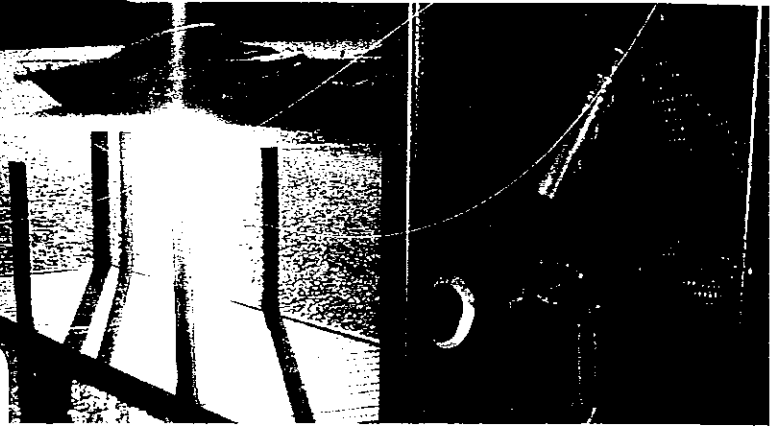


E10 and the marine industry



What is ethanol?

Ethanol is an alcohol that is produced primarily from sugarcane and grain grown in Queensland. Ethanol is blended with unleaded fuel for use in motor fuels, and can decrease fuel costs and harmful carbon monoxide emissions while increasing fuel octane ratings. In short, ethanol is a clean-burning, high-octane fuel.

The most common ethanol-blended fuel is:

E10 = 10 per cent ethanol
90 per cent unleaded fuel

Why use E10?

It has been projected that fossil fuel sources will be depleted within the next 50 years. Unlike fossil fuels which take thousands of years to form, ethanol is completely renewable and therefore a long term alternative.

E10 in Queensland

By 2010 it will be compulsory in Queensland that the equivalent of five per cent of the total regular unleaded fuel available contain ethanol. As it is expected that fuel companies will continue to blend 10 per cent ethanol, it is likely that non-blended regular unleaded petrol will still be available in the market place. The Queensland Government will not require premium unleaded petrol to be blended.

What are the benefits of E10 for Queensland's marine industry?

Better for the air and our waterways

Ethanol is an oxygenate, which means it contains oxygen. This is why fuel blended with ethanol burns cleaner, more completely and more efficiently.

Ethanol reduces particulate matter emissions.

10 per cent ethanol-blended fuel reduces carbon monoxide emissions by 30 - 40 per cent.

Choosing a 10 per cent ethanol-blended fuel results in a three to five per cent reduction in greenhouse gas emissions on a whole of life cycle basis, when compared to conventional unleaded petrol.

Both late model two-stroke and four-stroke engines will experience little or no decrease in performance with an E10-blended fuel.

Most major engine manufacturers have declared ethanol as safe for your motor and better for the waterways and the environment.

What are the potential risks of using E10 in boats?

Although E10 is a positive step towards creating a cleaner environment by reducing carbon emissions, boat owners need to be aware of some of the risks associated with using E10 in their engine. These are outlined below.

Phase separation — Ethanol has the ability to attract and absorb water while safely burning through the engine. However, if ethanol becomes saturated with water — which can happen when it sits for long periods or in humid environments — the ethanol separates from the fuel, forming two separate layers. The ethanol layer sinks to the bottom of the fuel tank and cannot be re-mixed. When sufficient ethanol builds up in the bottom of the tank the pickup then carries a dose of near 100 per cent ethanol through the fuel system. This is a risk as the engine is designed to cope with no more than 10 per cent ethanol.

Solvent nature of ethanol — Ethanol is a stronger solvent than fuel, which has the potential to loosen rust and debris that may lay undisturbed in your fuel system. Ethanol may also remove some plasticisers and resins, effectively dissolving and weakening fibre glass fuel tanks. These dissolved compounds pass through most filters and are known to cause engine damage.

The solvent may damage paint and gel surfaces — Spills must be washed off with soapy water immediately.

Ethanol is linked to increased corrosion of aluminium fuel tanks — Due to ethanol's capability to conduct electricity, it can also cause galvanic corrosion. The principal issue with the corrosive effect is the possible reduction in structural integrity of the tank. This could cause leaks to go un-noticed, particularly for those tanks below decks. Many late model tanks are compatible with the ethanol-blended fuels, however the manufacturer should be consulted to ensure that all components are safe.

The use of E10 in marine outboards is not mandatory.



Guidelines for effective use of E10 in boats

Check for the presence of water in your fuel tank when switching over to an E10 fuel for the first time. If any water is present, dry the tank completely. Fill your tank as full as possible (95 per cent capacity or more) to limit the flow of air in and out of the vent. This reduces the chance of condensation occurring, which can add water to the tank. It is critical to minimise the amount of water in the tank, as too much water will cause phase separation and can lead to stalling and engine damage.

Do not overfill as any spill or leak through the breather will damage paint surfaces. Wash off any spill with soap and water immediately.

If phase separation occurs, it is necessary to completely remove all fuel from the system and replace the fuel before continuing operation. This involves opening the tank to remove any fuel at the bottom. Be aware that pumping fuel out of the pickup will still leave phase separated ethanol in the bottom of the tank.

Inspect your fuel filter frequently. Ethanol is a clean fuel that acts like a solvent, which may loosen particles that commonly settle in fuel tanks and lines over time. When you first change to ethanol, you may need to change the filter after the first tank and more frequently until the old deposits are removed. Stock your boat with extra filters and place the old filter in a metal container to prevent any spillage on the deck. Know how to replace the filter



in case it clogs while you are on the water. Replace the fuel filter regularly when burning the first several tanks of E10. A 10 micron filter is recommended.

Frequently inspect the complete fuel system including hoses and connections. In boats older than 20 years, using E10 may be detrimental to plastic and rubber components.

Most manufacturers of late model marine motors approve the use of E10 in their equipment without voiding the warranty.

Follow proper engine maintenance guidelines for your boat.

Check with your boat manufacturer if any additional precautions are required for E10 usage for your specific boat model.

Tips for extended storage

Fuel distributors recommend that E10 be stored for no more than two weeks (less in warmer climates). When preparing to store your boat for extended periods of time (more than a month) it is recommended to completely remove all fuel from the tank.

If it is difficult to remove the fuel, maintaining a full tank of fuel (at least 95 per cent) with a fuel stabiliser is recommended. A fuel stabiliser is essential when storing any fuel for an extended length of time as it acts as an antioxidant and extends the life of the fuel.

Boaters with fibreglass fuel tanks

Owners of boats with fibreglass fuel tanks can experience significant difficulties with E10. This is due to the solvent characteristics of ethanol. Some early fibreglass fuel tanks were not built to withstand the effects of ethanol-enriched fuel. However, there are some fibreglass tanks that are able to withstand the characteristics of E10. It is recommended you consult your boat manufacturer prior to using E10.

Avoid spills on fibreglass or painted surfaces. If E10 is spilled remove immediately.

Tips for marinas

Manufacturers recommend that marina fuel tanks be less than 20 per cent full before adding the first load of E10. This is common practice in the oil and fuel industry as it minimises the reactions between fuel blends with different chemical content.

Where can I purchase E10?

A range of ethanol blended fuels under various brand names are available from many service stations in Queensland. Check with your preferred service station for their brand of E10.

You can also visit www.ethanol.qld.gov.au for a current list of retailers selling E10 fuels in your area.