# Higher doses of ethanol arriving – the reasons (we are told…), and the potential dangers

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## E10 petrol is coming soon – to filling stations near you… by Dave Moss.

### Why E10, and why now?

The British government's ambition to drive down carbon emissions to net-zero by 2050 involves ever-tightening targets, which last December stood at a 68% reduction by 2030 compared to 1990… However, in April, days before the US climate summit, rumours began

circulating that yet another emissions reduction target was coming: 78% down on 1990 – by 2035…

For some time, low-carbon fuels have been quietly helping to reduce transport emissions, but Britain's first Transport Decarbonisation Plan, published in October 2019, defined an ambitious programme of coordinated action needed to achieve "net zero" by 2050. Phasing out new petrol and diesel vehicles from 2030 understandably hit recent headlines, but transport in general was responsible for 27% of UK Greenhouse gas output in 2019, and tighter carbon targets inevitably demand a significant improvement on that figure – from existing vehicles.

Since 2008, the Renewable Transport Fuel Obligation (RTFO) has required UK suppliers to deliver road fuel containing a proportion of renewables, and its targets have so far largely been met by blending up to 5% bioethanol into petrol, known as E5, and up to 7% biodiesel into diesel. In 2019 Government estimates indicated that the RTFO had then reduced CO2 emissions by over 5 million tonnes – equivalent to taking 2.5 million cars off the road. In 2021, however, pressure to further exploit the reduced emissions potential of low-carbon fuels is demanding higher biofuel blends, which is why the government is now looking to introduce E10 petrol, containing up to 10% bioethanol.

## Rationale for introducing E10

After 2000, increasing numbers of new petrol vehicles were approved for E10 use. Since 2011 all new petrol cars have had to be compatible, and UK petrol has been allowed to contain up to 10% bioethanol. What's more, E10 has been the reference fuel for official new vehicle emissions and performance testing since 2016. Yet only E5 petrol has been sold in Britain to date, and the Government believes that moving to E10 could reduce petrol vehicle CO2 emissions by around 2%, doubling the carbon savings achieved by E5. It's seen as an easy way to increase biofuel use, without needing new technologies or major fuelling infrastructure changes – while most vehicles will need no adaptation. Calculations also suggest that building E10 into increased RTFO targets could reduce road transport CO2 emissions by another 750,000 tonnes annually.

## The public and industry has had its say…

A government consultation opened in March 2020 to discover attitudes towards a move to E10 as Britain's standard 95 octane petrol grade, while maintaining availability of current E5 petrol in 97+ higher-octane 'Super' grade. There were 208 responses, 143 from private individuals and 65 from organisations – ranging from agricultural associations to fuel suppliers, local government, and motoring organisations.

## Key points from the consultation – and the government's plans

Around 66% of organisations were broadly supportive of E10 introduction, though some specific concerns were raised. Those favouring the fuel highlighted its use around the world, sometimes in even higher ethanol blends, while some stressed that increased biofuel content is particularly important because petrol will be a required fuel for many years. Less than 30% of private individuals either supported the introduction of E10, or didn't object to it. Over two-thirds were concerned about fuel incompatibility, or reduced economy bringing additional costs. The damage that ethanol-blended fuel can inflict on some older fuel systems was also highlighted, as was the fact that not all incompatible vehicles are classics, making it important that E5 remained available. The consultation also revealed that many classic car owners already use 'Super' grade fuel.

The question "Do you agree that E5 should be available for a maximum of 5 years after E10 is introduced, before being reviewed for a further extension?" proved controversial, with a near-even split amongst the 105 respondents. Many of those agreeing stressed that E5 availability would probably need to be extended at a 5-year review, because large numbers of classic vehicles would remain in use. Those disagreeing were mostly private individuals, particularly classic vehicle owners, who were nervous that the proposals did not guarantee indefinite E5 supply, and simply maintaining E5 'Super' grade did not automatically ensure its availability nationwide, with rural areas potentially disadvantaged.

Some fuel suppliers felt that an earlier policy review could be valuable, in case fuels providing greater emissions savings were developed. They argued that it should be left to

the market to decide on ‘Super’ grade ethanol content after 2 or 3 years.

The Government has nonetheless decided that ‘Super’ grade E5 will remain available – though subject to review within 5 years, saying this is…

*“…to ensure it remains appropriate – as is required by good legislative practice… such a review will examine if there’s a viable, widely available alternative – to ensure suitable low-ethanol fuel remains available for older vehicles and other powered machinery requiring it. We would like to reassure owners of such vehicles or equipment that, without such an alternative becoming available, it’s highly likely the E5 protection grade would continue to apply…”*

The government has vowed that this question will be central to future decisions on maintaining a legal requirement for forecourts to stock low-ethanol petrol.

There was wide agreement in the fuel sector that simply replacing the current 95 E5 standard grade with 95 E10 is the best method for introduction. The industry felt – and the Government has agreed – that it will promote high E10 uptake, because most vehicles using 95 grade petrol can simply continue using it. Such a move will also involve minimal change in the fuel supply chain infrastructure, leading to rapid, cost effective implementation.

The government accepts that reduced fuel economy is likely with E10 – because ethanol has a lower energy density than fossil petrol. A 1% to 2% consumption increase is anticipated – though it’s felt the carbon reduction benefits will outweigh this penalty. The actual increase will vary with driving style and supplier fuel blending adjustments.

## Next steps

Though there was broad support for the introduction of 95 octane E10, a clear majority wanted longer than the consultation proposal to provide industry and motorists with at least 6 months notice, plus a 2 month implementation period. The Government says it’s content that such a timetable is suitable, and draft documentation has now been published, with

relevant legislation  expect to follow shortly – so, subject to Parliamentary approval, distribution of E10 petrol will be required from September 1st 2021. Two months will then be allowed for nationwide distribution, after which all UK-supplied 95 octane petrol must meet the E10 standard. Government anticipates it will begin appearing on forecourts this summer.

Acknowledging that older powered machinery, vehicles and motorcycles will still need low-ethanol fuel, the legislation will also require a higher-octane 'Super' grade E5 to remain available at all filling stations offering at least two petrol grades. Some specific exemptions will be included: Outlets in remote areas covered by the Rural Fuel Duty Relief Scheme will be permitted – rather than required – to sell E10 petrol, with small and specialist filling stations also allowed to sell only 'Premium' grade E5 – if it is available via local supply chains.

The changes will be implemented via the "Motor fuel (Composition and Content) regulations, which will demand that 95 or 96 octane fuel must have at least 5.5%, and not more than 10%, ethanol content. It must be labelled as E10 at the pump, though the actual proportion could vary anywhere within that range, because suppliers would – as now – maintain flexibility over actual blend levels – to allow what is described as "efficient and cost-effective delivery of overall renewable fuel targets". 97 octane petrol (the 'Super' grade) would be defined as "containing no more than 5% ethanol."

## Getting the E10 message across

The government says it's determined that, in requiring E10 to be nationally available, drivers must be fully aware of the change, with necessary information widely distributed to ensure easy selection of the correct fuel. Following broad support from consultees, the key message on all E10 fuel dispensers will be "Suitable for most petrol vehicles: check before use." This wording was felt to combine brevity, caution and reassurance, though about two-thirds of respondents also wanted a comprehensive, government-led communication campaign, carrying a simple, clear, impactful message. Suggestions included TV and radio campaigns, information via vehicle tax or MOT reminders, and a website or QR code to

check vehicle compatibility and obtain more details. There was also a feeling that compatibility checks should be available at the pump – particularly around the time of E10 introduction..

The Government acknowledges the importance of access to such information, saying it's committed to working with industry to provide clear guidance on the forecourt, and ensure relevant information is widely communicated though a joint campaign, encouraging motorists to check vehicle compatibility, before introduction of E10. A vehicle checking tool is already available online, and will be further developed to support the launch programme.

## References

Responses to the consultation were analysed to identify common issues and themes. A complete overview can be found here:

Government consultations

Government guidance notes on E10 petrol are here:

Government guidance/explanations

The Government's vehicle compatibility checker can be found here:

Vehicle compatability checker

The current European Automobile Manufacturers Association list of vehicles cleared for E10 use can be found here. It includes most Japanese marques and some US marques which have been sold in Europe since 2000:

ACEA compatability list

Estimates of UK greenhouse gas emissions from 1990 to 2019 can be found here

Greenhouse gas emissions information

Details of the government's bioeconomy strategy until 2030 is here:

Government bioeconomy strategy

The legislation that will be amended to allow E10 to be introduced can be seen here. These regulations control the minimum standards for all motor fuels supplied in the UK.

E10 legislation

## Kim adds:

"We knew that E10 fuels were coming; this is now inevitable it seems. We also know that many modern vehicles are able to run on it without difficulty. However, it is a fact there are many vehicles, including classics and some more recent models still necessarily in everyday use for which fuel systems are unable to cope with ethanol, and upgrading is difficult or impossible. There are grave concerns about the results of ethanol attacking fuel system components, hoses, tanks and other parts, resulting in degradation/disintegration from within, with resultant very real fire dangers, quite apart from adversely affecting the running of the vehicle. If you own an older car powered by petrol you really do need to consider this aspect…

The complexities of the ethanol in fuel situation has been covered in depth on this website, and if you are interested in finding out more, please insert 'ethanol' into the Wheels-Alive search box to bring up a list of in-depth articles giving chapter and verse.

It should be noted that some fuel companies are currently still supplying ethanol-free petrol in their higher grades (for example Esso Synergie Premium+ 99). Check with each company to establish the current situation.

## Esso’s website states (at the time of writing, June 2021):

“Although our pumps have E5 labels on them, our Synergy Supreme$^{+}$ 99 is actually ethanol free (except, due to technical supply reasons, in Devon, Cornwall, North Wales, North England and Scotland). Legislation requires us to place these E5 labels on pumps that dispense unleaded petrol with ‘up to 5% ethanol’, including those that contain no ethanol, which is why we display them on our Synergy Supreme$^{+}$ 99 pumps.

There’s currently no requirement for renewable fuel, like ethanol, to be present in super unleaded petrol although this could change in the future, in which case we would comply with any new legislation.”