



NATIONAL BOATING FEDERATION



A FEDERATION OF NATIONAL, REGIONAL & STATE BOATING
ORGANIZATIONS REPRESENTING AMERICA'S BOATERS

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OUR POSITION STATEMENT REGARDING ETHANOL IN MARINE GASOLINE

First, it is a safety issue for those boats equipped with fiberglass gas tanks, generally those made before the mid-80's. Ethanol tends to dissolve certain resins, which then find their way through the engine intake and coat intake valves, which makes them stick causing bent pushrods or worse. More important is the possibility of a gas tank degrading to the point of leaking. As anyone knows, gasoline vapors in the bilge is an explosion waiting to happen. In addition to boats such as *Hatteras*, *Bertram*, and *Chris Crafts* made before the mid-80's, some smaller boats, notably *Boston Whaler Montauks*, have small above-deck fiberglass gas tanks. Some of these tanks have been reported leaking as well. Any boat with a fiberglass gas tank that was not specifically designed for ethanol should be suspect. There are some resins that are immune to ethanol (some vinyl esters, for example) and are used in underground gasoline storage tanks, but most resins, including common epoxies are not able to withstand contact with ethanol. Though it's no comfort to those with fiberglass gas tanks, fortunately, only a very small percentage of boats have them.

Second, is that the addition of alcohol to gasoline adversely affect the volatility of the fuel, which could cause vapor lock, causing a marine engine to fail to start when called upon to do so, or to stall, both potentially dangerous situations.

Third, ethanol may also affect many plastics and rubber. Alcohol present in automobile gasoline is not compatible with the rubber seals and materials used in some boats, however, most fuel hoses made after 1984 and marked with "SAE J1527" are designed to withstand ethanol. Some older fuel filter bowls made of plastic may be affected and some seals, o-rings, or plastic parts could be damaged. This damage creates deposits that tend to clog marine fuel systems, causing possible engine failure at inopportune times.

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Fourth, is phase separation, which happens when the fuel is cooled as a result of the vessel operating in winter weather. Ethanol absorbs water readily and as little as 0.5% water will cause a phase separation. When the alcohol separates from the gasoline, it may carry water that has been in solution that cannot be handled by the sediment bowl or fuel filter. This may affect performance and drivability. A water/ethanol mixture, being heavier than gasoline, will sink to the bottom of the fuel tank, leaving a lower octane gasoline layer on top. This lower octane gasoline can cause performance issues with four-stroke engines, but can cause damage to two-stroke engines due to a lean condition. In addition, two-stroke engines may be damaged if a quantity of water/ethanol is ingested since the proper lubricating oil won't be present. Keeping water out of the tank is obviously important.

Fifth, and another problem with the introduction of ethanol comes from mixing gasoline with MTBE and gasoline with ethanol, especially in the presence of water. This chemical soup is believed by some manufacturers to create a gel-like substance that clogs passages in carburetors, most notably in outboards. Stalled engines and shop bills are the result. Fuel injected engines seem to suffer much less than carbureted ones.

When ethanol is initially used, the boater may experience more frequent fuel filter replacement as ethanol's superior solvent properties cleans old varnish and other contaminants from the tank. Gasoline with ethanol also typically delivers slightly less fuel economy due to its lesser energy value.

WHEREFORE, the National Boating Federation finds that the use of ethanol in gasoline used by marine engines poses a major hazard and recommends that ethanol-free gasoline be made available to recreational boat operators.