

Storing Gasoline and Other Flammables¹

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Many of us must store some gasoline around our homes to operate lawnmowers, tillers, chainsaws and so on. But if stored improperly, a fire or explosion could result, destroying the house and causing injury or death. Gasoline is a product designed to fuel internal combustion engines. It is a highly volatile liquid, and its vapors can be ignited easily by a spark, flame or other hot object. When mixed with air in the right proportions, the vapor of one cup of gasoline has the explosive power of about five pounds of dynamite, enough destructive force to destroy any house or car.

Of course there are other dangers which can be presented by the improper handling and storage of gasoline and other flammable materials, such as using these materials in the wrong engine or appliance and poisoning. Let's look into some safe ways to handle and store gasoline.

PROPER CONTAINERS

How many times have you seen people pumping gasoline into milk jugs and the like and then putting it in the trunk of the car or the back of the truck to haul it home? Have you ever wondered how they make it home without setting the vehicle on fire, or how they keep the house from burning days later when the fuel expands, possibly rupturing the jug or blowing the top off? Milk jugs, anti-freeze jugs, glass containers and many 'gas cans' are not suitable for carrying or storing gasoline.

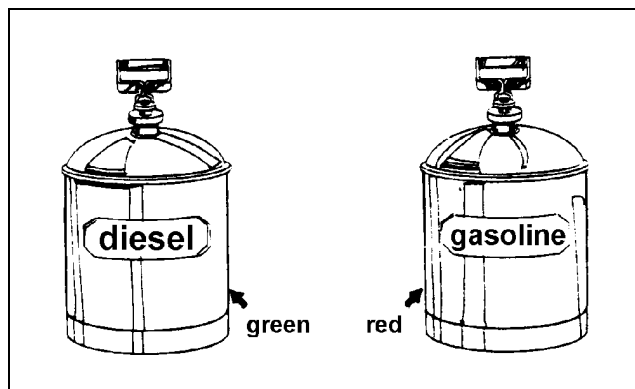


Figure 1. Carry fuel only in UL or FM approved containers clearly labeled and painted to identify the type of fuel.

Some plastics become brittle with age and are incompatible with gasoline. Other containers are not strong enough to withstand the pressures of expansion and contraction caused by temperature changes. In addition, some containers sold as gas cans usually cannot be sealed well enough to prevent spilling.

The best containers for handling gasoline are Underwriters Laboratories (UL) or Factory Mutual (FM) approved safety cans (see Figure 1). Safety cans are available in several sizes and have various mechanisms for opening the valve to pour the liquids. Funnel spouts can be added to make pouring easier and reduce spills. Although the cost is somewhat more than the cheap cans at the hardware store, they are much safer and will outlast several of the others. Both UL and FM have certain requirements which must be met before a safety

1. This document is SP288A, a series of the Agricultural Engineering Department, Agricultural Extension Service, University of Tennessee, Knoxville, Tennessee. Publication date: April 1986.
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can is allowed to carry their approval. The primary features of safety cans, as required by the testing laboratories, are listed below:

Stability: The cans must remain stable when filled and placed on a 30 degree slope.

Leakage: When a filled safety can is inverted, the valve cannot leak more than four drops per minute over a period of five minutes (UL) or 10 minutes (FM). This test must be passed before and after 5,000 (FM) or 10,000 (UL) normal opening/closing operations of the valve. In addition, the seams and joints are examined under pressure for leaks.

Strength: UL tests the body strength with a hydrostatic test of 25 psi. FM tests the strength of the spout and carrying handle by applying loads from 25-125 pounds on the pouring spout, and from 75-250 pounds on the handle, depending on the size of the can.

Fire Exposure: FM places a gas filled safety can in a large flat pan of water on which one inch of fuel is floated and allowed to burn (about eight minutes). The can must vent internal pressure during the fire exposure and retain the contents without spillage.

Flame Arrester: FM checks the flame arrester by passing natural gas through the screen and burning it on the other side. When the gas is shut off, the flame must not flash back through the arrester.

Abuse: FM requires a full can to withstand a three foot drop onto a concrete floor without sufficient damage to cause leakage.

Non Metallic Materials: If the can is not made of metal, additional test requirements must be met. The container must be compatible with various flammable liquids, impermeable to gasoline and it must meet puncture resistance requirements.

HAULING GASOLINE IN VEHICLES

Obviously there will be times when it is necessary to carry a container of gasoline in your car or truck, but try to keep it to a minimum. Hauling gasoline can be dangerous. When you must carry gas, secure the can so that it will not slide around or tip over if you must make sudden stops or turns. Remove the container as soon as you get where you are going.

WHEN YOU GET IT HOME

Storing gasoline and other highly flammable liquids at home is also dangerous if not done properly. The best way to store gasoline is in a well ventilated area separate from the house. The location should have no electrical equipment, open flames or other sources of ignition present. In addition, the location should be protected from the heat of the summer sun to keep evaporation to a minimum.

Do not store gasoline in the basement of your home or in the utility room. The furnace, water heater, clothes dryer or any of several other items could ignite fumes which may leak from the can and travel considerable distances. If you do not have a suitable storage area, consider building a cabinet outside your house for storage or purchasing a commercially available flammable liquid storage cabinet, available from safety equipment suppliers. In addition, never put gasoline or any other nonfood material in a container which resembles a food container. Keep gasoline and other dangerous materials locked up. These practices will prevent children from getting to the material and being accidentally poisoned.

Never smoke when handling gasoline and never refuel a hot or running engine. Take a break if you must smoke or let the engine cool down. If fuel is spilled, wipe it up immediately. Before starting the engine, move at least 25 feet away from the fueling area to avoid igniting fuel vapors which are heavier than air and may linger for some time.