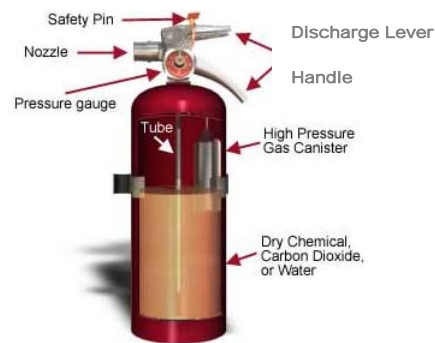


Fire Extinguishers

When used correctly, fire extinguishers can save lives and property by putting out small fires. Read the information below to ensure you know how to use your fire extinguisher correctly in a fire emergency.

What is a fire extinguisher?






- A fire extinguisher is a portable device, carried or on wheels and operated by hand, containing an extinguishing agent that can be expelled under pressure for the purpose of suppressing or extinguishing fire.
- A fire extinguisher is a device used to put out a small fire in its early stages. They are not designed to fight large or spreading fires. Even against small fires, they are useful only under the right conditions.
- A fire extinguisher is generally designed with the following characteristics:
 - ✓ a carrying handle
 - ✓ a discharge lever
 - ✓ a discharge nozzle or hose assembly
 - ✓ usually a pressure gauge
 - ✓ a cylinder/canister
 - ✓ a siphon tube
 - ✓ an extinguishing agent
 - ✓ an expelling means.



Types of Fire Extinguishers

- There are numerous types of fire extinguishers, each rated for a different fire hazard and containing various extinguishing agents including carbon dioxide, water based agents, wet chemical, dry chemical, dry powder, and clean agent gas.
- The type of extinguisher that is used should be matched to the hazard(s) being protected.
- Fire extinguishers are distinguished by their designated ratings, which indicate the fire hazard that they are suitable to be used on.
- Fire extinguishers ratings are provided on the label of the fire extinguisher and generally consist of a letter and a number (numbers are located on class A and B extinguishers only).
- The 'letters' tell you the 'classes of fire that the extinguisher is suitable for use on.
- The 'number' indicates the effectiveness of the extinguisher by measuring the time it takes to put out a certain size of fire. Generally, the higher the number, the larger the size of fire that can be extinguished up to a certain size as specified in the testing standards.
- The numeral given on a Class A extinguishers represents the cubic metres of combustible materials that an experienced individual may be able to extinguish. This rating ranges from 1A to 40A.

Fire Extinguishers

Classes of Fire	Class A Combustible Materials	Class B Flammable Liquids	Class C Energized Electrical Equipment	Class D Combustible Metals	Class K Combustible Cooking Media
	Wood, paper, cloth, rubber, plastics	Gasoline, oil, grease, tar, oil-based paint, lacquer, flammable gas	Wires, fuse boxes, circuit breakers, motors, switches	Sodium, potassium, magnesium, zirconium, and titanium	Vegetable or animal oils and fats
Fire Extinguisher Label					

- The numeral given on Class B extinguishers represents the area in square metres with no appreciable depth, (appreciable depth is defined as a depth of liquid greater than 6mm) which may be extinguished by an experienced individual. This rating ranges between 1B and 320B.
- The grade of the hazard (low, medium, or high) will determine the numeral rating and the number of extinguishers required per floor area. Refer tables 6.2.3.3 and 6.2.3.5 of the Alberta Fire Code, for a listing of these required ratings.
- A 2A 10BC fire extinguisher is recommended for a home, garage, car, boat, or RV.

How does a fire extinguisher work

- There are 5 ways that a fire extinguisher can operate:
 1. Self-Expelling. The extinguishing agents have sufficient vapor pressure at normal operating temperatures to expel themselves.
 2. Gas-Cartridge or Cylinder. Expellant gas is confined in a separate pressure vessel until an operator releases it to pressurize the fire extinguisher shell.
 3. Stored-Pressure. The extinguishing material and expellant are kept in a single container under pressure.
 4. Mechanically Pumped. The operator provides expelling energy by means of a pump, and the vessel containing the agent is not pressurized.
 5. Hand-Propelled. The material is applied with a scoop, pail, or bucket.
- Fire extinguishers suppress fires by discharging an agent that will interrupt the combustion process, by removing one of the key elements necessary to sustain a fire. Under the theory of the fire tetrahedron, there are four methods of fire suppression: removing the heat, removing the fuel, excluding the oxygen or stopping the chemical chain reaction. The agents in a fire extinguisher attempt to remove one or more of these elements (See the table below and refer

For more information, please contact the Alberta Emergency Management Agency at (780) 422-9000 (dial 310-000 for toll-free access outside of Edmonton) or email: aema@gov.ab.ca

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to the Fire Basics “Fire Facts” tip sheet on the website at www.municipalaffairs.gov.ab.ca/fco/FireFacts.cfm for more information).

Fire Suppression						
Extinguishing agents	Suppression methods	Class A Fires	Class B Fires	Class C Fires	Class D Fires	Class K Fires
Water	Cools the fire	Yes	No	No	No	No
Foam	Excludes oxygen and cools fire	Yes	Yes	No	No	No
CO2 Carbon dioxide	Displaces oxygen	No	Yes	Yes	No	No
Regular dry chemical Sodium bicarbonate base	Smothers flames	No	Yes	Yes	No	No
Purple K dry chemical Potassium bicarbonate base	Smothers flames	No	Yes	Yes	No	No
Multi-purpose dry chemical Ammonium phosphate base	Smothers flames	Yes	Yes	Yes	No	No
Dry powder	Exclude oxygen and/or cools fire	No	No	No	Yes	No
Wet chemical Potassium acetate base	Smothers flames and cools fire	No	No	No	No	Yes

Fire Extinguishers

Halon Extinguishers and their phase-out

- Halon fire extinguishers are composed of a liquid gas agent (carbon compounds containing halogens such as chlorine, bromine, etc.) that leaves no residue, and is highly effective for extinguishing fires. Some larger models are effective on Class A as well as Class B and C fires.
- Halon agents contain chlorofluorocarbons (CFC's), an ozone depleting substance that forms toxic gases when it is discharged and exposed to flames.
- In 1986 the United Nations signatories met in Montreal Canada and reached an international agreement to control and eliminate global emissions of ozone depleting chemical compounds, like Halon. This agreement is called the "Montreal Protocol on Substances that Deplete the Ozone Layer".
- In order to meet its obligations under the Montreal Protocol, The Canadian Council of Ministers of the Environment established a federal-provincial working group in 1989 to develop a coordinated national strategy to accelerate the phase out of CFC's and halon uses in Canada.
- As an active supporter of the national strategy, Alberta enacted the Ozone-Depleting Substances Regulation in 1993 to govern the use, handling and release of CFC's.
- In 2004, amendments were made to both the national strategy and provincial regulation to include additional CFC and halon use restrictions. The new Alberta regulations are outlined below:
 - √ After January 1, 2005 portable halon extinguishers cannot be recharged, except for critical uses.
 - √ One refill will be permitted between 2005 and 2010 for fixed halon fire extinguishing systems on the basis that the system would be replaced within a year of the refill, subject to critical use exemptions.
 - √ No refills for fixed halon fire extinguishing systems, except for critical uses, after 2010.
 - √ Addition of a seller take back requirement for surplus CFCs.
- Alternative agents are available on market and include inert gases, carbon dioxide, water mist systems, and clean agents. These agents are similar to halon agents in that they are nonconductive, non-corrosive, and evaporate after use, but they are better for the environment

Hazards of using Fire Extinguishers

- Extinguishing agents must be used with care. They can damage equipment and materials and they can burn your skin or make breathing difficult.
- Using the wrong type of extinguisher for the wrong class of fire could be extremely dangerous and make the fire emergency worse. It is particularly dangerous to use water or a type A extinguisher on a grease or electrical fire.

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- A novice can cause the fire to spread and endanger life. Proper training and practice are essential before you use an extinguisher in a fire emergency.
- Fire extinguishers make it tempting to stay and fight a dangerous fire emergency. One should only use a fire extinguisher if one is confident in using it. On the whole, fire fighting is the job of the fire department. The important thing is to safely GET OUT of the fire emergency.

The Law

As per Section 6.2 of the 1997 Alberta Fire Code

- Portable extinguishers shall be located in or adjacent to corridors or aisles that provide access to exits and when in proximity to a fire hazard shall be located so as to be assessable without exposing the operator to undue risk.
- Portable fire extinguishers are required in all buildings, except homes. Although not required by the code, homeowners are strongly recommended to place at least one fire extinguisher on every floor of their home.
- Fire extinguishers in all buildings, except homes shall be provided as per the requirements given in tables 6.2.3.3 and 6.2.3.5 of the Alberta Fire Code (see tables 1 and 2 above).
- Portable fire extinguishers in all buildings, except homes, require a monthly inspection, annual maintenance, recharge and hydrostatic testing as prescribed in NFPA 10, listed below. Although homes are not required by this section of the code, it is important to note that it is the responsibility of the homeowner to maintain their extinguishers in accordance with the manufacturer's recommendations. In addition, homeowners should consider having their extinguishers maintained in accordance with NFPA 10, listed below.
- All agencies servicing, recharging or repairing fire extinguishing equipment shall have their facilities and equipment certified annually by an approved fire-testing agency, and by Transport Canada or its appointee for high-pressure hydrostatic testing equipment.

Safety Tips

How to buy a fire extinguisher

- Only listed and labelled fire extinguishers can be sold or distributed in Alberta. The two recognised agencies that do this are Underwriters Laboratories of Canada (ULC) or Underwriters Laboratories (UL). Extinguishers bearing a ULC or UL small c are permitted to be sold in Alberta.
- Read the label. Ensure that the extinguisher was designed for the type and severity of fire hazards in the area you intend on locating it.
- Ensure you can hold and operate an extinguisher before you buy it.
- You can purchase fire extinguishers at most hardware stores or service agencies that specialize in selling and maintaining extinguishers.
- Do a visual check to ensure that the unit is fully charged and in good condition.

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Fire Extinguishers

- Rechargeable and disposable fire extinguishers are available for purchase. Rechargeable extinguishers are re-usable but require recharging after every use. Disposable extinguishers must be discarded after use or after 12 years from the date of manufacture.

Using a Fire Extinguisher

- All of the requirements listed below must be met before you attempt to use a fire extinguisher. If you have the slightest doubt about whether or not to fight the fire-DON'T! Instead, get out, closing the door behind you and call the fire department.
 - The building is being evacuated (fire/smoke alarm activated).
 - The fire department has been called (9-1-1).
 - You have sized up the fire. The fire is confined to a small area, no bigger than the size of a wastebasket, and is not spreading beyond its starting point.
 - You have the right type of extinguisher. The Extinguisher is rated for the type and size of fire you are extinguishing.
 - The extinguisher is fully charged and in working order.
 - You know how to use the extinguisher.
 - You have an unobstructed escape route.
 - You are strong enough to use the extinguisher.
- Only fight a fire if you feel confident to continue. Keep your back to an unobstructed exit and begin by standing 6-8 feet away from the fire.
- To operate your extinguisher use the acronym **PASS** -- **P**ull, **A**im, **S**queeze, and **S**weep
 - Pull** the pin at the top of the extinguisher that keeps the handle from being accidentally pressed.
 - Aim** the nozzle toward the base of the fire, not directly into the flame. Aim away from yourself, from others and upwind if possible.
 - Squeeze** the handle to discharge the extinguishing agent. If you release the handle, the discharge will stop.
 - Sweep** the nozzle from side to side while carefully moving toward the fire. Sweep back and forth from the base of the fire until the flames appear to be out. Never turn your back on the fire, even if you think its out. Watch the fire area, if the fire re-ignites repeat the process.
- **Know when to get out!** If the fire starts to spread, the area gets too smoky or if your exit is being threatened, GET OUT.
- Many fire extinguishers discharge completely in as little as 8-10 seconds.
- Always be sure the fire department inspects the site, even if you think you've extinguished the fire.
- Leave clean up to the fire department or a professional cleaner. The smoke and char from the fire may contain toxins that can harm you.

Fire Extinguishers

Locating a Fire Extinguisher

- Locate the fire extinguisher near fire hazards for which they are suitable.
- Install extinguishers in an obvious place, above the reach of children, near an exit and/or escape route, and close to a hazard area.
- Use fire extinguishers suitable for more than one class of fire.
- Hang fire extinguishers on a wall bracket. Mount no higher than 5 feet off the ground.

Inspection, Testing and Maintenance (NFPA 10)

Follow the manufacturer's instructions for care and maintenance.

Daily Check by Owner

A quick inspection should be done on a daily basis and should include the following checks:

- Appropriate extinguisher in designated location.
- Ensure that the extinguisher is fully charged.
- The extinguisher has not been tampered with.

Monthly Inspection by Owner

An inspection should be done on a monthly basis and should include the following checks:

- The extinguisher is appropriately rated for the area.
- The extinguisher is in its designated location, and its operating instructions face outward.
- Access to the fire extinguisher is not obstructed.
- Operating instructions are legible.
- Any seals or tamper indicators are not broken, missing, or in need of replacement.
- Ensure that the extinguisher is fully charged.
- There is no evidence of corrosion or damage.

Annual Maintenance Inspection by Qualified Person

- Rechargeable extinguishers require maintenance on a yearly basis. Maintenance will include an examination of mechanical parts, extinguishing agent, and expelling means.
- All rechargeable type fire extinguishers shall be recharged after use or as indicated after an inspection or when performing maintenance.
- Rechargeable fire extinguishers should be hydrostatically tested when required. Depending on the type this can be at 5 or 12-year intervals. Refer to the label on the specific fire extinguisher for exact intervals.
- Maintenance, recharging, and hydrostatic testing are to be performed by a service agency whose facilities are certified (by ULC or Intertek). Fire extinguisher servicing companies are found under the category "fire" in the Yellow Pages.
- In addition every extinguisher technician must be qualified as required under the AFC.
- Disposable fire extinguishers can, be used only once and must be replaced after one use or 12 years from the date of manufacture.