



STIHL

**FUEL GUIDELINES
FOR STIHL OUTDOOR
POWER EQUIPMENT**

Fuel plays an important role in everyday life, powering everything from your car to your outdoor power equipment. However, not all fuels are the same. Knowing a few facts about your fuel can keep the engines in your STIHL equipment running strong.

WHAT'S THE DIFFERENCE BETWEEN MY CAR'S ENGINE AND ENGINES USED IN SMALL POWER EQUIPMENT?

Cars have comprehensive fuel and engine management systems controlled by electronics and numerous sensors. You may not feel or hear anything going on when your car is running, but there are many measurements and automatic adjustments being made to account for things like humidity, altitude, temperature and the quality of the fuel being used.

On the other hand, garden power equipment like your STIHL tools are designed to be compact and lightweight. These tools don't have the space available for the equipment found in cars and so are much more sensitive to issues like fuel quality.

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FUEL STORAGE LIFE

You may not realise it, but petrol begins to decompose and break down into other compounds in as little as one month when stored. This is not normally an issue for cars since people drive their cars and refill their tanks on a regular basis.

Outdoor power equipment is often used far less frequently, sometimes as little as a few times in a year, and then can be stored away for weeks, months or years until it is needed again, and additional fuel is normally stored in containers that may only be refilled once or twice a year. This means there is a greater chance of the fuel breaking down and forming gum and varnish-like compounds that can easily restrict or block the tiny fuel passageways used in small engines.

Any fuel remaining in your storage can or left in your power equipment for more than 2-3 months can lead to expensive damage to your equipment's fuel system and engine. This is why STIHL recommends always using fresh fuel or specially formulated fuel mixes like STIHL MotoMix® in your equipment. STIHL MotoMix® is a high-grade, high-octane, ethanol-free premixed fuel containing STIHL HP Ultra synthetic oil. It is a pure and stable fuel mixture that can be stored for up to two years in the original container and is ideal for machines that are used infrequently.



Varnish in Carburetor



Carburetor damage from stale fuel

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WHAT YOU NEED TO KNOW ABOUT ETHANOL

- Ethanol gasoline blends have different characteristics that need to be considered when fueling your STIHL power equipment.
- Some of the petrol sold throughout Australia contains ethanol. The maximum ethanol content recommended for use in outdoor power equipment is limited to 10% (E10). Most small power equipment engines are designed to use no more than a 10% ethanol blend.
- If you are not sure of the ethanol content in the petrol you are purchasing, ask the station attendant. If they are unsure, purchase your fuel from another station that offers petrol with no more than 10% ethanol.
- Ethanol is a stronger solvent than petrol and can soften, swell and damage some rubber and plastic components that petrol alone would not harm.
- The solvent properties of ethanol can also dissolve varnish and gum deposits that have previously formed inside fuel storage cans, fuel tanks or the equipment's fuel system. When these deposits become dislodged, they can mix with the fuel and plug small openings and filters within the fuel system and cause costly damage to your equipment.
- Ethanol easily attracts and mixes with water, so any moisture in the air can be absorbed by the ethanol petrol blend. This moisture can corrode metal components in the fuel system leading to expensive repairs.
- If enough water is absorbed, the ethanol and water will settle out of the petrol blend. The resulting ethanol and water mixture is heavier than the petrol and settles to the bottom of the equipment's tank or your storage can, leaving a layer of petrol floating on top.
- With the ethanol separated from the petrol, the layer of petrol now has a lower octane level than the original ethanol petrol blend. If you originally bought 91 octane fuel, the petrol layer in your storage container now has a lower octane than what the engine manufacturer intended to be used, resulting in unstable engine operation, power loss and major engine failures.
- This separation of ethanol and petrol can also occur inside the fuel tank of your equipment. Since the fuel is often drawn from the bottom of the fuel tank, the engine is drawing in a mixture of ethanol and water with no petrol and, in the case of 2-cycle engines, also has no lubricating oil. This ethanol/water mix is thicker than petrol and cannot easily pass through the fuel system. This can result in hard starting, unsafe high idle speeds, stalling and can ultimately lead to engine damage or fuel system failure, resulting in costly repairs.



Damage to carburetor diaphragm



Left: Plugged fuel filter screen

Right: Clean fuel filter screen



Corrosion inside carburetor



**Water and ethanol (bottom layer)
separated from gasoline (top layer)**

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GUIDELINES FOR USING E10 PETROL IN STIHL POWER EQUIPMENT

When it comes to your outdoor power equipment, STIHL does not recommend using fuel with an ethanol content of more than 10%. Doing so may also void your STIHL Limited Warranty.

If the proper precautions are taken, petrol containing a 10% quantity of ethanol can safely be used in your STIHL products.

- Use a minimum of 91 octane petrol and always use fresh fuel. Only buy enough petrol that you can easily use within one month.
- For air-cooled, two-cycle engines, use a quality oil mix that meets the engine manufacturer's recommendations. All STIHL oils are designed to readily mix with petrol containing 10% ethanol. STIHL HP Ultra Oil is especially suited for use with E10 petrol.
- Shake your petrol can well when first mixing the oil to thoroughly disperse the oil in the fuel mixture.
- Fuel containing ethanol has a tendency to 'lean out' the carburetor mixture when compared to fuel without ethanol. Make sure your dealer is aware that you are using fuel with ethanol in it so that they can ensure the carburetor is adjusted properly for the fuel that is being used.
- Properly store your equipment. If your equipment is not going to be used for a couple of months, the remaining fuel in the machine should be drained from the tank and disposed of properly. To ensure that any remaining ethanol is removed from your equipment, STIHL recommends adding a small amount of STIHL MotoMix® premixed fuel to the tank and running the engine for a few minutes to circulate the fuel through the carburetor. This will flush any of the original fuel out of the system and protect the fuel system components from water absorption and fuel decomposition. If the machine is going to be stored for several months, it is good practice to empty the STIHL MotoMix® from the machine's tank, then start the engine and run at idle (do not rev up the engine) until the machine runs out of fuel.
- Equipment should be serviced regularly by your STIHL dealer. Items such as fuel filters, fuel lines, carburetor diaphragms and spark plugs should be checked and replaced if necessary, as part of a normal engine tune-up.

By following these guidelines and suggestions, your STIHL equipment should perform the way it was designed and help you get the job done. For more information and tips to help you get the most out of your STIHL tools, visit your [local STIHL dealer](#) or our [Blog](#).



Corrosion from water inside carburetor



Seized piston



Use STIHL MotoMix®