

# Flammable Liquids

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Flammable liquids are volatile, flammable, toxic liquids commonly used as fuels, solvents, cleaning agents, thinners, adhesives and paints. For example, gasoline, acetone and toluene include some of the more common types of flammable liquids. Most people don't realize how easily flammable liquids can ignite, or even explode. Don't risk your life or the life of your family or neighbors by using or storing flammable liquids improperly. Follow these safety guidelines.

## Fire Facts

- Flammable liquids release invisible vapours, and it is these vapours that ignite given the right flammability range, not the liquid itself. These vapours are easily ignited by weak ignition sources such as a single spark of static electricity or even just high temperatures. Gasoline is a flammable liquid and can self ignite at high temperatures.
- The vapours of flammable liquids are toxic and can be hazardous to breathe. They can cause vomiting, dizziness, mental confusion, coma, brain damage, and even death.
- Exposure to flammable liquids in a confined, unventilated area can also cause an asphyxiation hazard (when the vapours displace the oxygen in the air). Without oxygen in the air, death can occur.
- Flammable liquids can strip away natural oils in the skin, leaving the skin vulnerable to irritation, infection and chronic skin problems.
- The vapours of flammable liquids will ignite only when their percentage falls within a certain range of air by volume (flammability range). If the vapour to air ratio is within this limit and an ignition source is present a fire or explosion will occur. Gasoline has a flammability range of 1.4 and 7.6 percent vapour in air by volume.
- When temperatures rise, the vapourization process may accelerate and cause too much pressure to build up in the container; vapour may vent/release from the container as a result. If this gas builds up in an enclosed, unventilated area it can lead to an explosion. Flammable gases will explode where the correct fuel to air ratio has been achieved before ignition.
- Flammable liquids have a flash point. This is the lowest temperature at which a liquid will give off enough vapour to form an ignitable mixture with air. Flammable liquids will ignite at any temperature above this point. Gasoline has a flash point of -45 degrees Celsius.
- Once ignited, the flames "Flash back". This means the flames travel back, through the vapour-air mixture, to the container or source of the flammable liquid creating an explosion.
- Gasoline and almost all other flammable liquids produce heavier than air vapours, which can spread considerable distances along the floor and be ignited by a distant heat, spark or flame.

## The Law

Part 4 of the Alberta Fire Code states:

- Flammable liquids shall not be stored in or adjacent to exits, elevators, or principle routes that provide access to exits.
- Class 1A Flammable liquids, such as gasoline, cannot be stored in a dwelling unit.

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](mailto:aema@gov.ab.ca)

Last updated/reviewed December 1, 2009

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- Flammable liquids cannot be stored on an exterior balcony.
- No more than 50L of flammable liquids, of which not more than 30L shall be gasoline, can be stored in a garage or shed attached to a dwelling unit.
- For detached garages and sheds a high volume of flammable liquids is not permitted. Contact your local jurisdiction for maximum storage amounts.
- Your container must be ULC or CSA approved.

## Safety Tips

- Ensure that flammable liquid containers are certified and labeled by a recognized testing agency, such as the Underwriter's Laboratories (UL/ULC). Do not store flammable liquids in glass containers. Metal containers are best, but approved plastic containers are also available. Approved containers for portable use and storage will have welded seams, are vapour proof, with spark or flame arresters, and pressure release valves or spring closing lids with spout covers. Approved containers for bulk storage and dispensing will also have metal ground wiring to prevent static build-up.
- Regularly inspect and maintain containers and dispensing units for visible damage and wear. Ensure the above safety measures are in place and operational. Bulk Storage and dispensing drums should also have a safety drip can in place with a fire baffle and a bonding process and materials for dispensing.
- Store flammable liquids outside the home in a cool ventilated area, preferably in a locked, detached shed. Do not store in your home or vehicle.
- Make sure flammable liquids are stored and used well away from any heat source or flame. Locate operating heaters in garages high above the ground and never smoke around flammable liquids.
- When fuelling flammable liquid equipment, fuel outdoors in a well ventilated area away from combustibles. Avoid activities that could create an electrical charge while fueling.
- Never fuel flammable liquid equipment when the engine is running. Cool the motor before refueling.
- Before starting the motor of your flammable liquid powered equipment, move the equipment at least three metres away from the fuelling spot if possible. This prevents vapours from igniting.
- To transport flammable liquids in an automobile, use an approved container. Do not fill the container to the brim. Close the container tightly and transport with adequate ventilation. For example in the trunk of a car with trunk-lid propped open. Drive home directly and never store flammable liquids in a vehicle.
- Do not use flammable liquids to accelerate campfires or solid fuel barbecues. Flash-back may occur.
- Wear proper protective clothing when handling flammable liquids. Wear safety goggles, long sleeves and pants, and protective shoes. These will prevent the possible toxic effects of flammable liquids from harming the skin.

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- Do not wash clothes soaked in flammable liquids in the washing machine.
- Dispose of flammable liquid wastes promptly and properly.
- Be careful not to spill flammable liquids and immediately wipe them up if a spill occurs.
- Never use water to extinguish a flammable liquid fire. Water will spread the liquid while allowing the vapours to continue to burn.
- There are three types of extinguishers that may be used for flammable liquid fires: carbon dioxide, dry chemical and halon or halon substitute. Have a Type B fire extinguisher immediately available in case of fire. Follow the manufacturer's operating instructions.

## At the Service Station: Gasoline

Part 4 of the Alberta Fire Code states:

- You must turn off your vehicle's engine when refuelling; avoid smoking.
- Use only the refuelling latch on the gasoline dispenser nozzle, if there is one. Do not jam the latch open with an object to hold it open.
- To avoid spills, do not overfill your portable gasoline container or vehicle gas tank.
- Never fill a portable gasoline container when it is in the vehicle. Always place the container on the ground first.

In addition:

- Discharge any static electricity by touching metal on the outside of the vehicle away from the filling point before inserting and removing the nozzle from your vehicle.
- If a fire starts while you are refuelling the vehicle or a container, don't remove the nozzle from fill point or try to stop the flow of the gasoline. Leave the area immediately and call for help.
- After pumping gasoline, leave the nozzle in the tank opening for a few seconds to avoid drips when you remove it.
- Do not wash gasoline soaked clothes in the washing machine. Hang them outdoors to deplete the gasoline vapours.
- Never siphon gasoline by mouth. A drop of gasoline in the lungs can cause fatal chemical pneumonia.
- When transporting gasoline from the service station to your home for immediate use, use a safety can and fill it only half or three-quarters full. Transport the container in your trunk with the lid partially open. Never store gasoline in your car or truck.