

# Fuels and Fuel Storage, the Short and Long of It

I searched and searched from plain Google searches to searching on the various “Big Oil” sites and of course the library. I ran across all kinds of fuel storage information on gasoline, diesel and kerosene, etc.

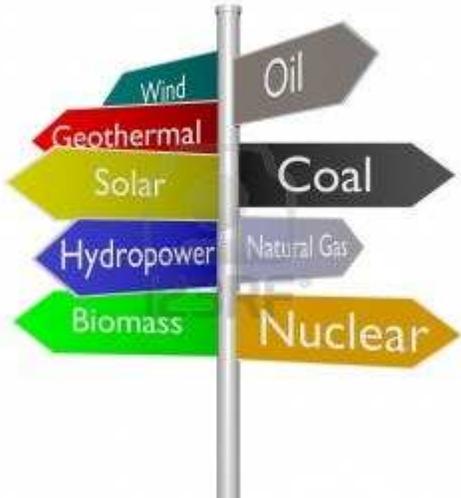


**I learned that the three common fuels we citizens purchase are made for seasons and regions.** They are blended to work best in the temperatures and season of the area and date they are purchased. Yep, this means if you buy fuel in your town in the summer it may not work right in the winter or if you get a fantastic deal in the next state, it may not work right when you are back home. *Go figure.* In fact, diesel fuel may cloud or gel. Gasoline may not vaporize well and cause starting problems. If you are storing fuel in a boat, RV, generator, tractor, auto, etc., it is best to leave the fuel tank full and use a commercial grade fuel stabilizer prior to equipment storage.

**Did you know that over 30% of the gasoline that we purchase today is oxygenated and when it is it doesn't store as well as non-oxygenated gasoline?** Jeeze, what will they think of next to get us to keep coming back! **How do you tell if this is the case with your gasoline?** Easy, look and see if it has MTBE or ETBE additives. If it does, it is oxygenated, so try to find gasoline that doesn't have these additives.

**I've also learned it is not wise to use gasoline with a higher octane than what the manufacturer calls for.** Higher octane gas can cause problems with many newer designed engines and engines with some kind of governed speed device installed. Now if you have an older classical car (yeah), this does not apply. In fact with these vehicles the fuels we have today often lack the octane that the engines need. If this is your case, several sites recommended something called “Octane Supreme”.

**Then I found out that Kerosene is what is added to diesel fuel for sub zero wintertime use** and at the truck stop they often call it #1 diesel fuel and the kerosene should be treated as diesel fuel using some kind of Fuel Treatment when storing to prevent algae growth (sludge).



**Kerosene** is one of the easiest fuels to store and is more versatile than most people think. It does not evaporate as readily as gasoline and will remain stable in storage with little to no special treatment. Many pre-1950 farm tractor engines were designed to run on kerosene and diesels will run on kerosene if necessary. Kerosene stoves and refrigerators are also available and would definitely be preferable to LP models from the safety standpoint.



**Coal** has an infinite storage life, *dah* it's been in the ground for millions of years.

 <b>Pellets</b>	 <b>Wood Chips</b>	 <b>Logs</b>
<ul style="list-style-type: none"><li>✓ Low moisture &amp; high energy content</li><li>✓ Cost effective</li><li>✓ Delivered in bags or blown into storage</li></ul>	<ul style="list-style-type: none"><li>✓ Burn very efficiently</li><li>✓ Cheapest wood fuel for automated boilers</li><li>✓ Most appropriate for medium/large scale users</li></ul>	<ul style="list-style-type: none"><li>✓ Burn very efficiently</li><li>✓ Many local suppliers</li><li>✓ Most appropriate for medium/large scale users</li></ul>

**Wood**, if kept dry and free from rot and termites can be expected to last almost forever as well.

**Alcohol (ethanol)**, if kept in an airtight container should also last about forever. It is not commonly considered a storage fuel, but here is the data on it for those who distill their own. Alcohol is as hygroscopic as it gets (absorbs water from air) and must be stored in a sealed container to prevent moisture contamination. It is about as volatile as kerosene and presents a unique problem; when ignited, it burns with an almost invisible blue flame. It may be best to store the raw material for stilling the alcohol and producing the fuel as needed, rather than producing a large quantity and storing it.



**Most all gaseous fuels or LP fuels like propane, butane and others have a near infinite storage life**, assuming the container doesn't spring a leak; they should last for a hundred years or better. **LP gas is one of the easiest fuels to store and also one of the most dangerous.** It is a highly versatile fuel which can be used to power internal combustion stationary engines, tractors and other motor vehicles, as well as for cooking and heating. LP has two serious drawbacks: First, it must be stored under pressure to remain a liquid; any leak (which may not be visible) could leak away all of your fuel without your knowledge. Second, LP is only slightly heavier than air and will disperse at the exact ratio to produce an explosion. It will also "puddle" in low spots, waiting for an ignition source. Make sure this storage area is a safe distance away and use gravity to your advantage.



**Biodiesel** has been gaining interest and market share as a blend component in home heating oil. In the past few years, Bioheat home heating oil has become more popular, particularly in the Northeast United States where the bulk of the country's heating oil users reside. However, biodiesel can act as a solvent. According to the National Biodiesel Board, biodiesel has a solvent effect that may release deposits accumulated on tank walls and pipes from previous diesel fuel storage. The NBB suggests that only fuel meeting the biodiesel ASTM specification be used. ASTM International has published a furnace fuel specification for Bioheat home heating oil (B5 in ASTM D 396 fuel).

**Diesel** fuel is very low on volatility; it is difficult to ignite on purpose and almost impossible to ignite by accident, stores the longest of the liquid fuels, with almost (get that *almost*) no special treatment and is becoming more and more popular among the self sufficient.

Two grades are available: #1 diesel which is old-fashioned yellow kerosene and #2 diesel which is the same thing as #2 home heating oil. (You may see literature to the contrary, but #2 diesel is #2 heating oil. Six in one hand, half a dozen in the other.)

Unique to #2 diesel is the fact that some paraffin wax is dissolved in the fuel and will settle out at about 20° F, clogging the fuel filter. This “fuel freezing” may be eliminated by adding 10% gasoline or 20% kerosene to the diesel fuel. Commercial diesel fuel supplements are also available to solve the same problem. *Diesel should always be filtered before use.*

Water in diesel comes essentially from two sources – condensation in the tank and direct absorption from the air. Diesel sludge or black gunk is actually anaerobic bacteria (algae) that eats the sulphur in the fuel and lives in water in the fuel tank. Left untreated, the sludge will grow until it fills the entire tank, ruining the fuel. **Stored diesel fuel should be treated with a biocide** like methanol or other fuel treatment as soon as it is delivered.

The federal government now requires that oil refineries dye **#2 heating fuel oil red**, **off-road #2 diesel fuel blue-green**, and highway use diesel is left **un-dyed** (so that roadside inspectors can determine that truckers are using fuel on which road taxes are paid . The government just has to get its monies). In the Northeast, oil heat is fairly widespread and #2 is frequently sold as “home heating oil” or simply “heating oil”. Farming communities will also have access to #2 as the diesel powered tractor has become standard equipment. When ordering diesel fuel, blue-green dyed #2 is most often available, designated as “heating oil or off-road diesel fuel only”.



**Gasoline** has the advantage of being a liquid at room temperature. **But it is probably the hardest fuel to store for any length of time.** It has a high vapor pressure (which means it evaporates quickly) and will go stale in a few weeks if not chemically treated. It does have a fairly high ignition temperature (about 1100° F) even though it does not need a large volume of heat to ignite. **Stored gasoline must be treated with a BHT additive** to keep it protected from moisture if it is to be stored for any length of time.

**Whatever fuel you store, it would be a good idea to monitor your fuel usage and plan your storage around a 90-day supply.**

Gasolines, diesel fuels and heating fuels are often supplied to customers who use their equipment only intermittently. For example, hospitals, telephone switchboards and microwave stations have standby power units to keep them going if a utility power failure occurs. In such cases the fuel may be stored for months, or even years, before it is used so it must be kept clean and viable to perform as expected.

In recent years, equipment and fuel advancements have been made in reaction to energy shortages and environmental concerns. These shifts have resulted in many benefits.

**However, the benefits carry costs that include increased prices and fuels that are less stable and more prone to contamination.** In a first quarter 2008 Petroleum Equipment Institute Journal article, Tim Brady of Algae-X International mentions that major storage tank contaminants include water, microbial growth, particulate matter and fuel breakdown byproducts. These contaminants cause increased wear and corrosion, clogging, degraded performance and equipment failure.

**There are a lot of variables that effect fuel storage. It is recommended to use a commercial grade fuel stabilizer on an annual basis** to extend the useful life of fuel for an extra year. This annual procedure can be repeated between 5 and 10 times, thus giving fuel between 5 and 10 years of storage life.

BatteryStuff.com recommends and sells commercial grade fuel treatments and additives. Power Research Incorporated (PRI) treatments preserve and restore fuel freshness.

- PRI-G for gasoline
- PRI-D for diesel, kerosene and home heating oil extends fuel storage life for all fuels

PRI recommends that for long-long storage, all fuels be re-treated annually at the normal dosage rate to ensure maximum freshness and performance. While laboratory tests show that PRI chemistry can preserve fuel freshness with just one treatment for 5 to 10 years, the length of fuel preservation is affected by the original condition of the fuel and the storage conditions. For maximum protection, follow the suggested re-treatment regimen.

PRI Fuel Treatments are capable of restoring and rejuvenating old fuels. PRI must be blended (shaken, stirred, or re-circulated) and left several minutes to several hours to restore fuel quality. In most cases the fuel will recover to engine manufacturers' fuel specification.

BatteryStuff.com stated that all manufacturers recommend the use of fuel stabilizers to protect fuel quality over the long haul. So I checked out Ford, GM, Cat, Detroit, Cummins, Mercury Marine, Briggs & Stratton and a few others and sure enough if the fuel is not going to be used consistently day after day, then they do recommend fuel treatments. You can find more detailed information on these products at BatteryStuff.com on the "Fuel additive" page (<http://www.batterystuff.com/fuel-treatments/>).

Australia has a treatment called FUELKLEENIK that can be found at: <http://www.fueltrat.com.au/>

**Remember that heat from sunlight will speed the oxidative process in stored fuel** and temperature swings will cause condensation to build, resulting in water accumulation in tank bottoms. Whatever tank you use, *make sure it is equipped with a valve on the tank bottom so that you can periodically drain any water accumulation.*

**Keep your tank topped off**, leaving about 5-10 percent of capacity free for headspace. The same holds true for steel drums. This minimizes condensation, yet gives room for the fuel to expand and contract with temperature variances.

**Invest in a good quality spin-on fuel filter that separates water.** Put this on the output line from the tank, whether you are using gasoline or diesel fuel. They make small ones for small tanks and they are commonly available at marine supply stores.

**Keep a good supply of spare fuel filter cartridges on hand.** Additionally, avoid the use of copper or any copper brazing on your tank. Minute particles of copper can contaminate the fuel and these few particles can actually accelerate fuel deterioration.



## Safe fuel handling

Regardless of the fuel in question, all liquid fuels should be handled in the same matter as the most volatile, which is either gasoline or LP gas.

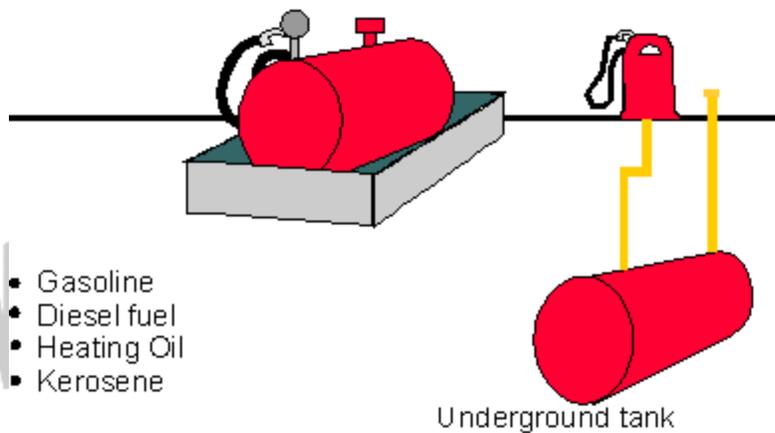
Fuel should be stored in an isolated area, downhill and downwind from any other buildings. Fuel vapors are heavier than air and will flow downhill.

LP tanks should be shaded, left in the open and not enclosed in any way.

Liquid fuel tanks can and should be stored in a well-ventilated building or open lean-to to prevent solar heating from evaporating the fuel.

If the storage location is permanent and you can afford it (all those environmental regulations will cost you big time!), consider using a buried tank. If set below the frost line, temperatures are stable at apx 55° F, which will inhibit evaporation. The tanks will be safe from everything, including stray (or aimed!) gunfire, brushfires and just about everything else except the EPA. If buried fuel tanks offend your sense of environmental responsibility, then consider an underground vault. This gives you the added advantage of being able to inspect the tanks from time to time. However if you go this route, be sure the vault is well ventilated.

Aboveground tank

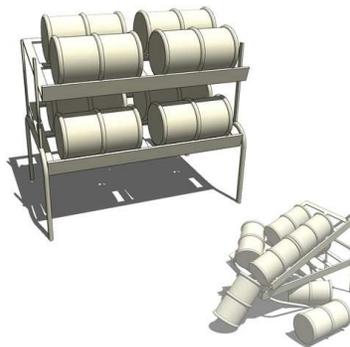


- Gasoline
- Diesel fuel
- Heating Oil
- Kerosene

Underground tank

### Examples of fuel storage tanks

Regardless of the tank location, a dry chemical or CO2 fire extinguisher should be hung on the outside of the building or near the pump.



**Any electrical fixtures should be “explosion proof”** (sealed) and wired in sealed conduit to prevent fuel vapors from coming into contact with electrical sparks.

**Prohibit smoking** or carrying of smoking materials within 50 feet of the fuel pumps.

**Electrical fuel pumps** should have a heat sensitive shutoff to stop the pump in the event of fire.

**Always shut down the engine of the machine being fueled.**

**Promptly clean up any spills** and be certain to use only the equipment that is approved for the fuel in question. (Some fuel pumps are approved for diesel only and are unsafe to use for gasoline.)



**Here are some other points to remember for your short or long term fuel storage:**

- Keep fuel in a cool area and avoid wide temperature swings; store downhill, downwind and well ventilated.
- Avoid wide temperature changes to the tanks. Either put in the shade or paint with reflective paint.
- When a large fuel tank is exposed to wide temperature swings, it should have a *2-way check valve* to relieve pressure and vacuum.
- Keep storage containers free of water and harmful metals.
- To keep fuel free of water: Above ground tanks should have no contact with the ground. Underground tanks should be set in soil and rock for improved water drainage. (Right, like us average citizens can afford underground storage tanks.)
- Be sure the tanks are clean. Most fuels produce microorganisms or algae when water begins to collect in tanks and can be a real problem. The fuel contamination plugs filters and causes fuel system corrosion. Biocides have been developed to kill and prevent algae, bacteria, and fungus in fuels.
- Storage Containers: Metals such as copper and galvanized/zinc should not be used in fuel storage. If you use plastic, fiberglass, or other epoxy composition tanks, be sure they will stand up under the long-term hydrocarbon contact; *they must be designated as liquid fuel containers.*
- When using fuels that have been in long term storage, don't just pump from the tank, especially avoid the very bottom of the tank and *always filter the fuel.*

- Set-up a storage maintenance plan that includes scheduled testing (get a test kit or eyeball it), assessment and periodic maintenance of the fuel storage system and not just the fuel-powered equipment. The plan should consider the conditions under which the fuel is stored, the types of stored fuel and the special requirements and usage of the fuel.
- **Check with your local Fire Department concerning any local ordinances** about how much gas or fuel you can store in your area, be it residential, suburban, urban or rural. In some places storage of large amounts of fuel in certain areas *can lead to criminal and civil penalties.*
- **ALWAYS keep any fuel away from children, pets and a safe distance from your most occupied structures.**
- Don't ever forget that by its very nature, **Fuel Storage is DANGEROUS.**



## Fuel storage methods

All liquid fuels use the same storage systems. LP gas is normally stored in pressurized tanks supplied by the LP dealer.

**The most basic fuel storage system is the common portable fuel can.** If you are still on the grid and have a job “off the property,” then this is a workable and economical method of fuel storage. A minimum of three cans will be required: one full at all times, one for use as needed, and one to be refilled at the first opportunity.

**Rotation of the cans will ensure some amount of reasonably fresh fuel at all times.** This storage system has the added advantage of portability in the event that the storage site must be abandoned. *Use only approved containers and use caution not to mix up containers.*



**The standard color code for portable cans is blue for kerosene, red for gasoline, and yellow for diesel fuel.** However, this is not cast in stone. Use whatever color scheme you like, but be consistent with it. Gasoline introduced into a diesel tank will make the diesel engine hard to start when hot. Gasoline in a kerosene heater will explode like a Molotov cocktail. Diesel #2 in a kerosene lamp will smoke, stink and soot up the globe. If you use all three fuels, it may seem like you are filling a fuel can every time that you go out. Delivered fuel is much more convenient and usually cheaper.



**The next storage system is the 55-gallon drum** used with a hand pump or horizontally on a rack. This is a highly flexible storage system, as drums may be added as needed to suit individual requirements. Most fuel dealers have a 100-gallon minimum delivery, so at least two drums will be needed. You can even load one drum in your truck, drive to the service station and fill it, then bring it home and pump the fuel into your storage drum. Drums are also portable enough in the event that the storage site must be abandoned. The only disadvantages are the negligible cost of the drums and that the drums will eventually rust and leak. Drums are commonly used for kerosene and gasoline storage. **Label each drum clearly** or color code them like the small portable containers, **if you are storing more than one type of fuel.**

**If you wish to store large quantities of fuel, then the built-for-the-purpose fuel tank is the system of choice.** Tanks are available new in capacities from 100 to 10,000 gallons in above ground and underground types.

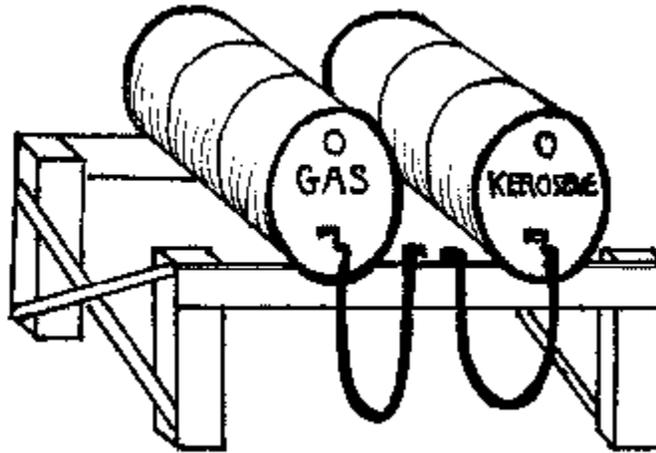
The most commonly used tank in the Northeast is the standard residential 275-gallon fuel tank. These are available new at plumbing and heating suppliers for about \$150. Used tanks are usually available free for the hauling, including whatever fuel is in them. According to Backwoods Home, an individual with a pickup truck and a reciprocating saw could make a fairly decent living removing old fuel tanks as homeowners change away from fuel oil to natural gas. This is about the dirtiest work available, and pays about \$100 per tank. The removed tanks could be cleaned up, painted and resold for \$50 or more.



Salvaged 275 gallon horizontal fuel tank with hand fuel pump and filter. This type of pump is suited for all fuels; current use is for diesel fuel.



**Fuel dispensing is a matter of choice.** An elevated tank needs only a valve and filter; gravity will do the rest. Most homesteaders prefer to use hand pumps for their kerosene and diesel tanks. Valves have been known to leak and vandalism is an unfortunate reality of modern life—especially if the vandal elects to open the valve on a tank of gasoline and follow it up with a lit match. **Hand pumps are safer and they are more easily secured if the tank must be left unattended.**



A horizontal drum storage system from Backwoods Home. Front and rear 2x6s are notched to hold drums and are bolted to 4x4 posts. Braces are 2x4s. This would be nice to have under a lean-to beside the tractor shed.

## Liquid Fuel Containers

Consider **portable nylon fuel tanks on wheels**--typically of 23-gallon size and available at marine supply stores like Boater's World and West Marine. Next option is **auxiliary tanks for vehicles and pickups**. Many truck supply companies manufacture tanks that fit in pickup beds.



One type of approved and properly marked portable fuel cans.

**Don't use "Poly" drums (like the ones for water storage) to store fuel!** "Poly" drums--the type sold for water storage--are made of high density plastic and should not be used to store fuel. Over time, the fuel will react with the plastic (a hydrocarbon) and gradually deteriorate the drum interior. **Consider 55-gallon steel drums.** These must be stored in a well ventilated area away from heat.

Large **surface storage tanks** with capacities of 250 gallons plus are the best and most expensive alternative. Many commercial fuel suppliers or "jobbers" that dispense gas, diesel and home heating oil, lease or sell these tanks. If they don't they can at least direct you to a good source. You may also wish to contact industrial tank manufacturers. Check the classifieds for auctions of industrial equipment. This is a great way to pick up tanks at bargain basement prices.



**If you live in an urban area**, small 5-gallon nylon or metal storage cans will have to do. **If you have access to, or own rural property**, then above ground storage is the answer. Place your tank in an outdoor cool, shaded area. Best yet, put your tank in a well ventilated indoor, covered (lean-to) location away from your main buildings.



Thirty dollar drum pump mounted on a 55-gallon drum of kerosene. This type of piston pump is not suitable for gasoline.

### Military Type “Jerry” Cans (thanks to SurvivalMonkey.com)



There are four types of Jerry Cans:

- USGI plastic military fuel can (MFC)
- NATO style fuel can
- USGI steel military fuel can (aka "Blitz" cans)
- French fuel can

Each of the above four cans have different pour spouts and only one of these pour spouts is compatible with 2 jerry cans.

Typically jerry cans *will not* safely and efficiently pour fuel without their corresponding pour spout, especially if you are refueling a vehicle that uses unleaded fuel. Therefore, it's important for you to know what kind of jerry can you have or plan to buy so that you get the correct pour spouts and pour spout replacement gasket.

In addition, there are 2 types of jerry can holders. The military designed holder will hold all types of jerry cans, both for fuel and water; the civilian version will only hold the Blitz style fuel can.

**Note:** California residents are no longer allowed to buy any of these jerry cans unless the corresponding spouts meet the new California Air Resources Board (CARB) spill-proof spouts. Although CARB spouts are available that fit some jerry cans, discussion of these CARB approved spouts is out of scope for this FAQ since these spouts are not a military standard.

### USGI plastic Military Fuel Can (MFC):

The plastic MFC is the current US military fuel can and like its brother, the USGI plastic military water can (MWC), is very tough and very durable. It's much lighter than the steel jerry can and rust and corrosion are not a consideration with the plastic can. Another advantage of the USGI cans is that plastic is much less noisier than metal cans.

These cans are made by the same USGI water can manufacturer, Scepter of Canada. Research noted that the sources for these new cans are: Brigade Quartermaster (BQ), Davidson Products and Generator Joe. With an average cost of \$39 with combination sales of both the can and spout for about \$45.

The main difference between the MFC and MWC is that the fuel can has three handles vs. water can's one and a different spout cap size and threads. Caps are *not* interchangeable between the 2 cans.

Used plastic MFC's can be purchased at Major Surplus for about \$10 each and are usually used for diesel fuel.

According to Scepter, **the gasket material is different for diesel vs. gas.** Although there are no MIL markings on them, they are made by Scepter and have the same dimensions, cap/spout interface etc. as the USGI MFC.

The USGI MFC cans meet the US Federal specification A-A-59592, Can, Fuel, Military: 20-liter Capacity, dated August 28, 2000. This specification supersedes the previous Military specification MIL-C-53109. Both of these specifications are in the public domain and should be available at any public library. See figure 1 for a drawing and dimensions of the USGI MFC.

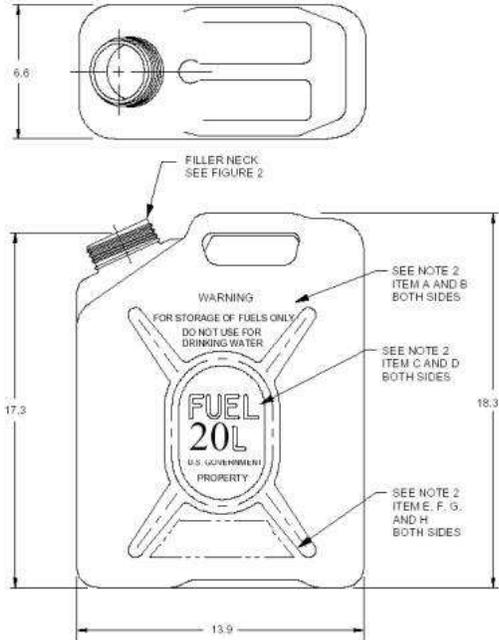


Figure 1 USGI MFC with dimensions (figure from A-A-59592)

This can has a 3.4 external (male) thread for the cap and designed to use a female threaded pour spout. This pour spout is not compatible with any other jerry can. The USGI MFC also has an internal female thread. This female thread pattern and size is compatible with the old Blitz style male threaded spouts. See figure 2 for the external thread and dimensions; note that the internal female threads are not shown on this figure.

Another advantage of the USGI MFC is that there are adapter cap assemblies available to turn the MFC into a spare fuel tank for your vehicle. These products are available from Davidson Products. A complete adapter cap assembly with hoses etc. costs apx \$80, or you can get the adapter cap itself without hoses for about \$25.

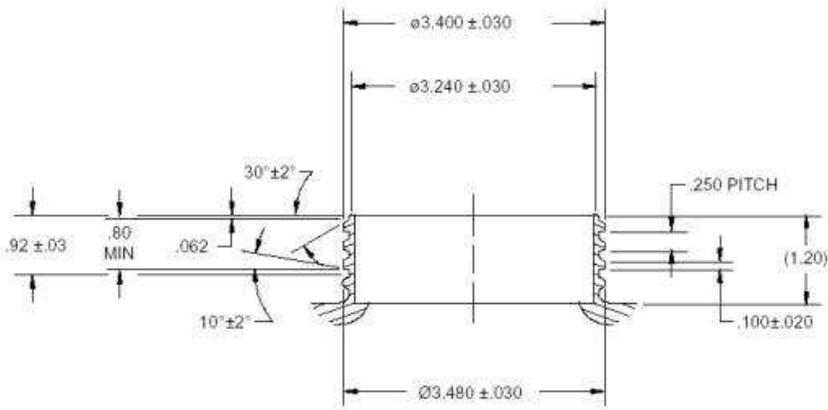


Figure 2 USGI MFC external pour spout thread and dimensions (from A-A-59592). The internal female threads are not shown. These internal threads are compatible with the male-threaded Blitz style pour spouts.

Figure 3 shows a picture of the USGI MFC and three pour spouts designed for them. *Note that for unleaded gas powered vehicles in the US, you will need the smallest pour spout.* Replacement gaskets are available directly from Scepter; gaskets for gasoline cans are about \$4.95 each with diesel gaskets are about \$1.95 each. The gaskets for gasoline cans are made of viton.



Figure 3, USGI MFC with 3 pour spouts. Note the female threads on the spout and cap. (photo courtesy of Scepter)

#### NATO Style Jerry Cans:

These steel cans are the current NATO spec cans used throughout NATO member nations in Europe. The NATO cans shape is similar to, but very slightly thinner, than the USGI MFC. The NATO cans will fit all military style jerry can holders.

This can is constructed of 2 sides welded together in the middle. The welded seam is leakproof unlike the early US steel jerry cans with their rolled seams. The design of this can has remained essentially unchanged since before WWII.

The main difference between these steel cans and USGI plastic cans, besides the material, is the pour spout. The NATO cans have a trapezoidal shaped locking cam cap and pour spout design. This design is very robust and leakproof, assuming the gasket is in good shape. The gasket for the NATO locking cap and the pour spout are the same. The NATO can gasket is different from the USGI MFC and the steel Blitz style can cap and spout gasket discussed below. See figure 4 for a picture of a typical NATO style can.



Figure 4 NATO Style Steel Jerry Cans. Note the trapezoidal can opening and locking cam mechanism. (photo courtesy of Major Surplus)

Used NATO cans are available on-line from several sources, notably Major Surplus and Cheaper than Dirt. Prices vary from \$10-\$15 each. CTD also has Israeli new cans for \$60 for four cans. *One thing to watch for when buying used cans is that the internal coating may be flaking off the insides.* If so, you'll either need to remove all of the flaking and replace it and/or take steps to not contaminate your fuel with the paint flakes when refueling. Major Surplus also have the pour spouts for about \$7 each plus the can cap and pour spout gaskets for \$.95 each.

Both the USGI MFC and NATO cans are available in 10 liter (2.5 gallon) size cans (see figure 5 for an example). These cans are the same dimensions for width and length but are not as tall. They will fit all military style can holders. They are useful for those that may have trouble moving or using the +40 lb. cans when full or don't need the full 20 liter capacity.



Figure 5 Wedco Jerry cans. Note the 10l (2.5 gallon) can on the lower right and the blue water can on the left; the yellow can is for diesel fuel. (photo courtesy of Back Country Trailers).

New NATO style steel fuel cans are available from Back Country Trailers and others. These cans are made by Wedco and they are very sturdy, very robust cans. Recent cost of these cans was \$41 each. These cans also will not leak when the gasket is in good shape. Back Country has the pour spouts for \$15 each and the gaskets for \$1.95 each, both are compatible with the NATO style cans. See figure 5 for a picture of the Back Country Trailer Wedco jerry cans. The Wedco cans have a gold colored anodized locking pin that ensures the cap stays locked. These locking pins are not on the NATO cans. The camming action of the cap doesn't necessitate this safety pin, but it does add confidence that your can won't inadvertently open under rough off-road conditions. See figure 6 for a picture of a NATO style cam locking pour spout.



Figure 6 NATO style pour spout. This is the Wedco blue can and pour spout for potable water. Just barely visible above the spout is the gold colored anodized cap locking pin unique to the Wedco cans. (photo courtesy of Back Country Trailers)

**USGI Steel Blitz cans:**

These cans are the former US military standard jerry cans. This can has been around for decades. They are made of steel with a vertical edge on the bottom. This civilian can is the same as the military can except for the color of the paint and the thickness of the metal. Military cans have thicker steel material and are olive drab in color. This can has a male threaded cap and it is different than either the USGI plastic can or the NATO/Wedco cans. See figure 8 for a picture of the Blitz style pour spout. The Blitz style pour spout, as noted earlier, will fit the female internal threads of the USGI MFC; the MFC spout will not fit the Blitz style can, however.

SurvivalMonkey stated that their experience "with the Blitz style cans is that they leak. They leak with the cap on and they leak when refueling."



Figure 8 Blitz style pour spout. Note the male threads and the screen on end of spout. This spout is too large for unleaded fueled vehicles. The male threads will also fit the USGI plastic MFC jerry can. Just barely visible is the black rubber gasket.

#### French Military Jerry Can:

SurvivalMonkey had no experience with this can other than the picture at the Cheaper than Dirt catalog. The CTD catalog clearly states that the French can pour spout is not compatible with the NATO cans that they also sell. These cans go for about \$10-\$15 used. These cans are not recommended due to being built by the French, no known pour spout available and no known cap and spout gasket available. **Not a recommended fuel jerry can.** See figure 9 for a picture of the French jerry can.



Figure 9 French jerry can. Note details of cap and gasket and its incompatibility with the NATO style jerry cans. (photo courtesy of Cheaper than Dirt)

Please see [http://www.survivalmonkey.com/portable\\_fuel\\_storage.htm](http://www.survivalmonkey.com/portable_fuel_storage.htm) for more details.

*“Forewarned, forearmed; to be prepared is half the victory.” Cervantes*

TNT

A 50 Something, homesteading, Prepper ;-)



Residential Oil Tank



2 in 1 Safety Tank



Cathodic Protection



UL 142 Skid Tank



## Saving energy, conserving water and reducing waste in the home

Call your local advice centre on **0800 512 012** to find out how you can start saving today.

**Install a water displacement device**  
Putting a water displacement device in your toilet cistern is a simple way to save water

**Invest in a water butt**  
Invest in a water butt and use the collected water on your garden or to wash the car

**Replace your old boiler**  
Swapping your old boiler for a new condensing one, with full heating controls could cut your heating bill by up to 40%, saving around £275 a year

**Reuse food**  
If everyone in the UK eliminated their food waste, the carbon dioxide saving would be the same as taking one in five cars off the road (source: WRAP)

**Take a shower**  
Taking a shower instead of a bath uses a third of the water<sup>1</sup> (source: Waterwise)

33% Walls<sup>1</sup>

**Upgrade to Energy Saving Recommended appliances**  
Upgrade to Energy Saving Recommended appliances and save up to £39 a year

**Fit thermostatic radiator valves**  
Control individual room temperatures with thermostatic radiator valves and prevent heating rooms not in use unnecessarily

**Insulate your water tank**  
Making sure your hot water tank and pipes have adequate insulation could save you around £50 a year

**Insulate your loft**  
By insulating the loft to the recommended depth of 270mm could save you up to £205 a year

26% Roof<sup>1</sup>

**Use Energy Saving Recommended lightbulbs**  
Replace all the inefficient lightbulbs in your home with Energy Saving Recommended ones and save around £50 a year

**Fit double glazing**  
Install Energy Saving Recommended double glazing and save around £140 a year

**Draught proof**  
Save around £30 a year by draught proofing doors, windows and letter boxes

**Recycle**  
the waste from all the bins in your house – not just the kitchen

18% Windows<sup>1</sup>

3% Doors<sup>1</sup>

12% Ventilation and draughts<sup>1</sup>

Savings quoted are for a gas heated semi-detached three-bedroom property  
1. Heat loss based on an uninsulated home

**Insulate your walls**  
Cavity wall insulation helps reduce the amount of energy you need to heat your home and save around £160 a year. For older properties with solid walls, why not insulate the inside/outside of the walls. It will save you between £470–£500 a year

**Turn appliances off standby**  
You could save around £37 a year by ensuring appliances are switched off and not left on standby



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