

Verdugo Fire Academy
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Portable Fire Extinguishers




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Objectives (1 of 2)

- State the primary purposes of fire extinguishers.
- Define Class A fires.
- Define Class B fires.
- Define Class C fires.
- Define Class D fires.
- Define Class K fires.
- Explain the classification and rating system for fire extinguishers.



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Objectives (2 of 2)

- Describe the types of agents used in fire extinguishers.
- Describe the types of operating systems in fire extinguishers.
- Describe the basic steps of fire extinguisher operations.
- Explain the basic steps of inspecting, maintaining, recharging, and hydrostatic testing of fire extinguishers.


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Introduction (1 of 2)



Extinguishers are:

- Used by civilians and fire fighters
- Required for commercial vehicles, boats, and aircraft
- Easy to operate with minimal training


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Introduction (2 of 2)



- Extinguishers vary in size and type of extinguishing agent used.
- Selection of appropriate extinguisher is critical.
- Proper use reduces injury and property damage.

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Purposes of Fire Extinguishers (1 of 2)

- Used to extinguish incipient fires
- Used to extinguish fires where traditional suppression methods are not recommended
- Most departments carry at least one
 - ◆ In California, Type I fire apparatus are required to carry 3 types: water, CO₂ and dry chemical

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Purposes of Fire Extinguishers (2 of 2)

- Must know:
 - ◆ Which fires require special extinguishing agents
 - ◆ What type of extinguisher to use
 - ◆ How to operate each type of extinguisher



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Classes of Fires



<ul style="list-style-type: none"> A  B  C  D  K  	<ul style="list-style-type: none"> ■ Essential to match extinguisher and fire ■ Classes grouped by their characteristics ■ Some agents more efficient on certain fires. ■ Some agents will not control certain fires ■ Some agents are dangerous when applied to certain fires.
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Class A Fires

- Class A fires involve items such as:
 - ◆ Ordinary wood
 - ◆ Rubber
 - ◆ Household rubbish
 - ◆ Natural vegetation
- Water is most common extinguishing agent.









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Class B Fires

- Class B fires involve items such as:
 - ◆ Flammable liquids and gases
 - ◆ Oil
 - ◆ Grease
 - ◆ Tar
 - ◆ Some plastics
- Several agents can be used.








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Class C Fires

- Class C fires involve energized electrical equipment such as:
 - ◆ Building wiring
 - ◆ Circuit breakers
 - ◆ Transformers
 - ◆ Power tools
- Require agents that will not conduct electricity








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Class D Fires

- Class D fires involve combustible metals such as:
 - ◆ Magnesium
 - ◆ Sodium
 - ◆ Lithium
 - ◆ Potassium
- Violent reactions to water and other agents can occur.








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Class K Fires

- New classification due to cooking trends
- Involves combustible cooking oils and fats
- Some restaurants still use Class B extinguishers.
 - ◆ California no longer allows Class B for Class K






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Classification of Fire Extinguishers (1 of 7)

- Classification and rating based on characteristics and capabilities.
- Underwriters Laboratories, Inc. (UL) develops standards for ratings and classification.
- Extinguishers are rated for safety and effectiveness.
- May have multiple letters if effective on more than one class of fire




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Classification of Fire Extinguishers (2 of 7)

- Letters indicate class of fire for which extinguisher can be used.
- Numbers indicate effectiveness for Class A and B extinguishers by a nonexpert user.
 - ◆ California Fire Code requires 2A:10BC in all State Inspected residential buildings




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Classification of Fire Extinguishers (3 of 7)

- Class A Fire extinguishers
 - ◆ Number is related to amount of water.
 - ◆ 1-A rated contains equivalent of 1.25 gallons of water.
 - ◆ 2-A rated contains equivalent of 2.5 gallons of water.
 - ◆ 4-A rated should extinguish approximately twice as much fire as a rated 2-A.




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Classification of Fire Extinguishers (4 of 7)

- Class B Fire Extinguishers
 - ◆ Number is based on approximate square feet of burning fuel that can be extinguished.
 - ◆ 10-B rated will extinguish 10 square feet of fire.
 - ◆ 40-B rated will extinguish 40 square feet of fire.




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Classification of Fire Extinguishers (5 of 7)


- Class C extinguishers use agents that do not conduct electricity.
 - ◆ Though all manufactures claim this, it is not true, use caution!



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Classification of Fire Extinguishers (6 of 7)




- Class D extinguishers use agents for flammable metals.
 - ◆ This is very a very specialized agents and are used on small fire only.

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Classification of Fire Extinguishers (7 of 7)

- Class K extinguishers use (wetting) agents for cooking medium (fats/oils).
 - ◆ They were created specifically for this purpose.







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Labeling of Fire Extinguishers (1 of 3)

- Traditional lettering system:
 - ◆ Class A = green triangle
 - ◆ Class B = red square
 - ◆ Class C = blue circle
 - ◆ Class D = yellow star
- No traditional-system alphabet graphic for Class K

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Labeling of Fire Extinguishers (2 of 3)

- Pictograph system:
 - ◆ Square icons representing each class of fire
 - ◆ Class A, Class B, Class C, and Class K have pictographs.

A	
B	
C	
D	
K	

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Labeling of Fire Extinguishers (3 of 3)


- Icon represents the rating for the class of fire.
- No icon = no rating
- Red slash indicates that the extinguisher must not be used on that type of fire.
- Some Class B and C extinguishers exclude Class A fires based on effectiveness.

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TYPES OF FIRES		TYPES OF EXTINGUISHERS:	
CLASS A ORDINARY COMBUSTIBLES: wood, paper, rubber, fabric and many plastics		CLASS A	
CLASS B FLAMMABLE LIQUIDS & GASES: gasoline, oils, paint, lacquer and tar		CLASS A:B	
CLASS C FIRES INVOLVING LIVE ELECTRICAL EQUIPMENT		CLASS A:B:C	
CLASS D COMBUSTIBLE METALS OR COMBUSTIBLE METAL ALLOYS (NO picture symbol)		CLASS A:C	
CLASS K FIRES IN COOKING APPLIANCES THAT INVOLVE COMBUSTIBLE COOKING MEDIA vegetable or animal oils and fats		CLASS B:C	
		CLASS D	
		CLASS K	


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Fire Extinguisher Placement (1 of 3)

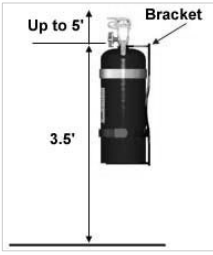
- NFPA 10 lists recommendations for placing and mounting portable fire extinguishers.
- Occupancy regulations specify area protected, travel distance from extinguisher to fire, and types of extinguishers provided.
- Two factors to consider to determine the type of extinguisher:
 - ◆ Class of fire likely to occur
 - ◆ Potential magnitude of an incipient fire

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Fire Extinguisher Placement (2 of 3)

- In California
 - ◆ All extinguisher are to be mounted as seen
 - ◆ For residential
 - ◆ Extinguisher shall be within 75 feet of travel from all parts of the structure
 - ◆ Standard size is a 2A:10BC



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Fire Extinguisher Placement (3 of 3)

- Extinguishers should be readily visible and easily accessed.
- Do not mount heavy extinguishers high on a wall.
- NFPA 10 recommends mounting heights.
 - ◆ Use California Fire Code



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Classifying Area Hazards

- Risk classification based on amount & type of combustibles and typical situations for occupancy.
- Fire load
 - ◆ Quantity of combustible materials present
 - ◆ Includes building materials, contents, & furnishings
 - ◆ Measured as the average weight of combustibles per square foot
 - ◆ The larger the load, the larger fire potential

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Light or Low Hazard (1 of 2)


- Areas where the majority of materials are noncombustible
- Arranged so that a fire is not likely to spread
- Contain limited amounts of Class A and Class B combustibles

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Light or Low Hazard (2 of 2)

- Common light hazard environments include:
 - ◆ Offices
 - ◆ Classrooms
 - ◆ Churches
 - ◆ Hotel guest




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Ordinary or Moderate Hazard

- Contain more Class A and B materials than light hazard locations
- Examples include:
 - ◆ Auto showrooms
 - ◆ Research facilities
 - ◆ Parking garages




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Extra or High Hazard (1 of 2)

- Contain more Class A and Class B materials than ordinary hazard locations




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Extra or High Hazard (2 of 2)

- Examples include:
 - ◆ Woodworking shops
 - ◆ Kitchens that have deep fryers, flammable liquids, or gases under pressure
 - ◆ Facilities used for storing flammable liquids



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Determining the Appropriate Class of Fire Extinguisher

- Consider the types and quantities of fuels found in the area.
- Multipurpose dry chemical extinguishers often used in areas containing low to moderate hazards.
- Facilities present a variety of conditions.
 - ◆ Evaluate each area and tailor the installation.

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Methods of Fire Extinguishment (1 of 2)


- Understanding the nature of fire helps to understand how extinguishing agents work.
- Fires require fuel, heat, and oxygen.
- Rapid oxidation
 - ◆ Occurs when a fuel is combined with oxygen
- Combustion
 - ◆ Occurs when fuel is heated to its kindling temperature

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Methods of Fire Extinguishment (2 of 2)

- Extinguishers stop burning by:
 - ◆ Cooling the fuel
 - ◆ Cutting off the supply of oxygen
 - ◆ Interrupting the chain of reactions




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Extinguishing Agents


- Substance contained in portable fire extinguisher that puts out a fire
- Various chemicals are used (including water).
- Best agent for a particular hazard depends on several factors.
 - ◆ Types of materials involved
 - ◆ Anticipated size of the fire

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Types of Extinguishing Agents

- Water
- Dry chemicals
- Carbon dioxide
- Foam
- Wet chemicals
- Halogenated agents
- Dry powder



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Water (1 of 2)

- Efficient, plentiful, and inexpensive
- Converts from liquid to steam, absorbing heat in the process
- Effective on Class A fires
- Less effective or dangerous on other classes
- Loaded-stream extinguishers used in areas subject to freezing
- Wetting agents can be added for penetration.

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Water or PW (2 of 2)

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Dry Chemical (1 of 4)

- Stream of finely ground particles
- Different types of compounds are used.
- Extinguish in two ways:
 - ◆ Interrupts chemical chain reaction
 - ◆ Absorbs large quantities of heat

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Dry Chemical (2 of 4)

- Several advantages over water extinguishers
- Ordinary: suitable for Class B and C fires
- Multipurpose: rated for Class A, B, and C fires

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Dry Chemical (3 of 4)

- Additives prevent packing and caking.
- Disadvantage: chemicals are corrosive.
- Primary compounds used in dry chemical extinguishers:
 - ◆ Sodium bicarbonate
 - ◆ Potassium bicarbonate
 - ◆ Urea-based potassium carbonate
 - ◆ Potassium chloride
 - ◆ Ammonium phosphate

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Dry Chemical (4 of 4)

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Carbon Dioxide (1 of 4)


- 1.5 times heavier than air
- Forms a dense cloud displacing air surrounding the fuel
- Interrupts combustion by
 - ◆ Reducing the oxygen
 - ◆ Disrupts liquid fuel's ability to vaporize

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Carbon Dioxide (2 of 4)

- Stored under pressure as a liquid
- Rated for Class B and C fires only




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Carbon Dioxide (3 of 4)

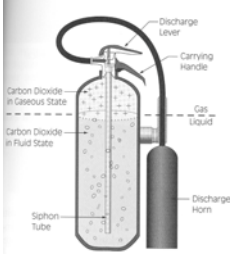
- Limitations include:
 - ◆ Heavier than similarly rated extinguishers
 - ◆ Short discharge range
 - ◆ Does not perform well below 0°F or in wind
 - ◆ Suffocation hazard in confined spaces
 - ◆ Not suitable for pressurized fuel or cooking grease fires




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Carbon Dioxide (4 of 4)




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Foam


- Water-based foam concentrate solution
- Nozzles introduce air to form foam blanket.
- Use on Class A or B fires
- Additives depend on compatibility with fuels.
- Some foams approved for polar solvents
- Not suitable for Class C fires
- Cannot be stored or used at freezing temperatures

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Wet Chemical

- Only agent to meet Class K fire rating
- Chemicals applied as water solutions
- Formulated for use in commercial kitchens
- Saponification turns oils and fats to soap or foam.
- Creates thick blanket to smother the fire and prevent re-ignition
- Discharged as a fine spray
- Very effective and easier clean up




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Halogenated Agents (1 of 2)


- Produced from family of liquefied gases
- Called clean agents
 - ◆ Leave no residue
 - ◆ Suited for use on electronic equipment
- Twice as effective as carbon dioxide
- Two categories
 - ◆ Halons: use limited by Montreal Protocol
 - ◆ Halocarbons: replaced halons

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Halogenated Agents (2 of 2)

- Stored as liquids and discharged under high pressure
- Vapor mist disrupts chain reaction.
- Dissipate in windy conditions
- Displace oxygen in confined spaces
- Halon 1211 should rarely be used.
- Four agents in portable extinguishers



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Dry Powder (1 of 2)

- Used on combustible metal fires (Class D)
- Stored in granular or powdered form
- Forms solid crust over burning metal



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Dry Powder (2 of 2)




- Commonly produced from sodium chloride or graphite powder
- Avoid splatter
- Violent reactions can result from any trace quantities of water.

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Fire Extinguisher Design

- Use pressure to expel contents
- Many extinguishers require pressurized gas to expel the agent.
- Some agents are self-expelling.
- Hand-operated pumps expel water or water with additives.



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Portable Fire Extinguisher Components (1 of 7)

- Most hand-held extinguishers have six basic parts:
 - ◆ Cylinder or container
 - ◆ Carrying handle
 - ◆ Trigger
 - ◆ Nozzle or horn
 - ◆ Locking mechanism (Pin)
 - ◆ Pressure indicator gauge




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Portable Fire Extinguisher Components (2 of 7)

- Cylinder or container
 - ◆ Body of the extinguisher
 - ◆ Holds the extinguishing agent
 - ◆ Nitrogen, compressed air, or carbon dioxide used to pressurize the cylinder
 - ◆ Gas can be stored internally (stored-pressure) or externally (cartridge/cylinder).




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Portable Fire Extinguisher Components (3 of 7)

- Handle
 - ◆ Used to carry an extinguisher and to hold it during use
 - ◆ Extinguishers weighing more than 3 lbs must have handles.
 - ◆ Usually located just below the trigger mechanism



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Portable Fire Extinguisher Components (4 of 7)


- Nozzle or horn
 - ◆ Expels agent
 - ◆ Attached directly to valve assembly or at the end of a short hose
 - ◆ Foam extinguishers have a special aspirating nozzle.

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Portable Fire Extinguisher Components (5 of 7)

- Trigger
 - ◆ Mechanism that is squeezed or depressed to discharge extinguishing agent
 - ◆ Usually a lever located above the handle
 - ◆ Cartridge/cylinder models usually have a two-step operating sequence.




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Portable Fire Extinguisher Components (6 of 7)

- Locking mechanism
 - ◆ Prevents accidental discharge
 - ◆ Simplest form is a stiff pin
 - ◆ Inserted through a hole in the trigger
 - ◆ Usually has a ring at the end
 - ◆ Tamper seal
 - ◆ Secures the pin
 - ◆ Discourages people from tinkering with extinguisher




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Portable Fire Extinguisher Components (7 of 7)

- Pressure indicator
 - ◆ Shows whether a stored-pressure extinguisher has sufficient pressure to operate
 - ◆ Most extinguishers use a needle gauge.
 - ◆ Some disposable extinguishers have a pin that, when pressed, tests the pressure.

Fire Extinguisher Charge Indicators
 Check the charge level of your fire extinguishers regularly. Replace them immediately if they are not fully charged.



green button
 To check this style of fire extinguisher, depress the green button. If it is fully charged, the green button should pop back out immediately.



On this style of fire extinguisher, the needle indicator should be in the "full" range.

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Wheeled Fire Extinguishers

- Large units mounted on wheeled carriages
- Typically contain 150 to 350 lbs of extinguishing agent
- Indoor use requires wide doorways and aisles.
- Long delivery hoses allow operators to attack fire from multiple sides.
- Usually pressurized by separate cylinders
- Installed in special hazard areas

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Wheeled Fire Extinguishers

WHEELED CO₂ FIRE EXTINGUISHER

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Fire Extinguisher Characteristics (1 of 2)

- Portable extinguishers vary according to
 - ◆ Extinguishing agent
 - ◆ Capacity
 - ◆ Effective range
 - ◆ Time it takes to completely discharge agent
- Extinguishers also have different mechanical designs.

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Fire Extinguisher Characteristics (2 of 2)

- Seven types of extinguishers:
 - ◆ Water
 - ◆ Dry chemical
 - ◆ Carbon dioxide
 - ◆ Class B foam
 - ◆ Wet chemical
 - ◆ Halogenated agent
 - ◆ Dry powder

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Water Extinguishers (1 of 6)

- Used to cool burning fuel below its ignition temperature
- Intended primarily for Class A fires



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Water Extinguishers (2 of 6)

- Stored-pressure water-type
 - ◆ Used for incipient Class A fires
 - ◆ Contents can freeze
 - ◆ Can be recharged at any location that provides water and a source of compressed air



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Water Extinguishers (3 of 6)

- Loaded-stream water-type
 - ◆ Discharge solution of water containing an alkali metal salt
 - ◆ Usable to -40° F
 - ◆ Most common model is 2.5 gallon unit
 - ◆ Larger units pressurized by separate cylinder of carbon dioxide.


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Water Extinguishers (4 of 6)


- Wetting agent, Class A foam water-type
 - ◆ Solution reduces surface tension.
 - ◆ Allows water to penetrate Class A fuels more efficiently
 - ◆ Foam concentrate reduces surface tension and creates foam.
 - ◆ Configurations same as hand-held and wheeled models
 - ◆ Do not expose to temperatures below 40° F.

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Water Extinguishers (5 of 6)

- Pump-tank water-type
 - ◆ Range from 1-A rated, 1.5 gallons units to 4-A rated, 5 gallons units
 - ◆ Non-pressurized storage
 - ◆ Expelled via hand-operated piston pump
 - ◆ Sits upright on the ground
 - ◆ Can be used with antifreeze solution
 - ◆ Not legal in California




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Water Extinguishers (6 of 6)

- Backpack water-type
 - ◆ Used primarily for brush and grass fires
 - ◆ Water tank made of fiberglass, stainless or galvanized steel, or brass
 - ◆ Wide mouth opening with filter allows easy refill.



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Dry Chemical Extinguishers
 (1 of 3)



- Contain variety of agents in granular form
- Ordinary models extinguish Class A and B fires.
- Multipurpose models extinguish Class A, B, and C fires.
- All can be used on Class C fires, but residue damages electronics.

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Dry Chemical Extinguishers
 (2 of 3)

- Discharge time is 8 to 20 seconds in small models, up to 30 seconds in larger units.
- Range of discharge is from 5' to 30', depending on size.
- Trigger allows intermittent discharge.
- Extinguishers do not retain internal pressure for extended periods.
- Disposable models not refillable
- Can be stored at temperatures below freezing

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Dry Chemical Extinguishers
 (3 of 3)

- Ordinary
 - ◆ Available in hand-held models up to 160-B:C
 - ◆ Wheeled units carry up to 640-B:C
- Multipurpose
 - ◆ Aluminum phosphate agent
 - ◆ Hand-held models 1-A to 20-A, 10-B:C to 120-B:C
 - ◆ Large wheeled units 20-A to 40-A, 60-B:C to 320 B:C
- ◆ Should never be used for Class K fires




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Carbon Dioxide Extinguishers (1 of 2)

- Rated for Class B and C fires
- Extinguishes by enveloping fuel in a cloud of inert gas
- Also cools the burning material
- 1.5 times heavier than air
- Colorless, odorless, nonconductive, and inert
- Is noncorrosive
- Both an expelling agent and an extinguishing agent




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Carbon Dioxide Extinguishers (2 of 2)

- Have relatively short discharge ranges
- Not recommended outdoors or near strong air currents
- Trigger mechanism allows intermittent operation.
- Metal horns no longer made, but some units may still be in service and are not compatible for Class C fires.




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Class B Foam Extinguishers (1 of 2)

- Aspirating nozzle discharges solution of water and AFFF or FFFP agent.
- Discharged through an aspirating nozzle




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Class B Foam Extinguishers (2 of 2)


- Foam blanket floats over surface of flammable liquid.
- Effective for Class A and B fires, but not suitable for Class C or K fires
- Not effective at freezing temperatures

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Wet Chemical Extinguishers

- Used to protect Class K installations
 - ◆ Cooking oils, deep fryers, & grills
- Commercial facilities used fixed, automatic systems.
- Portable extinguishers available in 1.5 gallon and 2.5 gallon sizes
- No numerical ratings




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Halogenated-Agent Extinguishers


- Include both halon and halocarbon agents
- Use of halon agents strictly controlled due to environmental hazards
- Available in hand-held models rated for Class B and C fires
- Agent discharged as a streaming liquid
- They are nonconductive and leave no residue.

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Dry Powder Extinguishing Agents
 (1 of 2)

- For Class D fires involving combustible metals
- Agents and techniques vary.
- Each agent listed for use on specific combustible metal fires




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Dry Powder Extinguishing Agents
 (2 of 2)

- Dry powder fire extinguishers
 - ◆ Have adjustable nozzles that allow operator to vary the flow of agent
- Bulk dry powder agents
 - ◆ Available in 40 lb and 50 lb pails and 350 lb drums
 - ◆ Applied manually using a shovel or scoop

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Use of Fire Extinguishers

- Simple to operate with basic training
- Six basic steps for extinguishing fires
 - ◆ Locate the fire
 - ◆ Select the proper extinguisher
 - ◆ Transport the extinguisher to the fire
 - ◆ Activate the extinguisher to release the agent
 - ◆ Apply the extinguishing agent
 - ◆ Ensure personal safety
- Practice and training are essential.


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Locating a Fire Extinguisher



- Know the types and locations of extinguisher on apparatus.
- Know where extinguishers are located in and around the fire station.
- Have at least one extinguisher in your home and another in your personal vehicle.

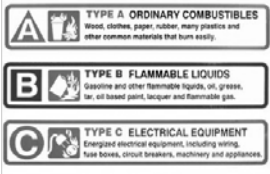
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Selecting the Proper Extinguisher (1 of 2)



- Requires an understanding of the classification and rating system
- Requires understanding the different types of agents

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Selecting the Proper Extinguisher (2 of 2)

- Fire fighters must quickly determine if a fire can be controlled by an extinguisher.
- Fire fighters should also determine the appropriate type of extinguisher to place in a given area.

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Transporting a Fire Extinguisher

- Best method depends on size, weight, and design of extinguisher.
- Carry fixed nozzle units in stronger hand.
- Use weaker hand for units with a hose between trigger and nozzle.
- Place heavier extinguishers on ground near fire; one hand to depress trigger, one hand to hold nozzle and direct stream.

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Basic Steps of Fire Extinguisher Operation

- P-A-S-S acronym:
 - ◆ Pull the safety pin.
 - ◆ Aim the nozzle at the base of the flames.
 - ◆ Squeeze the trigger to discharge agent.
 - ◆ Sweep the nozzle across the base of the flames.
- Practice discharging different types of extinguishers.

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1 Pull Pin Tamper Seal

2 Aim

3 Squeeze

4 Sweep


WARNING
CO₂ is extremely cold and can burn or raise blisters. Keep your hands on the insulated horn handle when using a cylinder.

REMEMBER
CO₂ is extremely cold and can burn or raise blisters. Keep your hands on the insulated horn handle when using a cylinder.

Hold firm to inverted handle. Remember: Sweep side.

Figure 7-2-2 Operating a CO₂ extinguisher


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Ensure Your Personal Safety

- Approach fire with an exit behind you.
- Have a planned escape route in case of extinguisher failure.
- Never let fire get between you and a safe exit.
- After suppression, back away; never turn your back on the fire.
- Watch fire for rekindle.
- Wear appropriate PPE and SCBA (if needed).


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The Care of Fire Extinguishers




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The Care of Fire Extinguishers

- Extinguishers must be regularly inspected and properly maintained.
- Records keep inspections and maintenance on schedule.
- Proper training required for inspection and maintenance.
- Follow manufacturer's recommendations.


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Inspection (1 of 2)

- “Quick check” verifies availability for immediate use.
- Check extinguishers on apparatus regularly.
- Check tamper seals.
- Weigh or “heft” to determine fullness.
- Examine for obvious physical damage, corrosion, or leaks.


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Inspection (2 of 2)

- Check pressure gauge.
- Confirm proper identification by type and rating.
- Shake dry chemicals to mix or redistribute agent.
- Check nozzle for damage or obstructions.
- Take problem units out of service and replace with spares.

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Verification of Sufficient Extinguishing Agent

- Stored-pressure extinguishers
 - ◆ Pressure gauge indicates if pressure is sufficient to expel entire agent.
 - ◆ Weight of unit indicates degree of fullness.
 - ◆ Intact tamper seal indicates fullness.
- Cartridge-type extinguishers
 - ◆ Pressurized gas expelled only when cartridge punctured.
 - ◆ Unpunctured cartridge indicates full, proper charge.

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Maintenance

- Maintenance includes internal inspections and repairs.
- Maintenance must be performed periodically.
- An inspection may reveal the need for maintenance.
- Only qualified personnel can perform maintenance.

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Common Indicators of Need for Maintenance

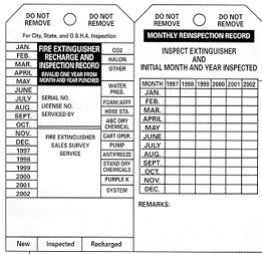
- Pressure gauge reads outside normal range
- Out-of-date inspection tag
- Broken tamper seal
- Any indication that unit is not full
- Obstruction of hose and/or nozzle assembly
- Signs of physical damage, corrosion, or rust
- Visible signs of leakage around discharge valve or nozzle assembly

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Inspection Tag

- Must comply with SFM UFC Standard 10-1
- Required on all portable fire extinguishers


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Recharge (1 of 3)



- Required after every use
 - ◆ Only exceptions are non-rechargeable units
- Take extinguisher out of service immediately after use.

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Recharge (2 of 3)

- Replace only when properly recharged.
- Extinguishing agent refilled
- Expulsion agent recharged
- Tamper seal installed after recharging

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Recharge (3 of 3)

- Recharging stored-pressure water extinguishers
 - ◆ Can be performed by fire fighters
 - ◆ Discharge remaining stored pressure to safely remove valve assembly.
 - ◆ Add water to water-level indicator.
 - ◆ Replace valve assembly.
 - ◆ Introduce compressed air to raise pressure to level indicated on gauge.

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Hydrostatic Testing (1 of 4)



- Measures extinguisher's ability to withstand internal pressure
- Special test facility required
- Above-normal pressure applied to water-filled cylinder

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Hydrostatic Testing (2 of 4)

Carbon dioxide extinguishers	1/2 service pressure stamped on cylinder
Carbon dioxide and nitrogen cylinders (used with wheeled extinguishers)	
Carbon dioxide extinguishers with cylinder specification ICC3	3000 psi (20 685 kPa)
All stored-pressure and bromochlorodifluoromethane (1211)	Factory test pressure not to exceed 3 times the service pressure
Carbon dioxide hose assemblies	1,250 psi (8619 kPa)
Dry chemical and dry powder hose assemblies	300 psi (2068 kPa) or at service pressure, whichever is higher

Note: The factory test pressure is the pressure at which the shell was tested at time of manufacture. This pressure is shown on the nameplate.
The service pressure is the normal operating pressure as indicated on the gauge and nameplate.

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Hydrostatic Testing (3 of 4)

- Assigned maximum interval usually 5 or 12 years, depending on vessel type
- Must indicate most recent test on the outside of the extinguisher
- Extinguisher may not be refilled if most recent test date is not within prescribed limit.
- All out of date extinguishers must be tested at an appropriate facility.

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Summary (3 of 3)

- Extinguishers vary by
 - ◆ Extinguishing agent
 - ◆ Capacity
 - ◆ Effective range
 - ◆ Time it takes to discharge the agent
- Six basic steps to using an extinguisher
- Extinguishers require regular inspection and maintenance.