SERVICE INFORMATIE

ONDERWERP:	INFO NUMMER:	DATUM:
Gebruik van E10 benzine in Yamaha motorfietsen en scooters	MC-11-13 **BLAD:** 1/5	12-07-2011
MODEL:	**MODELCODE:**	**FRAMECODE:**
Algemeen	Algemeen	Algemeen

Vanaf 1 januari 2011 bieden de pompstations in alle EU landen de nieuwe benzinesoort E10 aan. Na Frankrijk zijn begin 2011 ook tankstations in Duitsland overgestapt op de **nieuwe** brandstof **E10**. Daar veel motoren in de vakantieperiode er op uit willen trekken informeren wij u bij dezen over het gebruik van E10-brandstof.

De huidige benzinesoorten bevatten nu 5% bio-ethanol. De E10-brandstof die vanaf 1 januari wordt aangeboden, bevat 10% bio-ethanol. Pompstations die deze E10-brandstof aanbieden, blijven ook de reguliere Superbenzine met 5% bio-ethanol leveren. Voor Super Plus-benzine verandert niets, het gehalte bio-ethanol blijft 5%. Voor Yamaha motorfietsen, motorscooters en scooters vanaf modeljaar 1990 kan E10-brandstof gebruikt worden. Echter is het wel zo dat het gebruik van E10-brandstof nadelen met zich meebrengt, zoals het aantrekken van water, oplossen van harsen welke in kunststof brandstoftanks gebruikt worden en verouderd de brandstof sneller. Deze zaken worden hieronder toegelicht in de vorm van Q & A (vraag & antwoord). In het kort komt het er op neer dat Yamaha normale 95 octaan (sommige modellen hebben 98 octaan nodig) benzine aanbeveelt, maar dat vanaf modeljaar 1990 kan E10-brandstof gebruikt worden.

Q and A

What is E-10 fuel?
E10 fuel is a blend of ethanol (10%) and gasoline (90%).

Are Yamaha engines compatible with E10 fuel?
Motorcycle fuel systems can still be affected by: water, dissolved gum, varnish, corrosion particles, and dissolved resins that E10 fuel has cleaned from the distribution system and your motorcycle's fuel tanks.
Yamaha recommends to use regular 95 octane (some models need 98 octane), but bio-ethanol gasoline can be used at motorcycles and scooters sold at 1990 and after, if the contain level is 10% and less.

Is it possible to use two-stroke oil with E10 fuel?
Yamalube oils are compatible with E10 gasoline.

What are the negative properties of ethanol?
Ethanol has several properties that contribute to fuel system issues.

- Ethanol is a strong cleaner (solvent) drying agent and cleanser. It will clean or dissolve some parts of, and deposits in, fuel storage and fuel delivery systems, including some fuel tank materials. The dissolved material can clog filters or pass through and leave deposits on fuel injectors, fuel pumps, fuel pressure regulators, carburettor jets, intake tracts, valves, and valve guides
- Ethanol is hygroscopic. It will attract water (e.g., it has a strong attraction to moisture).
- E10 fuel's usable life span is less than the normal fuel, which can be a problem, when taken into account the length of off season motorcycle storage.

S.V.P. DEZE INFORMATIE LATEN CIRCULEREN IN HET BEDRIJF.

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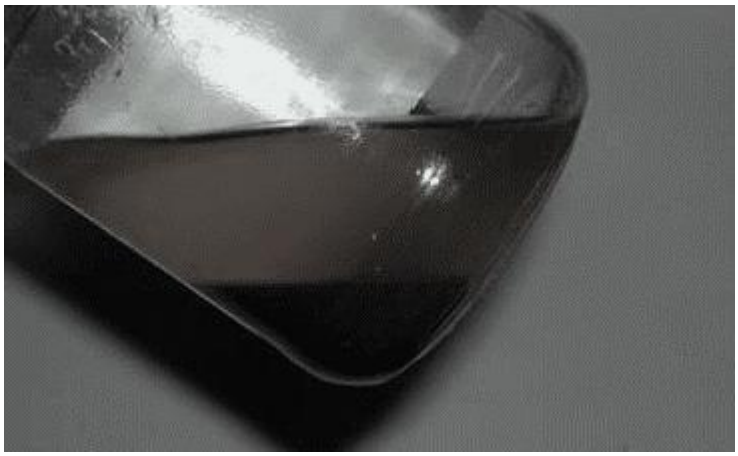
Can I use fuel with a higher percentage of ethanol, such as E15 or E85?
Never use a gasoline for your motorcycle that contains more than 10% Ethanol, such as E85 which contains 85% Ethanol, or gasoline containing any amount of Methanol. These fuels can cause starting and running problems, as well as serious fuel system and internal engine damage.

Wouldn't the cleaning properties of ethanol be good for a fuel system?
No, fuel systems that have been used for non-oxygenated gasoline will have varnish deposits and surface corrosion (rust and aluminium oxides). This includes the tanks and pipes used for fuel storage and transportation. Ethanol will clean varnish as well as surface corrosion from any surface it contacts. Ethanol may dissolve plastic resins used to make some fibreglass tanks.
The amount of material cleaned from all of these systems can quickly exceed the filtration capacity of fuel system filters resulting in restricted fuel flow. Ultimately engine performance is reduced and potentially damage to the engine can occur.

What happens when phase separation occurs?
Several things occur when Phase separation occurs:

- The ethanol and water molecules settle to the bottom of the fuel tank forming a distinct layer of water & ethanol on the bottom and gasoline without ethanol on the top.
- Fuel for the engine is drawn from the bottom of the tank. An engine will not run properly, if at all, on ethanol and water. The ethanol and water mixture is very corrosive to some metals and can damage internal engine components.
- The remaining gasoline, without ethanol, will have an octane level below the original E10 fuel's octane level, approximately 2 ~ 3 points lower. This octane level may be below the requirements of the engine.



Can I use the gasoline remaining after removal of the phase separated water and alcohol?
No, the remaining gasoline will have a lower octane level that may not be compatible with your engine.

What is the benefit of adding Yamalube Fuel Stabilizer and Conditioner® in my fuel?
Yamalube gasoline additives reduce internal deposits and extend the storage life of gasoline. Continuous use of Yamalube Fuel Stabilizer additive reduces harmful internal deposits.
Yamalube Fuel Stabilizer & Conditioner® added to fresh gasoline will help protect the fuel system from varnishing while helping to keep the gasoline's octane level from decreasing excessively during storage.

What about the fuel system components on a motorcycle?
It is important to follow the motorcycle manufacturers' recommendations when selecting appropriate fuels. Use of an inappropriate fuel can result in damage to the engine and motorcycle components that may require repair or replacement.
Fuels with ethanol can attack some fuel-system components, such as tanks and lines, if they are not made from acceptable ethanol-compatible materials. This can lead to operational problems or safety issues such as clogged filters, leaks or engine damage.

What can I do to prevent issues with E10 fuel?
Total prevention of issues may not be possible but there are steps you can take to minimize the occurrence and severity of the negative effects of E10 fuel:
If at all possible, do not use E10 fuel.

- Ideally (before switching to E10 fuel) have your fuel tank completely drained to remove any accumulated water. As little as 16 ml. of water can promote phase separation in 40 liters of E10 fuel.
- If your motorcycle has fibreglass fuel tanks, consult with your motorcycle builder concerning E10 compatibility.
- If unable to completely drain and clean your tank before switching to E10 fuel, add as much E10 fuel as possible to minimize the possibility of phase separation.
- Carry extra filters and change more frequently if there are indications the efficiency of the filter is rapidly diminishing due to excessive water and contaminates.
- Buy name brand fuel.
- Buy fuel from the same source if possible.
- Buy fuel from stations that have newer, cleaner storage tanks.
- Regularly use Yamaha Fuel Stabilizer and Conditioner® to retard fuel aging.
- Stabilize fresh fuel before storing. Stabilizers do not help fuel that has already aged. Stabilizers are most effective when immediately added to fuel fresh from the gas station or marina fuel pump.

Summary on usage of E10 based fuel:

--- **Ethanol acts as a detergent,** loosening rust, debris and other gunk inside your tank and fuel lines. This crud clogs fuel filters, restricting fuel flow and leading to stalling and hard starting.

--- **Ethanol's corrosive solvent-like characteristics also remove resins and plasticizers from some plastic and rubber materials.** Most significantly, it damages the resins in fibreglass fuel tanks.
Tanks slowly soften and begin leaking (with the associated potential for explosion from fuel). Black sludge is created that builds up on intake valves, causing them to stick, and on fuel injectors, clogging orifices, with the potential for major engine damage, like bent pushrods. Some resins, notably vinylester, are impervious to ethanol. Most common types of epoxy and polyester resin are not ethanol-resistant.

--- **Ethanol is hygroscopic–it absorbs water**, and will mix more easily with water than with gasoline. Up to 10% of your fuel could become a water-ethanol mix, and the liquid may undergo "phase separation", forming a top layer of pure low–octane gas and a bottom layer of water-saturated ethanol. Since the fuel pickup is located at the tank bottom, water contaminated fuel can cause your engine to run badly, or not run at all. This low-octane fuel causes problems with performance in four stroke engines, and can cause damage in two stroke engines from lean fuel.

--- **Ethanol has a short six-week shelf life**, and the octane begins to decrease after that time period. This deterioration is a more substantial problem in infrequently used motorcycles or during winter storage.

--- Don't mix ethanol-enhanced fuel with the other type of fuel that contains MTBE. MTBE is the acronym for **methyl tertiary butyl ether**, a fairly simple molecule that is created from methanol. The combination of the two additives, especially when water is mixed in, may create a gel-like material that clogs carburettors. Use all the old gas before refuelling with E10 if possible, or refill with the tank no more than 20% full. A clean, dry tank is best for the first fill up.

--- Replace fuel filters frequently during the first few tanks of ethanol fuel.

--- Do your best to keep water out of your fuel. Fill up with only as much gas as you will use during the next two weeks (conversely, keeping your tank full prevents water from condensing on its walls, especially if you live in an area with big daily temperature swings). Add a gasoline fuel treatment like Yamalube Fuel Stabilizer and Conditioner®.

--- When winterizing, top off fuel tanks to about 95% full, leaving room for expansion, and add a good fuel stabilizer. A nearly full tank limits the flow of air into and out of the vent, reducing the chance of condensation adding water to the fuel. Draining or emptying before fuel tanks of E10 gas before storing is the best way, while completely eliminating any chances of phase separation.
But this is a potentially dangerous and an impractical solution.

--- Once phase separation occurs, additives and water separators can't help.
The only remedy is to have the gas and ethanol/water mixture professionally removed from the tank. With any fuel that sits in a tank for a long time, it's important to add a stabilizer (but understand that stabilizers do not prevent phase separation).
Phase separation problems typically happen when motorcycles are stored over the winter with tanks only a quarter to half full. In the summer, infrequently used motorcycles with partially filled tanks are also prone to phase separation.

VOORBEELD VAN TEKST IN GEBRUIKERS HANDLEIDING VOOR NIEUWE MODELLEN VANAF 2011.

Voorgeschreven brandstof:
Normale loodvrije benzine of gasohol (E10)
Inhoud brandstoftank:
17.0 L (4.49 US gal, 3.74 Imp.gal)
Brandstofreserve:
3.4 L (0.90 US gal, 0.75 Imp.gal)

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Gebruik uitsluitend loodvrije benzine. Loodhoudende benzine veroorzaakt ernstige schade aan inwendige motoronderdelen als kleppen en zuigerveren en ook aan het uitlaatsysteem.

Uw Yamaha motorblok is gebouwd op het gebruik van normale loodvrije benzine met een octaangetal van RON 91 of hoger. Als de motor gaat detoneren (pingelen), gebruik dan benzine van een ander merk of gebruik loodvrije superbenzine. Door loodvrije benzine te gebruiken gaan bougies langer mee en blijven de onderhoudskosten beperkt.

Gasohol

Er bestaan twee typen gasohol: gasohol met ethanol en gasohol met methanol. Gasohol met ethanol kan worden gebruikt, mits het ethanolgehalte niet hoger is dan 10% (E10). Gasohol met methanol wordt niet aangeraden door Yamaha aangezien deze schade kan toebrengen aan het brandstofsysteem of problemen kan opleveren met de voertuigprestaties.