

Ethanol – The Good, The Bad & The Ugly

Why is Ethanol being added to gasoline?

Henry Ford originally designed the venerable Model T to run on Ethanol with gasoline as a secondary fuel.

Amendments to the Clean Air Act of 1990 required that gasoline be oxygenated (have oxygen added) in certain high pollution areas.

Originally, MTBE (methyl tertiary butyl ether) was used to meet the federal mandate. When that was found to contaminate ground water, Ethanol became the substitute. E10 fuel contains 10% ethanol and 90% gasoline. Oxygenated blends produce less pollution but provide lower fuel mileage.

Today, over 45% of gasoline in the U.S. contains Ethanol and it is expected to grow about 7% a year.

What Problems are caused by Ethanol in Gasoline?

Gasoline is designed for primary use in cars and trucks. Other than lower fuel economy, there are relatively few problems in these vehicles.

The major problems are found in boats, snowmobiles, ATVs, motorcycles and outdoor power equipment. Most of these are subject to periodic use and/or seasonal storage. Gasoline deteriorates after 30-60 days which causes engine deposits and gumming of carburetors and fuel injectors.

Upon storage manufacturers generally recommend draining all gasoline, or treating it with a fuel stabilizer. As it is nearly impossible to completely empty a built-in tank safely, the best solution is to top off the tank to 95% full (to allow for expansion). This is recommended by the National Fire Protection Association to minimize explosive vapors. The fuel should then be treated with a stabilizer.

What other Problems are caused by Ethanol?

- 1) The presence of Ethanol can cause deterioration of several fuel system components including hoses, squeeze bulbs, plastic fuel tanks, fuel pump and head gaskets. Such deterioration in turn can result in plugged fuel filters and pumps. This can occur in pre-1991 engines. Additives will not prevent this problem. Failed components will have to be replaced with Ethanol compatible components.

- 2) Fuel filters can get plugged by debris caused by Ethanol cleaning dirty fuel systems. A fuel treatment containing cleaning agents will allow the dirt particles to pass through the system.
- 3) Carburetors and fuel injectors can be clogged by a gel like substance created when a gasoline/BTBE blend in a storage tank is not completely cleaned out prior to being filled with a gasoline/ethanol blend. Additives will not prevent these problems.
- 4) A major problem is Phase Separation created when water gets into the fuel causing the water/ethanol mixture to sink to the bottom of the tank where the fuel pick-up is. Engines cannot run on an alcohol/water blend and will seize. Two cycle engines particularly have this problem since the proper lubricant will not be present in the gasoline. While a properly formulated additive may prevent the separation by removing excess water, it will not cure the problem once it exists. The best defense is to keep the tank as full as possible. Moisture condenses in the empty space in the tank, so reducing the amount of air in the tank reduces the amount of water that can enter.
- 5) Ethanol can etch aluminum, magnesium and die-cast zinc causing fuel injectors to plug and/or damage pistons and fuel pumps. A properly formulated fuel stabilizer will prevent corrosion.

How is Marine STA-BIL different than original STA-BIL?

Original STA-BIL is formulated to keep fuel fresh for 12 months or more, preventing gum and varnish deposits and eliminating the need to drain fuel before storage. Recently STA-BIL has been upgraded and is now recommended to be used at every fill-up to protect against corrosion caused by today's Ethanol-blended gasoline.

MARINE Formula STA-BIL contains double the corrosion inhibitor than in original STA-BIL, which is important in "open" fuel systems, such as those found in boats, lawnmowers and snowmobiles. Open fuel systems vent to the air and continually attract water from the air. This became especially true since the introduction of ethanol blended gasoline that attracts water. When water is introduced into your fuel system it can cause corrosion damage to fuel tanks, fuel lines, carburetors and injectors. MARINE Formula STA-BIL will protect your engine against these damaging problems.

MARINE Formula STA-BIL also contains four times the fuel system cleaner than original STA-BIL; it's a complete fuel system cleaner. Ethanol blended gasoline acts as a solvent on accumulated deposits in marine fuel tanks, fuel lines, carburetors and injectors. This solvent loosens deposits that can cause engine performance problems, such as hard starting, rough running, over heating and stalling. MARINE Formula STA-BIL cleans up these power-robbing deposits.

In addition, pumped gasoline starts to deteriorate immediately. An additional benefit of MARINE Formula STA-BIL is that it keeps gasoline fresh for up to 12 months in the gas tank. This eliminates the need to drain prior to storage.

For further information see www.goldeagle.com or phone (800) 621-1251 and ask for technical services.