but within 10ft. of the door opening. While this specification addresses the Class B rating, meeting the minimum requirements for an extra hazard in accordance with NFPA 10, there is no mention of a requirement for a 1 lb/sec flow rate fire extinguisher. This is where NFPA 10 takes precedence in your selection as there is the possibility of an obstacle or three-dimensional fire that could result from a ruptured or punctured drum of ignitable liquids. There's also the possibility that the drum may be on a Class A wooden pallet which would then require looking into the required minimum ratings for Class A hazards.

Amerex Z-Series Fast Flow extinguishers and Amerex High Flow extinguishers provide higher flow rates to handle these types of fires. Both styles are available with either ABC or Purple K dry chemical.

Z-Series Fast Flow ABC

Model	LBS.	UL Rating
791	20	4A:40B:C
792	30	4A:40B:C

Z-Series Fast Flow Purple K

Model	LBS.	UL Rating
794	20	40B:C
795	20	20B:C
796	30	40B:C

Z-SERIES FAST FLOW; ABC AND PURPLE K

High Flow ABC

Model	LBS.	UL Rating
720	10	1A:20B:C
760	20	4A:60B:C

High Flow Purple K

Model	LBS.	UL Rating
722	10	20B:C
762	20	60B:C

HIGH FLOW; ABC AND PURPLE K

TT47-1225

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