FIRE EXTINGUISHER TRAINING

WHAT WE WILL COVER . . .

Part I

- Classes of fires
- Fire Extinguisher Capability and Function

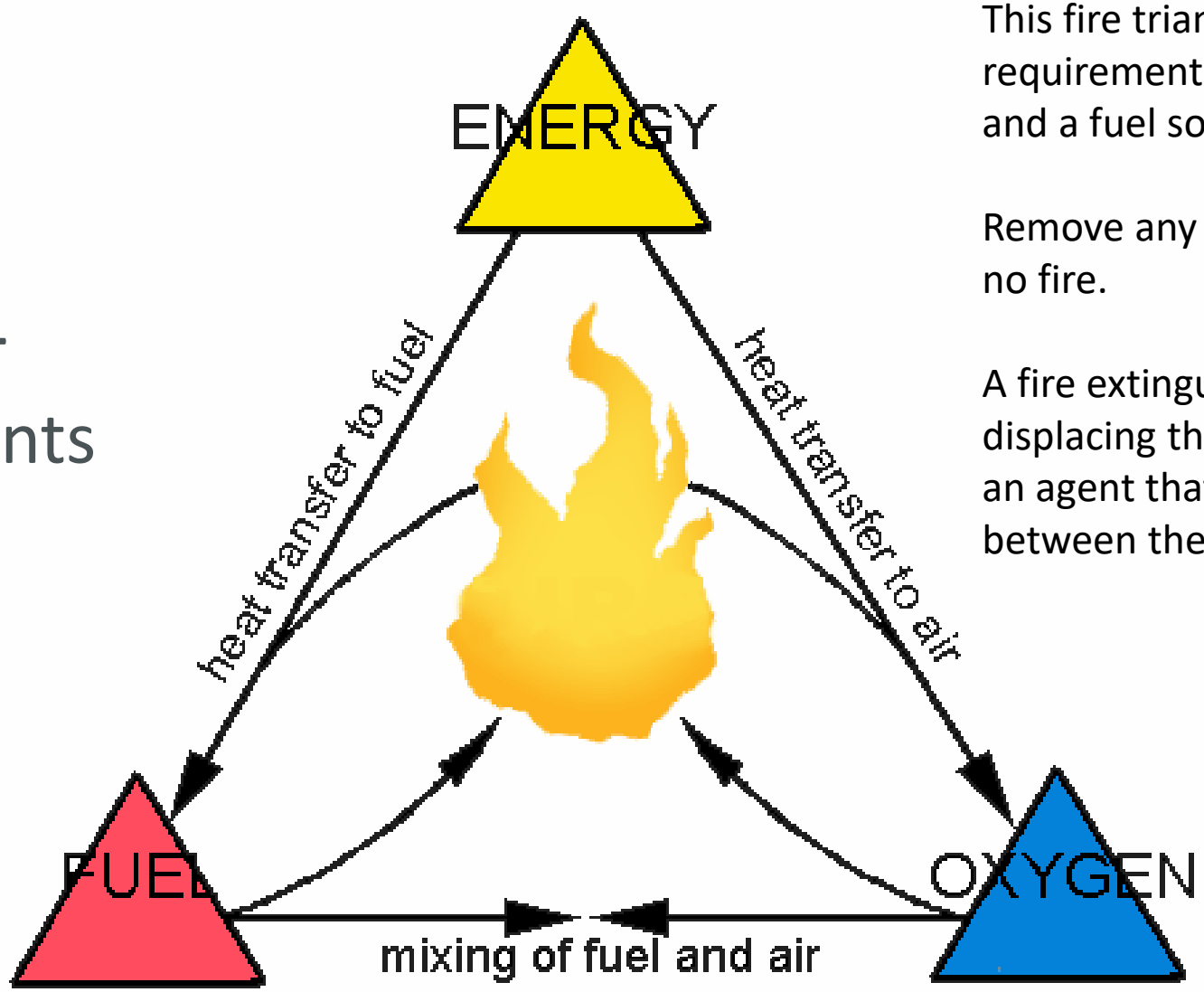
Part II

- Proper use of an extinguisher

Summary

- Questions
- Written Test

The Fire Triangle -
The Components of Fire.



This fire triangle outlines the three requirements for a fire: heat, oxygen and a fuel source.

Remove any one of these and there is no fire.

A fire extinguisher puts out fires by displacing the oxygen or discharging an agent that acts as a barrier between the fuel and oxygen.

HOW ARE FIRES CLASSIFIED?

5 Main Types of Fire

- Class A – solid combustible material
- Class B – flammable liquids
- Class C – electrical equipment
- Class D – combustible metals
- Class K – grease/kitchen fires

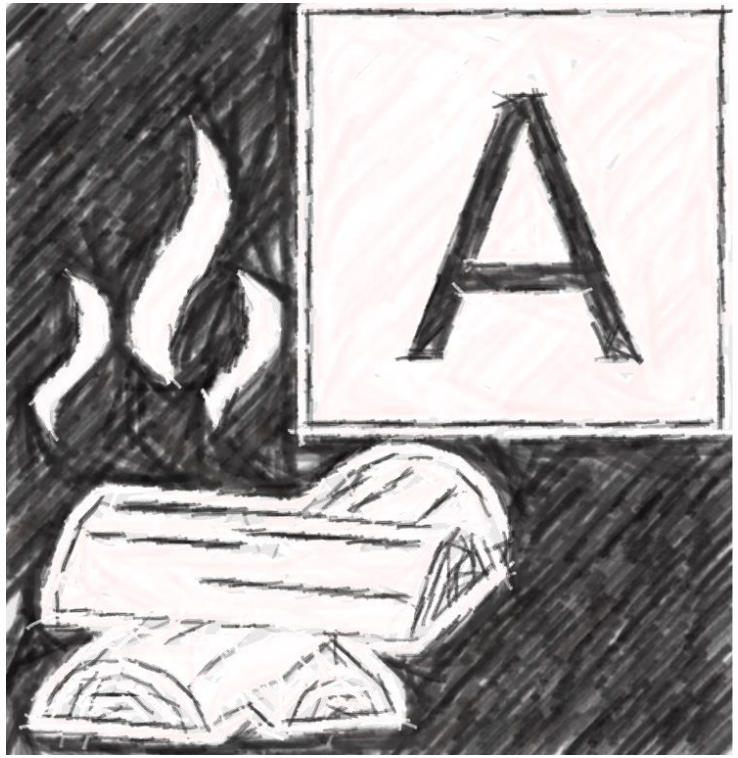
Fires are separated into classes by the type of material that is fueling the fire. The five main classes of fires are Class A, B, C, D, and K. While one extinguisher may be extremely effective on one class of fire, it may be completely ineffective on another.

You must ensure the extinguisher you have; will work for the class of fire you are dealing with. The extinguisher rating is usually located on the side of the extinguisher.

Let's take a quick look at the 5 main classifications…

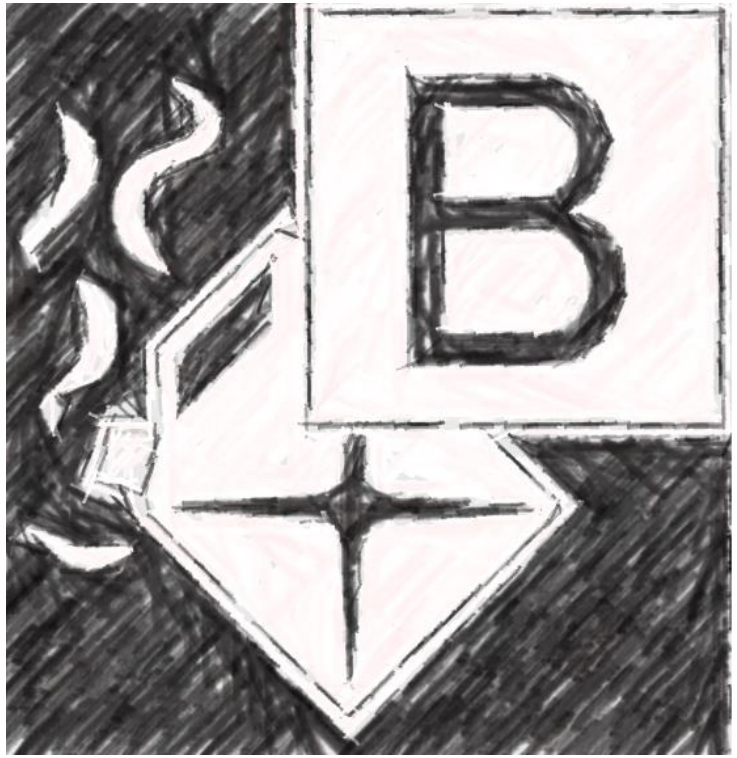
CLASS A FIRES

- Solid ordinary combustible materials
  - Wood, paper, trash, cardboard, etc…



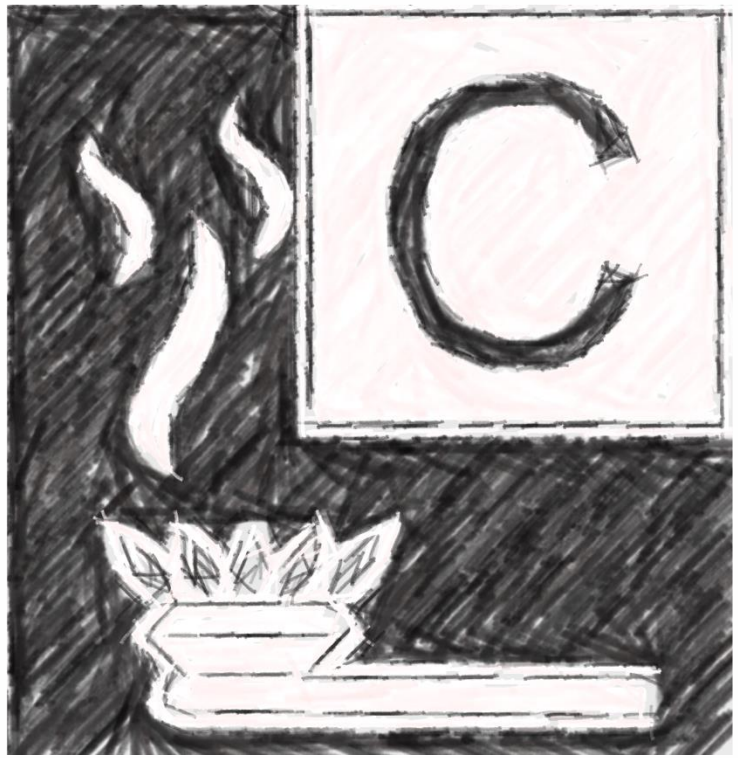
CLASS B FIRES

- Flammable and combustible liquids
  - Gasoline, Acetone, solvents, etc.



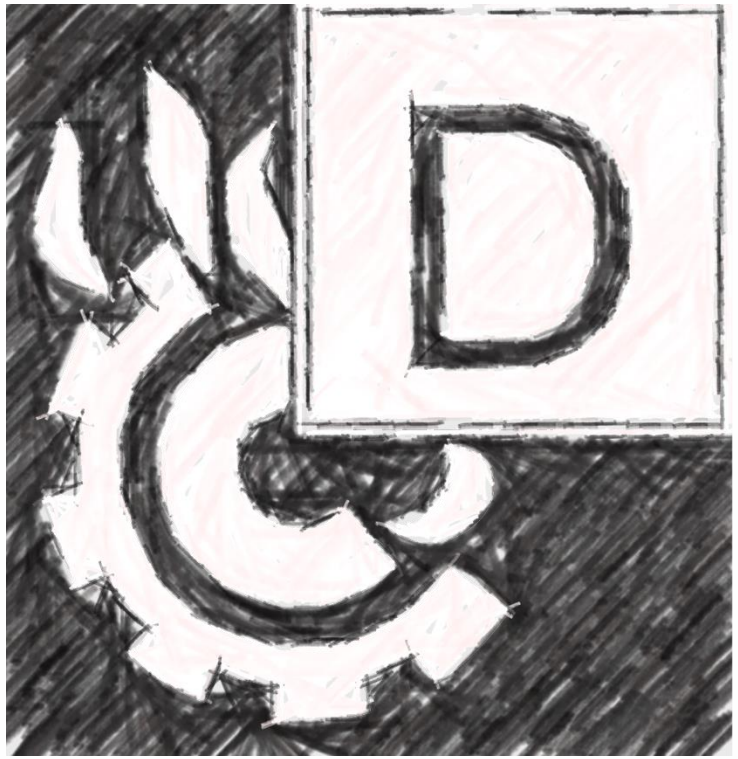
CLASS C FIRES

- Electrical equipment
  - Electrocution hazard
  - Do not use improper fire extinguisher
  - Fueled by equipment such as extension cords, electrical panels, etc.



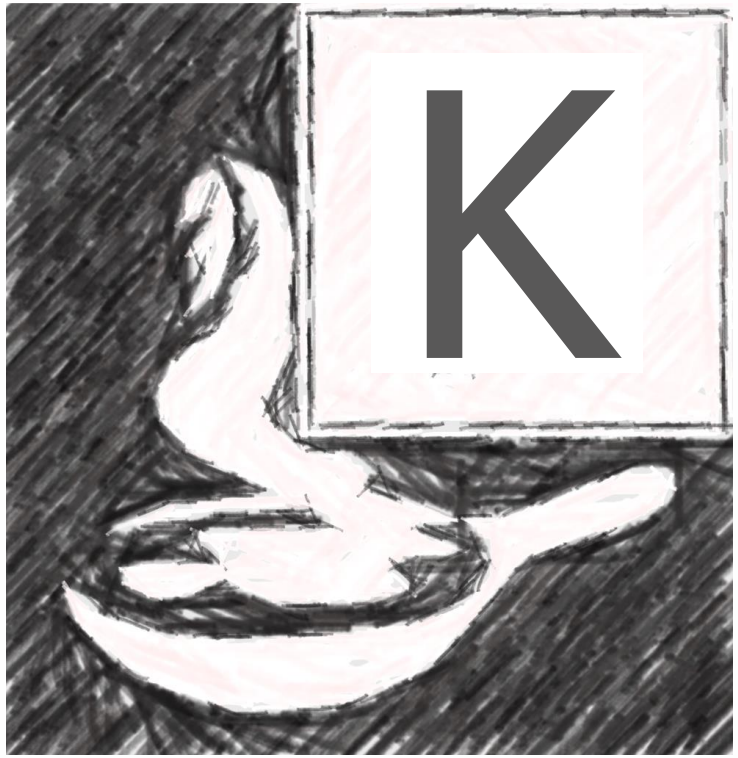
CLASS D FIRES

- Combustible metals
  - Magnesium, sodium, potassium, etc..
  - Don’t attempt to use an ABC or water extinguisher on metal fires. A special Class D extinguisher is necessary.
  - Evacuate and sound the alarm!



CLASS K FIRES

- Class K
  - Class K fires include cooking oil, fats, or grease.
  - Typically found in restaurant kitchens.



INSPECTION STEPS

NFPA 10 – The Standard for Portable Fire Extinguishers

The National Fire Protection Association (NFPA) has 10 steps you must follow in order to keep fire extinguishers properly maintained.

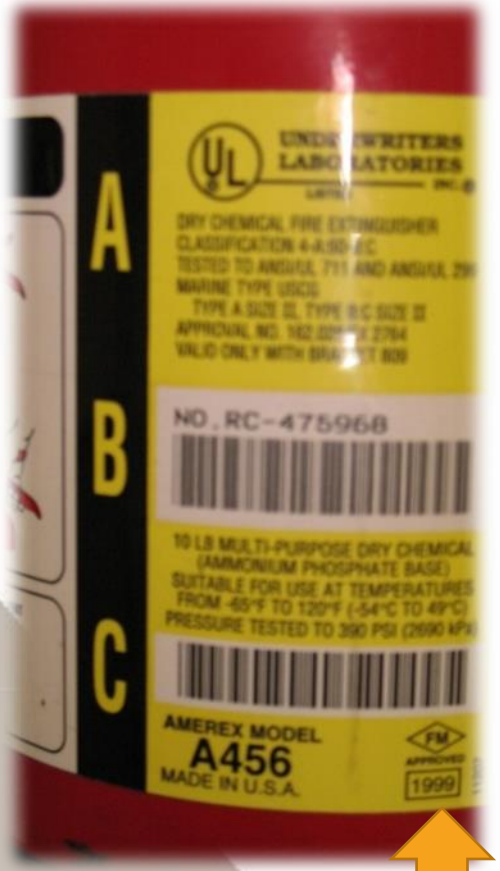
INSPECTION STEPS

- 1. Location is in a designated space
- 2. There is no obstruction to access
- 3. Pressure gauge is in operable range
- 4. Fullness by weight or heft
- 5. Indicator that identifies non-rechargeable extinguishers

INSPECTION STEPS, CONT.

- 6. All parts are present
  - Hose (if original); safety ring; tamper seal
- 7. No corrosion
- 8. Check maintenance dates
- 9. Record on a tag securely attached to the extinguisher
- 10. Remove if deficient and install a suitable replacement

COMPONENTS TO INSPECT



Look for the manufacture's date

Check the gauge

A collar ring indicates service was conducted on the body. Repacking should be repeated every six years and hydrostatic testing at twelve-year intervals.

Examine the tie and safety ring

Nonrechargeable Extinguishers that are more than 10 years old shall be replaced!

City of Ames

SIX YEAR MAINTENANCE REQUIREMENTS

– ABC, BC, & HALATRON

Six-Year Maintenance

- Rechargeable extinguishers only
- Remove powder
- Internal inspection of shell
- Inspect mechanical parts
- Refill and recharge 195#
- New tamper seal
- New label with date

Although this course does not prepare you or certify you to conduct a six year maintenance, it can be helpful to know what is involved.

TWELVE-YEAR MAINTENANCE REQUIREMENTS
– ABC, BC, & HALATRON

What is hydrostatic testing?

Hydrotesting

- Every twelve years
- Remove powder
- Inspect shell
- Pressure test with water to 600 lbs.
- Install service collar
- Refill and reassemble shell

Maintenance at 12 years is extensive. Again, while you will not be conducting this type of maintenance, it is good to know what is involved.

HOW TO USE A FIRE EXTINGUISHER

(THE MOST OVERLOOKED PART OF FIRE EXTINGUISHERS IS BEING TRAINED IN THEIR PROPER USE.)

WHICH EXTINGUISHER SHOULD BE USED?

Table 13.2
Pictorial and Letter Systems

Class Name	Letter Symbol	Image Symbol	Description
Class A or Ordinary Combustibles	A Ordinary Combustibles		Includes fuels such as wood, paper, plastic, rubber, and cloth.
Class B or Flammable and Combustible Liquids and Gases	B Flammable Liquids		Includes all hydrocarbon and alcohol based liquids and gases that will support combustion.
Class C or Electrical	C Electrical Equipment		This includes all fires involving energized electrical equipment.
Class D or Combustible Metals	D Combustible Metals		Examples of combustible metals are magnesium, potassium, titanium, and zirconium.
Class K or Kitchen	K Cooking Oils		Includes unsaturated cooking oils in well-insulated cooking appliances located in commercial kitchens.

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A portable fire extinguisher can provide the first line of defense against an incipient fire.

The value of a fire extinguisher lies in the speed with which it can be used

The person using the extinguisher must understand how it operates and be physically capable of operating it

To be effective, a fire extinguisher requires several items.

- Readily visible and accessible
- Suitable for the hazard being protected
- Properly maintained
- Of sufficient size to control an incipient fire
- Used in appropriate wind and weather conditions to provide effective application on exterior fires

Portable fire extinguishers are rated according to their intended use and extinguishing capabilities.

Occupants who need to use a fire extinguisher are usually under stress, and in a hurry, so a labeling system that includes both an icon and the alphanumeric rating is desirable

Fire extinguisher rating labels are designed to enable a user to identify the type of fire extinguisher without having to understand the A-B-C-D-K rating system

To simplify the process of matching extinguishers with types of fires, several methods for identifying extinguishers by using symbols or icons have been developed

Understand the characteristics of agents used in portable fire extinguishers.

Portable fire extinguishers use many different types of extinguishing agents

Each extinguishing agent may be able to control one or more classes of fire

One agent cannot extinguish all classes of fire

CAUTION!

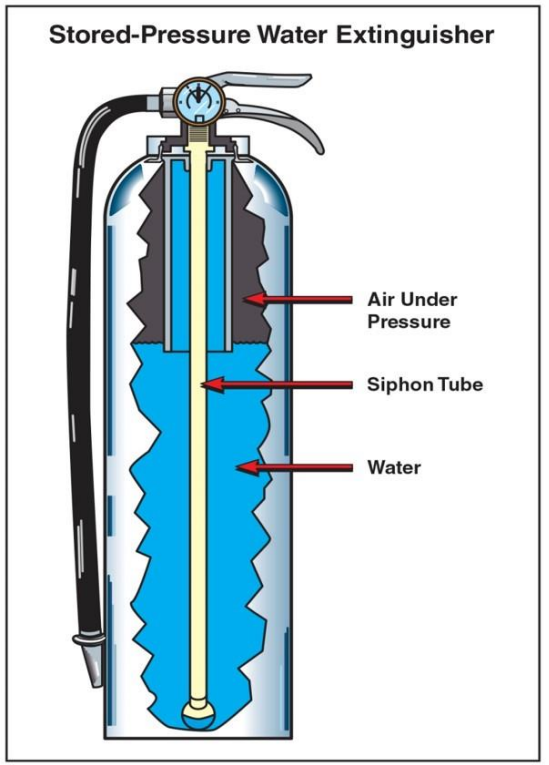
- It is very important to use the correct extinguishing agent on a fire.
- Using the wrong agent can be dangerous and can result in a fire not being extinguished, a violent reaction, or both.

WHICH EXTINGUISHER SHOULD BE USED?

The extinguisher label indicates classes of fire

WATER EXTINGUISHER

- Cools burning material
- **Class A fires**
- Not effective on class B and C fires



Class B and C Fires

Understand water-type fire extinguishers.

Characteristics

- Liquid used to extinguish fires in Class A materials primarily by cooling the burning fuel
- The most common size of water extinguisher is the 2½-gallon (10 L) model
- Maximum size that is considered portable is the 5-gallon (20 L) unit
- Relatively easy to maintain but subject to freezing
- Must be kept in a heated area unless an approved antifreeze agent is added to the water
- Limited by the amount of water carried in a portable unit

Limitations

- Ineffective by itself on most Class B fires
- Conducts electricity; dangerous on Class C electrical fires
- Reactive with some chemicals and Class D metals
- Can cause heated cooking oils to splatter

CARBON DIOXIDE EXTINGUISHER

- Displaces oxygen around fire
- **Class B and C fires**
- Not effective on class A fires

Class B and C Fires

Understand carbon dioxide (CO_2) fire extinguishers.

Characteristics

- Colorless, noncombustible gas that is heavier than air
- Extinguishes primarily through a smothering action
- Suitable for Class B and Class C fires
- Store CO_2 in a liquid state
- Has a white cloudy appearance when discharged

Limitations

- Limited value on Class A fires that are located deep within the burning material
- Difficult to project CO_2 very far from the extinguisher
- Its temperature has a minimal effect in cooling or extinguishing a fire
- Discharges with a loud noise
- May be a discharge of static electricity that can shock the operator when operated in areas of low humidity

WARNING

- Carbon dioxide (CO_2) is an asphyxiant. Do not use a CO_2 extinguisher in a confined space without supplied-air respiratory protection.

Dry Chemical Extinguisher

- Contain powder and powered by compressed nitrogen
- **ABC and BC fires**
- Most residential extinguishers are ABC

Class A,B, and C fires

Dry Chemical Extinguisher

- **ABC** – Ammonium phosphate powder
- **BC** – Sodium bicarbonate, Potassium chloride, Potassium bicarbonate or Potassium bicarbonate urea powder
- The chemical powder does *not* present a serious hazard to people, mainly a mild irritant.

Understand dry chemical fire extinguishers.

Characteristics

- Does not dissipate into the atmosphere as rapidly as gases
- Especially suitable for controlling fires outdoors

Frequently used agents

- Sodium bicarbonate
- Potassium bicarbonate
- Monoammonium phosphate (multipurpose)
- Urea potassium bicarbonate
- Potassium chloride

Understand wet chemical fire extinguishers.

Characteristics

- Solution composed of water and either potassium carbonate, potassium citrate, or potassium acetate
- Agent is delivered to the hazard area in the form of a spray
- Extinguishers are intended for use with Class K fixed systems or commercial kitchens that have deep fat fryers using vegetable or animal fats

Understand clean agent (Halotron) fire extinguishers.

Characteristics

- Leaves no residue when discharged
- Two halons are still in use in portable fire extinguishers
- Halon 1211 is most commonly found in portable fire extinguishers
- Halon 1301 is used in some portable fire extinguishers; more common in fixed-system applications
- Extinguishers using halon replacements contain inert gases such as argon or DuPont FE-36™
- Extinguishers are available in a variety of capacities and may cover 5 to 25 square feet (0.45 m^2 to 2.25 m^2)

Capability of Extinguishers

- 1A = Extinguishing equivalent of 1.25 gallons of water.
- 2A = Extinguishing equivalent of 2.5 gallons of water.

Capability of Extinguishers

- 10B:C = Extinguishing capability if used by a novice to put out a 10 ft2 fire
- 20B:C = Extinguishing capability if used by a novice to put out a 20 ft2 fire
- More capability if used by an experienced user

KNOW THE PARTS OF THE EXTINGUISHER

WARNING

- A fire extinguisher is intended for use only in a fire's incipient stage.
- If there is any doubt as to your ability to successfully extinguish a fire using an extinguisher, evacuate the area and sound the alarm to notify others.

The correct way to put out a fire!

- To fight a fire, you must P.A.S.S.
- P - Pull the pin.
- A - Aim the nozzle.
- S - Squeeze the handle on the extinguisher.
- S - Sweep the nozzle in a side-to-side motion at the base of the fire, while advancing.

PULL THE PIN

Pull

Pull the pin (or other motion) to unlock the extinguisher.

AIM THE NOZZLE

Aim at the base (bottom) of the fire and stand 6 - 10 feet away.

SQUEEZE THE HANDLE

SWEEP THE NOZZLE

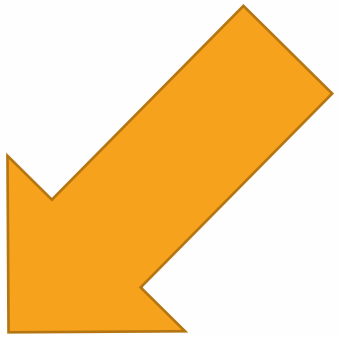
Sweep

Sweep the spray from left to right until the flames are totally extinguished.

WARNING

- Just to be clear, the number one thing to do if a fire occurs, is to calmly get away from the danger to safety.
- If possible, isolate the fire by closing any doors as you exit where the fire is occurring.

WARNING



- As soon as you are out of danger, Sound the alarm to notify others!
- The alarm can be sounded by calling 911, activating a fire alarm pull station, or calling for help!

Thank You!