

# HazSafety

## Training Advisor

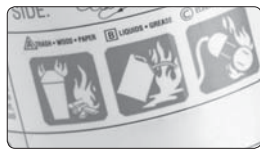
VOLUME 13, NUMBER 6, JUNE 2015

## Slow burn

This issue of *HazSafety* focuses on fire, fire hazards, and fire extinguishers that employees will find helpful when working with hazardous substances, chemicals, materials, and waste. We'll cover these issues in a variety of articles, activities, and quizzes, as outlined below:



**Make it count.** ..... 2  
Looks at the different types of fire extinguishers while describing how to identify an extinguisher based on label information. **Audience:** Targeted to employees who will use fire extinguishers to respond to fires involving flammable materials at your facility.



**Head of the class** ..... 3  
Reviews the NFPA's classes of fire and the need to select the appropriate extinguishing media for each. **Audience:** Targeted to employees who worked with or around flammable or combustible materials.



**Flammable liquids and DOT** ..... 4  
Discusses the DOT definition of flammable liquid and reviews required markings and packagings. **Audience:** Targeted to employees who worked with or around asbestos materials.



**Take a PASS.** ..... 5  
Stresses the importance of proper fire extinguisher usage, and reviews when it is appropriate to use an extinguisher. **Audience:** Valuable for all employees who work in an environment where fire extinguishers are present.

**Quiz: Test your knowledge** ..... 6  
Allows readers to test their knowledge of HazCom, HAZWOPER, HazMat, and HazWaste issues covered in this newsletter.

**Learning activity: Find the hazard!** ..... 7

**Training notes** ..... 8  
These training notes help you incorporate company-specific information into your program.



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# Make it count

A fire is the most common type of emergency for which small businesses must plan. A critical decision when planning is whether or not employees should fight a small fire with a portable fire extinguisher or simply evacuate. Small fires can often be put out quickly by a well-trained employee with a portable fire extinguisher. However, to do this safely, the employee must understand the use and limitation of a portable fire extinguisher and the hazards associated with fighting fires.

## Which extinguisher do I use?

It's important to use the correct type of extinguishing agent for the fire being fought. Using the wrong extinguisher can make things worse and might be dangerous.

Understand the fire hazardous present in your work area. Learn the exact location of extinguishers in your work area. Also be aware of what kinds of fires they will put out and how big an area they can cover.



## Selection and maintenance

If your company decides to provide fire extinguishers, it is responsible for the proper selection and distribution of those extinguishers. Your employer must ensure that the extinguishers provide the necessary degree of protection for the hazards present in your workplace.

The employer is responsible for the inspection, maintenance, and testing of all fire extinguishing systems used in the facility.

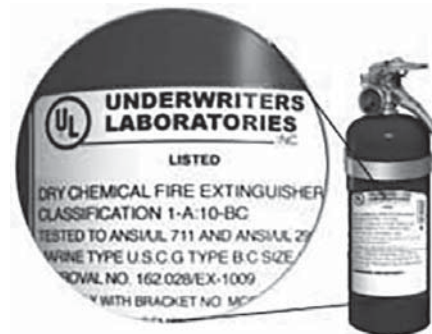
Look at the label pictured. The classification is:

1-A:10-BC

The letters (A, B, and C) represent the type(s) of fire for which the extinguisher has been approved.

The number in front of the A rating indicates how much water the extinguisher is equal to and represents 1.25 gallons of water for every unit of one. For example, a 4-A rated extinguisher would be equal to five (4 x 1.25) gallons of water.

The number in front of the B rating represents the area in square feet of a class B fire that a non-expert user should be able to extinguish. Using the above example, a non-expert user should be able to put out a flammable liquid fire that is as large as 10 square feet.



# Head of the class

If part of your job is emergency response at your facility, it is critical that you understand the proper response to fires. Knowing the different kinds of fires and the proper fire extinguisher to use is a good place to start.

The National Fire Protection Association (NFPA) established five general classes of fire. These classifications are based on the types of materials that are burning, and are represented by letters that are prominently displayed on fire extinguishers.

## Five classes of fires



Class A fires involve ordinary combustibles - wood, paper, rubber, and plastics. The common extinguishing agent for these fires is water, but dry chemicals are also effective. Do not use carbon dioxide extinguishers or those using sodium or potassium bicarbonate chemicals on Class A fires.



Class B fires involve flammable liquids, gases, and greases. They are harder to fight and require a special kind of extinguisher. Use foam, carbon dioxide, and dry chemical extinguishers on Class B fires. Also, water fog and vaporizing liquid extinguishers can be used.



Class C, or electrical fires, are the most common sources of industrial fires. These involve energized electrical equipment, such as computers, motors, electrical panels, and other electrical appliances. Carbon dioxide and dry chemical extinguishers are appropriate for this type of fire. Never use foam or water-type extinguishers on these fires.



Class D fires are caused by combustible metals including magnesium, titanium, zirconium, and sodium.

These fires require specialized techniques to extinguish them. None of the common extinguishers should be used. They can make the fire worse by adding an additional chemical reaction.



Class K fires involve cooking oils, grease or animal fat, which are extremely combustible. These types of fires burn at very high temperatures, and need a Type K extinguisher to extinguish.

## Which extinguisher to use?

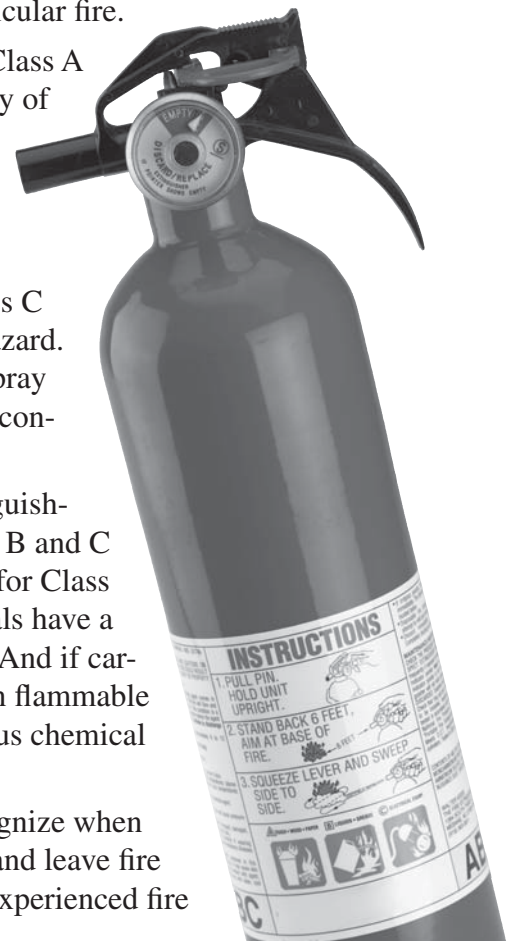
You must only use a fire extinguisher that is rated for a particular fire.

Water may put out a Class A fire, but using it on any of the other classes will cause the flames to spread and create a greater hazard.

Using water on a Class C fire creates a shock hazard. Some extinguishers spray foam, which can also conduct electricity.

Carbon dioxide extinguishers are great for Class B and C fires, but not so good for Class A fires. Those materials have a tendency to re-ignite. And if carbon dioxide is used on flammable metal fires, a dangerous chemical reaction can occur.

It is important to recognize when it is time to evacuate and leave fire suppression to more experienced fire fighters.



# Flammable liquids and DOT

Generally, the Department of Transportation (DOT) defines a flammable liquid (Class 3) as a liquid having a flash point of not more than 60°C (140°F), or any material in a liquid phase with a flash point at or above 37.8°C (100°F) that is intentionally heated and offered for transportation or transported at or above its flash point in a bulk packaging, with the following exceptions:

- Any liquid meeting one of the definitions specified in §173.115.
- Any mixture having one or more components with a flash point of 60°C (140°F) or higher, that make up at least 99 percent of the total volume of the mixture, if the mixture is not offered for transportation or transported at or above its flash point.

- Any liquid with a flash point greater than 35°C (95°F) that does not sustain combustion according to ASTM D 4206 (IBR, see §171.7 of this subchapter) or the procedure in appendix H of this part.
- Any liquid with a flash point greater than 35°C (95°F) and with a fire point greater than 100°C (212°F) according to ISO 2592 (IBR, see §171.7 of this subchapter).
- Any liquid with a flash point greater than 35°C (95°F) which is in a water-miscible solution with a water content of more than 90 percent by mass.

DOT requires non-bulk packages of flammable liquids to be labeled and marked to identify the contents and communicate potential hazards. Bulk packages of flammable liquids may be required to be placarded.

The flammable liquid label is red, with a flame in the upper half of the label and the number 3 in the lower corner of the diamond.



The “3” identifies the hazard class of the material as flammable. The FLAMMABLE LIQUID text across the middle of the label is optional, and some flammable liquid labels may not have FLAMMABLE LIQUID displayed on them. In most cases, non-bulk packagings must be marked with:

- The flammable liquid’s proper shipping name;
- Any technical names, if required;
- UN or NA identifications numbers;
- The consignee’s or consignor’s name and address; and
- A DOT exemption number, if required.

## Safely ship flammable liquids

Because of their potential danger, special care must be taken when transporting flammable and combustible liquids. Consider these required safety measures:

- Use only containers that are specifically designed to carry flammable and combustible liquids. They must be of sufficient strength to prevent leakage during transportation and handling.
- Make sure the closures are tight on all containers.
- The outside of all containers should be free of any residue.
- Secure all containers in the upright position by tie-down straps, or ship them in an outside container that will keep the inner container upright.
- Containers that may release vapors must never be transported in un-vented vehicle compartments.

Also, flammable and combustible liquids must never be:

- Stored next to or in contact with oxidizers, organic peroxides, or batteries; or
- Transported with explosives.

# Take a PASS

When a fire starts, think only of your safety and the safety of others. When a fire is out of control, you don't know what is burning, or you have not been trained to use extinguishers, sound the fire alarm and evacuate or call for emergency help from a safe place.

If you have been trained to use fire extinguishers, and the fire is small enough to be extinguished by a hand-held extinguisher, you can try to put out the fire with the extinguisher.

## Use the PASS technique

If operating a fire extinguisher use the P.A.S.S. technique:

1. **PULL...** Pull the pin. This will also break the tamper seal.
2. **AIM...** Aim low, pointing the extinguisher nozzle (or its horn or hose) at the base of the fire.

NOTE: Do not touch the plastic discharge horn on CO2 extinguishers, it gets very cold and may damage skin.

3. **SQUEEZE...** Squeeze the handle to release the extinguishing agent.
4. **SWEEP...** Sweep from side to side at the base of the fire until it appears to be out. Watch the area. If the fire re-ignites, repeat steps 2 – 4.

However, fight the fire only in these situations:

- Fire authorities have been notified.
- The fire is small and confined to the immediate area where it started.
- You can fight the fire with your back to a safe escape route.

- Do not allow the fire, heat, or smoke to come between you and your evacuation path.
- Your extinguisher is rated for the type of fire you are fighting, is large enough for the fire, is nearby, fully charged, and in good working order.
- Back away from an extinguished fire in case it flames up again.
- Evacuate immediately if the extinguisher runs out and the fire is not out.

If there is a wind or a predominant direction of airflow where you are, make sure you have the wind at your back. You don't want the contents of the fire extinguisher blowing back at you during discharge. Then, position yourself about 8 to 10 feet from the fire and use the PASS technique.

**If you have the slightest doubt about your ability to fight a fire...  
EVACUATE IMMEDIATELY!**





# Don't get burned!

Draw a line from the letter on the fire extinguisher to the type of fire that it can extinguish.

## Classes of fires



## Picture symbol



# Training notes

The information in this newsletter addresses many issues your employees need to know about fire extinguishers and fire safety. Consider including company-specific information in your training.

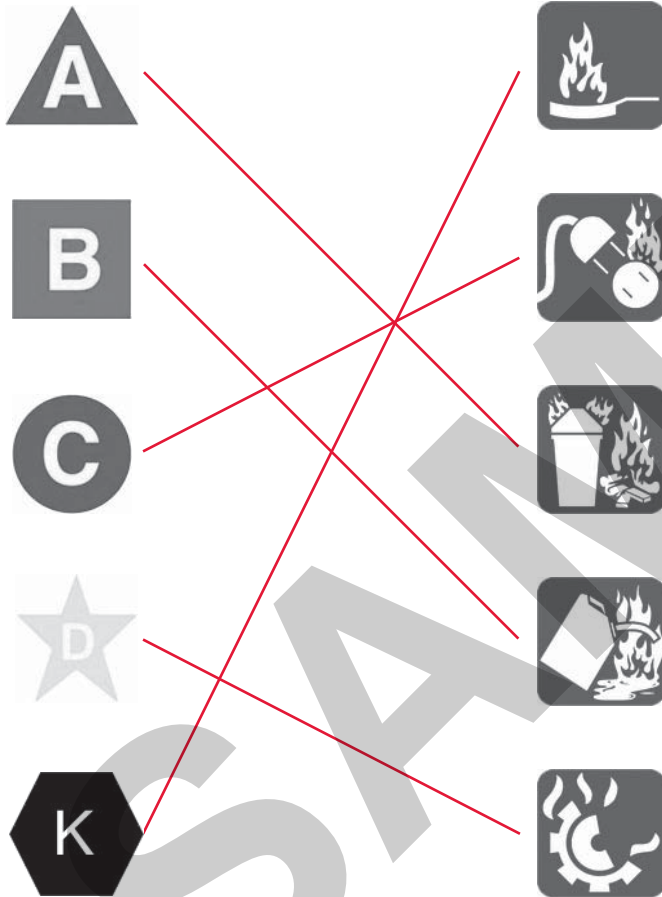
Ideas for covering company-specific information in your training for this topic include:

- Display the different types of fire extinguishers available to your employees. Show them how to read the labels to identify types of fires and where to find the extinguishers in the workplace.
- Give trainees a variety of likely fire scenarios for your facility and have them tell you the type of fire extinguisher that should be used and why.
- Show the trainees a container of flammable liquids used in your facility, and have them explain how they can determine the hazards from the label.
- Create a flow chart starting with where a hazardous waste is created, how it should be stored, and how it should be disposed of. Focus specifically on ignitable waste.

## Answer key: (from page 7)

### Classes of fires

### Picture symbol



## Answer key: Test your knowledge (from page 6)

Use the following answer key to see how well your employees understood the material in this newsletter. Or, if you prefer, you can allow employees to check their own answers by copying the key and providing it to them with the newsletter.

- (1) A (2) T (3) F (4) C (5) D (6) T  
(7) B (8) T

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ISSN 1546-7309

GST R123-317687

(41042)

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