



FIRE EXTINGUISHER SAFETY

Unified Fire Authority's Safety Training Program



OVERVIEW

- Fire basics
- Fire extinguisher overview
- Types of fire extinguishers
- Following the P.A.S.S. Technique





INTRODUCTION

- Fire extinguishers are designed to put out or control small fires
- Small fires, if not checked immediately, can spread out of control
- It is important that we equip our facilities with the proper fire extinguishers as part of our fire protection plan



STAY INFORMED

- Implementing a fire extinguisher safety program and informing occupants of the specific building's fire safety procedures is essential
- Knowing the different classes of fire and types of fire extinguishers **CAN** save lives



FIGHT OR FLEE

- A fire is the most common type of emergency businesses must plan for
- A critical decision when planning is whether employees should *fight* a small fire with a portable fire extinguisher, or *evacuate*
 - Small fires can often be put out quickly with a portable fire extinguisher
 - Employees must understand the use and limits of a portable fire extinguisher, and the hazards associated with fighting fire





FIGHT OR FLEE EXAMPLE





FIRE EXPLAINED



For fires to exist, four elements must be present at the same time:

1. Enough **oxygen** to sustain combustion
2. Enough **heat** to raise the material to its ignition temperature
3. Some sort of **fuel** or combustible material
4. This chemical reaction is **fire**

Oxygen + Heat + Fuel = Fire



4 CLASSES OF FIRES

1. Wood-based, cloth, paper, rubber, certain plastics
2. Flammable liquids, gases, greases, Petroleum products
3. Energized electrical equipment, conductors, or appliances
4. Combustible metals such as sodium, potassium, or magnesium

FIRE EXTINGUISHERS EXPLAINED



- Portable fire extinguishers apply an extinguishing agent that will either:
 - Cool burning fuel
 - Displace, or remove oxygen
 - Stop the chemical reaction
- When the handle is compressed, it opens an inner canister of high-pressure gas that forces the extinguishing agent from the main cylinder through a siphon tube, and out the nozzle
 - A fire extinguisher works much like a can of hair spray

EFFECTIVENESS

The following conditions must be met for a fire extinguisher to be effective:

- The extinguisher must be right for the type of fire
- It must be located where it can be easily reached
- It must be in good working order
- The fire must be discovered while it is still small
- The person using the extinguisher must be trained to use it properly





LABELING



- All portable fire extinguishers must be approved by a nationally recognized testing laboratory to verify compliance with applicable standards
 - Underwriters Laboratories, Inc. (UL)
 - Factory Mutual Research (FM)
- Equipment that passes the laboratory's tests are labeled and given an alpha-numeric classification based on the type and size of fire it will extinguish



TYPES OF EXTINGUISHERS

Different types of fire extinguishers are designed to fight different types of fires. The three most common types are:

1. Air-pressurized water
2. Carbon Dioxide
3. Dry chemical



AIR-PRESSURIZED WATER



- Water is one of the most commonly used extinguishing agents for type A fires
- You can recognize an APW by its large silver container
- They are filled 2/3 with water, then pressurized with air
- In some, detergents are added to the water to produce a foam
- They stand 2-3 feet tall and weigh about 25 pounds when full
- **APWs** extinguish fire by cooling the surface of the fuel to remove the **heat** from the fire triangle
- Designed for Class A (wood, paper, cloth, rubber and certain plastics) fires only





APW SAFETY

- Never use water to extinguish flammable liquid fires.
 - Water is extremely ineffective at extinguishing this type of fire and may make the fire spread
- Never use water to extinguish an electrical fire
 - Water is a good conductor and may lead to electrocution if used to extinguish an electrical fire. Electrical equipment must be unplugged and/or de-energized before using a water extinguisher on an electrical fire





CARBON DIOXIDE



- This type of extinguisher is filled with Carbon Dioxide (CO₂), a non-flammable gas under extreme pressure
- These extinguishers put out fires by displacing oxygen
- Because of its high pressure, when you use this extinguisher pieces of dry ice shoot from the horn (also a cooling effect)
- You can recognize this extinguisher by its hard horn and absent pressure gauge
- CO₂ cylinders are red and range in size from 5-100 lbs. or more
- CO₂ extinguishers are designed for Class B and C (flammable liquid and electrical) fires only

B



C





CO₂ SAFETY

- CO₂ is not recommended for Class A fires because they may continue to smolder and reignite after the CO₂ dissipates
- Never use CO₂ extinguishers in a confined space while people are present without proper respiratory protection





DRY CHEMICAL



- Dry chemical extinguishers put out fires by coating the fuel with a thin layer of fire retardant powder, separating the fuel from the oxygen
 - This powder also works to interrupt the chemical reaction, making these extinguishers extremely effective
- Dry chemical extinguishers are usually rated for Class B and C fires and may be marked multiple purpose for use in A, B, and C fires
 - They contain an extinguishing agent and use a compressed, non-flammable gas as a propellant
- Dry chemical extinguishers will have a label indicating they may be used on Class A, B, and/or C fires



WHERE TO FIND

- Extinguishers will frequently be found in:
 - Industrial vehicles
 - Hallways
 - Mechanical rooms
 - Offices
 - Computer labs
 - Flammable liquid storage areas

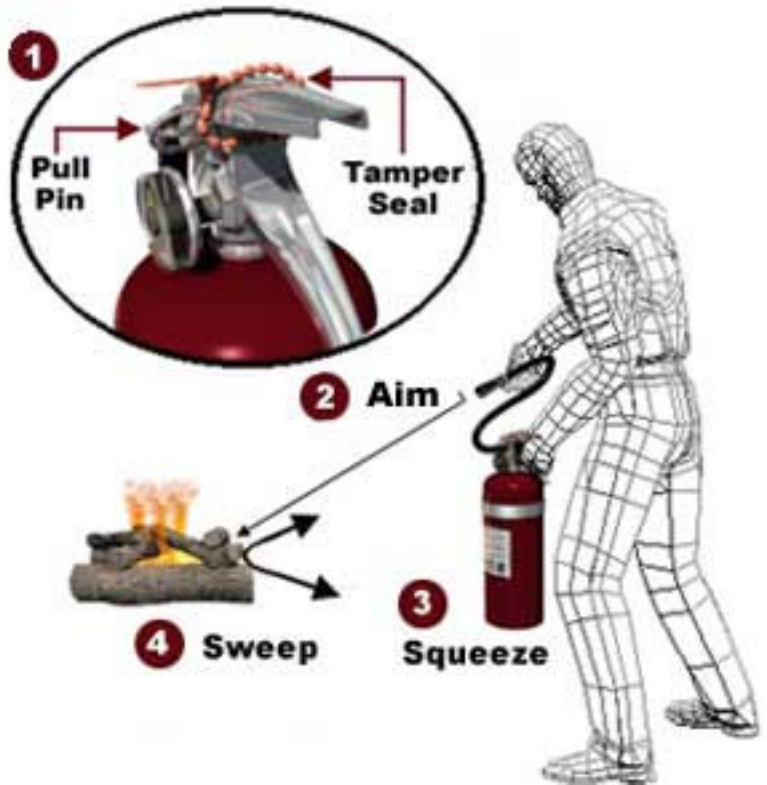


USING AN EXTINGUISHER

The following steps should be followed when responding to incipient stage fire (the fire is limited to the original material ignited):

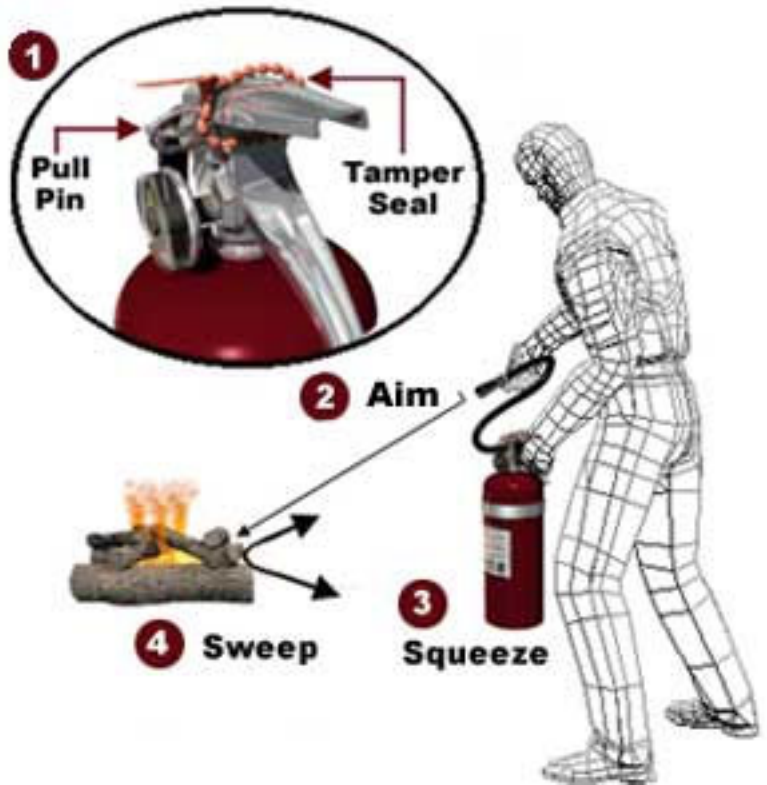
- Sound the fire alarm and call 911
- Select a safe evacuation path before approaching the fire
 - Do not allow the heat, smoke, or fire come between you and the evacuation path
- Discharge the fire extinguisher with its appropriate range using the P.A.S.S. technique (pull, aim, squeeze, sweep)
- Back away from an extinguished fire in case it flames up
- Evacuate immediately if the fire extinguisher is empty and the fire is not yet out
- Evacuate immediately if the fire progresses passed the incipient stage
 - While in the process of evacuating, make others aware of the fire

P.A.S.S. TECHNIQUE



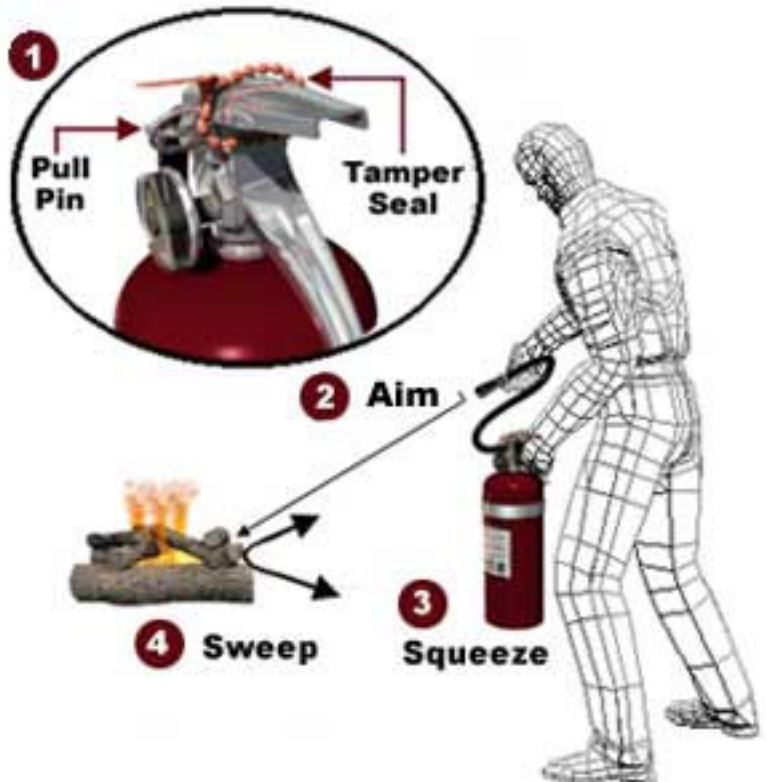
- Pull
- Aim
- Squeeze
- Sweep

P.A.S.S. TECHNIQUE



- Pull...
- Pull the pin. This will also break the tamper seal

P.A.S.S. TECHNIQUE

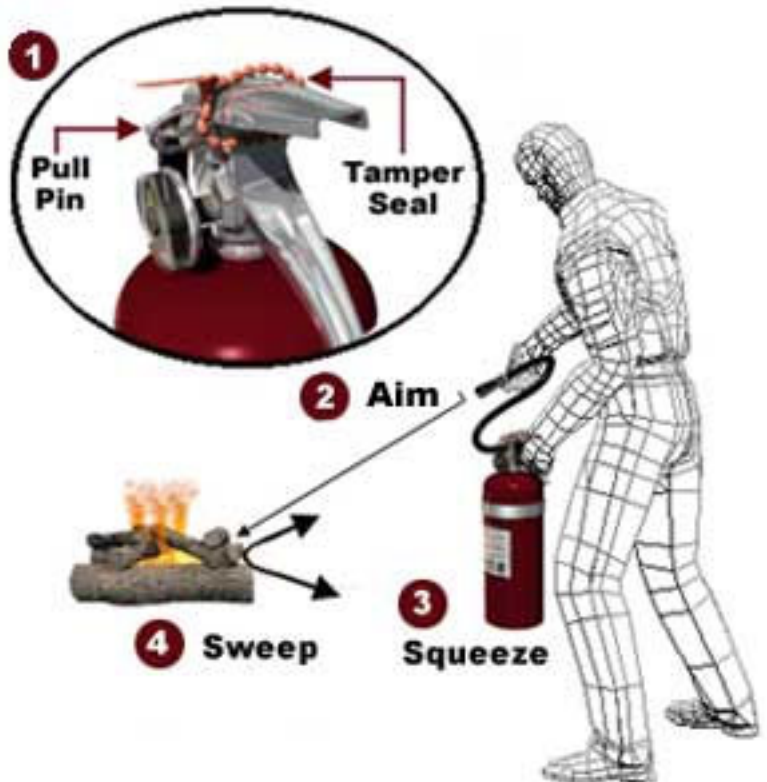


- Aim...
- Aim low, pointing the extinguisher nozzle (or its horn or hoses) at the base of the fire

Note: do not touch the plastic discharge horn on CO₂ extinguishers, it gets very cold and can damage skin



P.A.S.S. TECHNIQUE



- Squeeze...
- Squeeze the handle so that it will release the extinguishing agent

P.A.S.S. TECHNIQUE



- Sweep...
- Sweep from side to side at the base of the fire until the extinguisher is completely empty assuring that the fire is out



MAKE A PLAN AND PRACTICE EXIT DRILLS IN THE HOME (EDITH)

