Danger ahead!! A must-read for all classic car owners! Increasing ethanol content in petrol threatens major difficulties for older vehicles...

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Ethanol and Classic Cars… An Uneasy Mixture – by Dave Moss.

Do you run a classic car and wish to continue driving it in the future? If so, our Wheels-Alive guide to ethanol in petrol is ESSENTIAL reading…

Part 1 – The Background

Ethanol is alcohol, which, but for the fact that it's chemically modified, would be drinkable. In its original form, dating back into the mists of time, it was often known as the illicit whisky moonshine, which was a distillate of grain such as wheat, though production was also possible from sugar crops. Its use as a vehicle fuel is believed to date back at least to Henry Ford's first quadricycle, which reportedly ran on ethanol corn alcohol, as could the Model T and several other early US cars – until 'gasoline' became more widely available. Afterwards, ethanol was sometimes added to early petrol as an octane booster to combat the dreaded "pinking" (or "detonation") falling out of favour only with the discovery that tetra-ethyl lead did the same job with less hassle all round…

Ethanol began a comeback in the 1970s, when pressure was mounting in the US to remove lead from petrol, and some south American countries realised that as a vehicle fuel produced from local crops it could dramatically cut prices – and reduce reliance on imports as the oil crisis hit. In the 1980s unleaded – but ethanol-free – fuel arrived on British forecourts, preceding a new era of tighter exhaust emission controls, which began with mandatory exhaust catalyst fitment on new cars in 1991.

The return of ethanol to British petrol was driven by the EU's 2009 "Renewable Energy Directive", which created legally binding targets on both use of 'renewable' fuels and the reduction of greenhouse gas emissions in member states. The same year a "Fuel Quality Directive" was introduced, defining future EU road fuel standards. Under the various regulations, by 2020, suppliers had to achieve a 6% reduction in greenhouse gas emissions across all fuel types compared with 2010 levels – and ensure that 10% of transport fuel was sourced from renewable energy sources. Thus the fuel quality directive also enshrined the

principle that up to 10% of the bio-fuel ethanol could be blended into unleaded petrol. The UK enacted a legislative framework known as the Renewable Transport Fuel Obligation (RTFO) to achieve compliance with this package of EU measures.

According to the AA, the amount of biofuel needed to meet the EU stipulated targets increased annually until April 2013, when it reached 4.75% of total road transport fuel supplied by volume – equating to the E5 standard for current petrol. However, the AA says that to meet the "10% from renewable sources by 2020" requirement, Britain will need to move to at least 10% ethanol in petrol before then.

Road fuel specifications are defined in European "EN" standards jointly developed by governments and the oil and motor industries to ensure that petrol and diesel suit the widest practical range of existing and future vehicles and engines. UK fuel meets current European requirements via British standards known as BS EN228 for petrol and BS EN590 for diesel, which permit blending of up to 5% Ethanol in petrol, and 5% biodiesel in diesel – allowing suppliers to meet their RTFO obligations. Specific biofuel content isn't currently mandatory – forecourt supplies of both petrol and diesel can contain anything between zero and 5% biofuel – and taken alongside the official line, as restated by the AA, that at E5 level "There is no issue of compatibility with car fuel systems," pumps are not yet required to indicate that fuel dispensed may contain any biofuel element.

As long ago as March 2013, the EN and BS specifications for petrol were modified, allowing the maximum permitted ethanol content in unleaded petrol to rise from 5% to 10% by volume. In some parts of Europe, notably France, such fuel is now available, but following independent research, a UK switch to E10 was delayed by government until at least 2016, allowing more incompatible vehicles to reach the end of the road.

The E10 fuel standard requires any pumps dispensing fuel with a 10% ethanol content to be labelled 'Unleaded petrol 95 E10' because there's industry acceptance that, even with relatively modern cars, such a mix raises potential fuel system compatibility issues. In 2014, the AA estimated that 90% or more of petrol vehicles currently on British roads were

compatible with E10 fuel, leaving perhaps 2 million that are not – with the vast majority registered since year 2000, plus most classic cars. Despite this, the directive requiring 10% of transport fuel to come from renewable sources by 2020 makes E10 petrol a fast approaching inevitability in Britain. No timetable for introduction has yet been announced, but there are suggestions it could appear very imminently…

In this story, the implications for older and classic vehicles never intended for ethanol fuel blends might appear a very low priority, but the immediate future is fairly secure. Though more ethanol means more work to keep a classic abreast of such developments, suitable fuel is unlikely to dry up overnight. National legislation will require that where E10 is sold, forecourts will also offer what's described as a 'protection grade' E5 fuel for incompatible vehicles. For expedience however, this could simply prove to be the pricier "Super unleaded" grade – and here there is a worrying question for the longer term. How long will E5 remain available – when set against the commercial realities faced by oil companies and filling station operators in stocking a low (and declining) volume product with a very low profit margin and high background costs?

The answer to that question is currently one of life's great imponderables – and there's another, longer term question too: given time, just how high can the ethanol content in European fuel actually go? E85 is well established in some markets, including America – where E15 is already in use, and in the complex world of European environmental legislation, given time, almost anything seems possible. One thing's for sure: For classic car owners, this story isn't over yet…

Coming soon on Wheels-Alive – watch this space…

Part 2: Ethanol and the classic car petrol engine – an overview. This is now 'live' on this site, please click HERE to take you there…

Part 3: Ethanol and the classic car fuel system – Further information sources and principal references. This is also now 'live' on this site, please click HERE to take you there.

Note from Kim: This article was written before the UK’s decision to depart from the EU, and any possible implications of this exit, with respect to future legislation relating to fuel matters, are, of course, as yet impossible to determine!