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# ETHANOL AND MARINE ENGINES

**Boat owners need to be knowledgeable in the properties and effects of *ethanol* *when using E10 Fuels.***

**Marine engines require *special* precautions to prevent water contamination *from alcohol fuels*.**

E10 ethanol gasoline is hygroscopic (will attract and absorb water) and can absorb 50 times more water than conventional non-alcohol gasoline.

**Damage from ethanol's amazing water absorbing qualities is most prevalent in boating, to engines that exist in (a) water environment, requiring extra care and monitoring.** Boat engines are exposed to the most humid (summer) months where moisture can be absorbed into an unsealed fuel system.

At around 100 days, under ideal conditions (mid-temperature and high humidity), ethanol blended fuels will enter phase separation (PS) and will absorb enough moisture to cause contamination (WC). When E10 fuel experiences water contamination, OCTANE will decrease up to 3 points, sometimes referred to as "lean fuel" which can cause internal engine damage to valves.

## NOTE: It is recommended that fuel filters be changed frequently

## . . AT TEN HOUR INTERVALS!!

When using E10 ethanol alcohol fuels, special precautions are necessary with marine engines, because:

- E10 and E85 ethanol blended fuels have an affinity to absorb significant amounts of water, very quickly, compared to conventional non-alcohol gasoline.
- Ethanol alcohol is a great solvent and cleaner, that can dissolve engine parts (rubber, plastic, aluminum, and certain fiberglass tanks), dry out hoses, remove lubrication, and more.
- Engine seals and hoses shrink, swell, or lose strength when exposed to ethanol reformulated gasoline.
- Water is actually dissolved in an ethanol blended fuel and phase separation occurs much sooner. With MTBE, ETBE, lead and other chemicals used in the past to oxygenated gasoline, this did not happen
- The shelf life of ethanol blended fuels is much lower due to its water-absorbing and corrosive qualities. Replacing gasoline every 2 to 4 weeks is usually recommended with E10. ***NINETY DAYS IS THE MAXIMUM SHELF-LIFE RECOMMENDED!!***

This presents a serious concern with the volatility of fuel after winter layup, when the octane can drop as much as 30%. There are two elements of *'expert'* advice for consideration. The first urges that fuel tanks should be drained and the engines run (dry) to purge the entire fuel system, to be refilled with fresh fuel in the Spring. The second suggests that the fuel tanks should be filled to capacity and a stabilizer added in the Spring. Although the latter is in keeping with NFPA recommendations, we urge the former.