

Reducing the Damage of Ethanol Fuel

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Boaters can help prevent the damaging effects of ethanol fuel by following several simple guidelines.

1) **Use the fuel within three months of purchase.**

Water can contaminate ethanol fuel, reaching a critical stage after about three months, under some conditions. This phenomenon is known as phase separation. The time can vary, depending on weather, mixture ratios, placement of tanks and solvents present in the fuel. Ethanol, an alcohol that is derived primarily from corn, absorbs moisture. Moisture promotes rust and reduces the fuel efficiency of an engine. The irony here is that the federal government mandated the use of ethanol fuel to reduce consumption of oil-based gasoline.

Boaters are familiar with the ravaging effect of electrolysis—the passage of ions in water. The application of zinc disks to props, rudders, stern drives, and drive shafts helps protect against electrolysis. Ethanol fuel, when contaminated with water, fosters electrolysis in fuel systems where electric pumps are running submerged in gasoline. Gasoline will not conduct electricity, but mixed with water it forms a path across terminals which in turn eats away at internal wires and connectors. Ethanol based fuels aka oxygenated fuel contain extra amounts of oxygen to meet new air quality standards and will break down faster than fuel in the past.

2) **Change/clean fuel filters frequently.**

Solvents in ethanol fuel tend to attack fiberglass, plastic, and rubber. The resulting tar-like residues can clog small metal fuel filters associated with fuel pumps and carburetors and can greatly reduce the efficiency of even large, paper filters that serve as the first line of defense right at the tank. Dirty filters also increase the chance of residues gumming up fuel pumps and carburetors, which in turn leads to a lean running condition, possibly resulting in engine damage.

3) **Add fuel stabilizers.**

The market is replete with stabilizers for ethanol fuels. The purpose of most additives is to seal the surface of the fuel and resist evaporation of the lighter components and prevent surface contact with the atmosphere. Additives are a temporary fix, as time will still cause the fuel to go down hill. Stabilizers will only extend the life of fuel, but not prevent it from breaking down over time.

Periodically inspect/replace fuel lines.

Again, solvents are the culprits. They compromise the integrity of fuel lines, restricting flow, and they decompose fuel tank pickup tubes, leading to loss of fuel supply to the engine. New fuel lines resistant to deterioration are available from Mercury Marine, marked “USCG Type B1-15-SAE J1527 EPA Compliant.” The line is gray to resist damage from sunlight. A good rule of thumb: If a fuel line leaves residue on your hands, change the line.

4) Replacing fuel tanks.

Metal tanks and ethanol-safe plastic eliminate a major source of tar-like residues.

5) Write to your local, state, and national representatives.

Is economy of fuel use in marine engines worth the damage associated with ethanol fuel? A strong argument can be presented that repair and replacement of damaged parts actually require, in the long run, consumption of more energy than is saved.

Ethanol fuel, blended at a 9-to-1 ratio, that is, 10 percent and therefore commonly known as E-10, dates to the energy crisis of the late 1970s and early '80s, when international tensions restricted oil supply. Indications are that the federal government will order the use of higher ethanol percentages in fuel for marine and vehicle engines, exacerbating an already bad situation.

A common fuel for marine engines is an 87-octane, ethanol-gasoline blend.

Recommended for all modern marine engines, fresh 87-octane burns clean and generates the horsepower set by the engine manufacturer. Ethanol fuel also is available in 89 octane and 93 octane. The higher octane is necessary only if specified by the engine

manufacturer. Octane, a rating of resistance to fuel knock, appears to have no affect on fuel deterioration during storage.

Boaters frequently talk of siphoning out old ethanol fuel and disposing of it. That's wasteful. It's even silly. Boaters should "dispose" of the old fuel by firing up the engines and finding the spot where stripers are hitting, or packing a sandwich and soda for lunch among the coves, or cruising in search of the brown pelican. So, what are you waiting for? Go boating before that fuel goes bad.

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