
An amendment to the fuel quality Directive (EU Directive 2009/30/EC) adopted by the European Parliament and EU Council in April 2009 means that, from 1 January 2011, gas oil (diesel) supplied for use in certain applications must not contain more than 10 milligrams of sulphur per kilogram of fuel (mg/kg).

Gas oil supplied for use in road vehicles ("white diesel") has been subject to this lower sulphur limit for several years and for the time being gas oil supplied for use in sea-going vessels will continue to contain up to 1,000 mg/kg of sulphur ("high sulphur red diesel"). As such, the amendment to the Directive only affects gas oil marketed for use in 'Non-Road Mobile Machinery' (NRMM), a definition which includes inland waterways vessels and recreational craft that do not normally operate at sea.

The amendment means that gas oil supplied to inland waterways vessels and recreational craft that do not normally operate at sea will continue to contain chemical markers and red dye but must be virtually sulphur free ("sulphur-free red diesel"). Duty and VAT rates applicable to gas oil will remain the same, regardless of whether the fuel is high sulphur red diesel or sulphur-free red diesel.

Sulphur-free gas oil is needed to ensure the reliable operation of pollutant emissions control systems, which will be fitted to new non-road equipment from 2011 to meet stringent EU emissions requirements. However, this has a number of implications for recreational craft dependant on where they normally operate.

Will I have to comply with the new regulations?

Amendments to the UK Motor Fuel regulations have been made to implement the new fuel parameter limits that are set out in the amended EU Directive; **however, it is important to note that the regulations apply to the fuel supplier rather than to the fuel buyer or user.**

Whether or not the changes will affect you will depend on where you normally operate your craft, be it on any of the waters that fall within the four categories of inland and estuarine waters (A, B, C & D¹) that apply in the United Kingdom or on waters which are outside categorised waters and therefore may be regarded as 'to sea'.

For the purposes of the Motor Fuel regulations, fuel supplied to a recreational craft will not have to comply with the new lower limits for sulphur provided that the craft normally operates "at sea", which is

¹ A full list and description of the various Categorised Waters in the UK are set out in Merchant Shipping Notice 1776 (M), available from www.mcga.gov.uk

defined for the purposes of these regulations so as to include the following waters:

- **'To sea'**, that is outside (beyond) categorised waters.
- **'Tidal' Category C waters**, which includes sheltered tidal rivers and estuaries but excludes those non-tidal lakes and lochs that fall within Category C.
- **Category D waters**, which includes more exposed tidal rivers and estuaries and other stretches of partially sheltered water.

Consequently, it will be lawful for suppliers to supply fuel with higher sulphur content to recreational boaters who normally operate in the above waters, but supplies must comply with the new low sulphur limit where normal operation is on Category A and B waters (most canals and non-tidal rivers) and on those non-tidal deep lochs and lakes that fall within Category C.

So what fuel should I look for?

First of all, there are a number of industry fuel standards for the main grades of gas oil for vessels and road vehicles:

- BS ISO 8217 is the specified standard for marine fuels which meets certain other stringent international requirements; it permits a maximum limit of 1,000 mg/kg sulphur and prohibits the use of Biodiesel.
- BS2869 applies to gas oil for non-road use, including recreational craft that do not normally operate at sea and inland waterways vessels. This standard now specifies a maximum limit of 10 mg/kg sulphur but also permits the addition of up to 7% Biodiesel by volume (without it having to be labelled as such).
- BS EN 590 applies to road diesel and meets the BS 2869 specification but requires suppliers to add a minimum proportion of Biodiesel.

Thus there is no specific standard for a fuel that meets the reduced sulphur content limit yet also prohibits the addition of Biodiesel, although it is quite possible and lawful for the UK supply chain to supply such a fuel for all inland waterway vessels and recreational craft irrespective of where they normally operate; they simply do not mix in the Biodiesel!

It is generally agreed that ultra-low sulphur in itself does not cause a problem for engines or fuel systems as any reduction in the lubricating properties arising from low levels of sulphur can be adjusted by the use of additives during production. However, it is known the Biodiesel has strong solvent and detergent properties in its pure form and can cause problems during storage and on certain materials used in older fuel system

components. Ideally, therefore, you should try to buy fuel that contains no Biodiesel.

Can I buy diesel that does not contain Biodiesel?

Until the recent amendment, no one really questioned what fuel they used and it was quite probable that many inland-based suppliers would have supplied fuel produced to a standard that allowed it to contain anything from 0% to 5% Biodiesel, dependant on the supplier.

Now that suppliers are prohibited from supplying fuel for inland waterway vessels and recreational craft which do not normally operate at sea if the sulphur content exceeds 10 mg/kg at the point of distribution, there has been considerable concern that sulphur-free fuels may now contain Biofuel, which in turn may damage engines and fuel systems. This concern originates from the fact that the supply industry initially informed DfT that, because of limitations in the supply infrastructure where cross-contamination might occur between fuels of vastly different sulphur content, it expected to meet the requirement to supply sulphur-free fuel largely by supplying road diesel with a red marker dye, rather than by producing a third grade of biodiesel-free sulphur-free diesel.

This problem is exacerbated because the Renewable Transport Fuels Obligation Order 2007 requires suppliers to add a specified percentage of Biofuel to the road fuels they supply in the UK; the target for 2011/12 is about 4.25% by volume.

However, following pressure from the RYA and the marine industry, many producers and suppliers have now indicated that that they will make available a supply of biodiesel-free sulphur-free diesel.

The upshot is that there is likely to be a variation in the specifications of fuel supplied to recreational craft, with high-sulphur biodiesel-free fuel, sulphur-free biodiesel-free fuel and sulphur-free fuel with some biodiesel content all being available on the market.

How can I tell what I am being supplied with?

This can be difficult since, once marked with the red dye, the different specifications of gas oil are visibly indistinguishable. Although a survey recently carried out by the DfT and based on information provided by the supply industry would suggest that only about 25% of sulphur-free gas oil will be excise marked road diesel containing Biodiesel, clearly supply will not be uniform around the coast and it remains to be seen where any significant gaps in availability of biodiesel-free fuel may be.

It is therefore important that boaters ask their supplier what specification of fuel it is that they are buying and whether it contains biodiesel. If it

does contain biodiesel then the fuel will require different storage and housekeeping arrangements.

If I have no choice but to buy fuel containing biodiesel what should I do?

- Remove all water from the tanks and conduct monthly checks that they remain free of water
- Tanks that don't already have drain points for removing water are likely to need modification
- Examine sight gauges on older fuel storage tanks for signs of leakage and replace any leaking seals
- If you are having tanks serviced before you receive the new fuel it would be advisable to replace fuel seals as a one-off, precautionary exercise
- Replace fuel filters after two to three deliveries/turnover of the new fuel
- Consider fitting dual filters in parallel with a changeover switch in case one blocks
- Ensure the content of tanks is turned over every six months or in any event no more than 12 months to help prevent blockage of filters and fuel pipe.

Most engines are fully compatible with fuel containing biodiesel in the proportion found in road fuel. However, some fuel system components on older engines, in particular fuel seals and pipes, may not be compatible with biodiesel.

Users of older equipment should examine fuel systems in the months following the switchover and replace seals or pipes with compatible ones if there are signs of leakage.

Further comprehensive advice is published on the RYA website.

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GAS OIL TECHNICAL INFORMATION

The main grades of gas oil (diesel) for vessels are:

- BS ISO 8217. This is the specified standard for marine fuels which meets certain other stringent international requirements; it permits a maximum limit of 1,000 mg/kg sulphur and prohibits the use of Biodiesel.
- BS EN 2869. This standard is for gas oil for non-road use, including recreational craft that do not normally operate at sea and inland waterways vessels. This standard now specifies a maximum limit of 10 mg/kg sulphur but also permits the addition of up to 7% Biodiesel by volume (without it having to be labelled as such).

Marine Gas Oil to ISO 8217 will work entirely satisfactorily in recreational craft diesel engines. It is a good quality distillate fuel, which ships use not only for their generators when in harbour, but also in all other boats on board. These engines vary from small naturally aspirated low-power engines up to the turbo-charged and intercooled higher powered engines. In the UK, ISO 8217 fuel is dyed red.

The UK Regulations that transpose the EU Fuels Quality Directive apply to the supply of fuel and do not apply to craft that normally, 'operation at sea'; thus the UK regulations allow marinas and other fuel retailers / bunker holders in tidal category C and D waters (tidal estuaries and arms of the sea) to stock and sell ISO 8217 Category DMA gas oil to recreational craft that normally operate at sea. The obvious advantage of using gas oil that complies with ISO 8217 where it is lawful for this to be supplied is clear. Leisure craft users in those waters will not have to worry about the risks of micro biological contamination and associated engine failure any more than they customarily did.

However, that all depends upon marinas and fuel retailers being able to get hold of the ISO 8217 Category DMA gas oil. It is more likely that the suppliers will provide BS EN 2869:2010 Class A2, which does have the environmental benefit of lower sulphur level. In accordance with the UK Regulations, It is perfectly lawful for suppliers to provide this without the addition of Biodiesel for Non Road use and a number of suppliers have stated that they will make sulphur-free biodiesel-free gas oil available.

Marinas should ask suppliers to provide fuel that complies with BS ISO 8217; if this is not available then they should ask suppliers to supply fuel that complies with BS 2869. But beware that a number of suppliers has stated that they will only supply Dyed Road Diesel that complies with EN 590 to meet the low sulphur obligation where this applies; **EN 590 fuel will contain Biodiesel because it has to be added as part of the Renewable Transport Fuels Obligation Order 2007.**

With regard to the detail of the specifications, there are some differences but none that affect engine operation or boat fuel system performance to any significant degree. The key differences are:

Detail	ISO8217:2010	BS EN 2869:2010	BS EN 590	COMMENT
Cetane Number	Minimum 40	Minimum 45	Minimum 46	ISO8217 is typically 40 -45
Sulphur	Maximum 0.1%	Maximum 0.001%	Maximum 0.001%	
Density	Maximum 0.89	Maximum 0.82	Maximum 0.86	ISO typically 0.84
Flash Point	Minimum 60°C	Minimum 56°C	Minimum 55°C	ISO8217 is safer
Biodiesel content	None permitted	Up to 7% is permitted but not mandatory	Up to 7% is permitted. A percentage is mandatory	Biodiesel must be added to EN590 fuel. Minimum of 4.25% for 2011/12