



# Clean Our Air with **HVO Fuel**

One of the World's Purest and Greenest Fuels



**Crown Oil**  
Fuels and Lubricants

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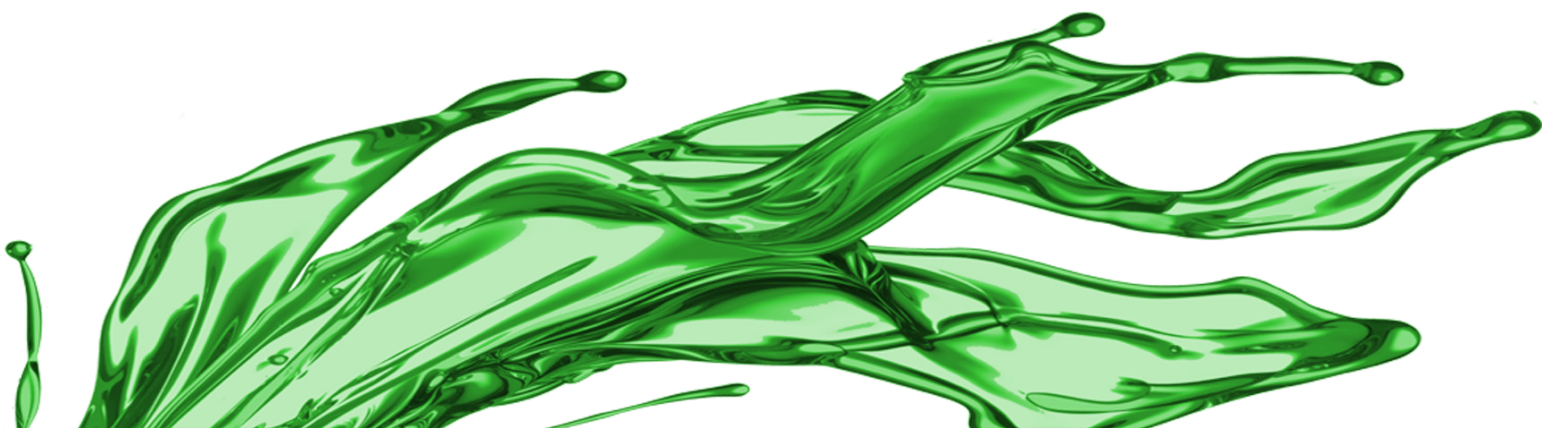






# Clean Our Air With HVO Fuel

Reduce your greenhouse gas emissions by up to 90%



Up to 90% reduction in harmful emissions

All deliveries are carbon offset – at no extra cost to you

Safer handling, reduced emissions and cleaner burning

Simply top up your existing stocks and go

**HVO (hydrotreated vegetable oil) is invaluable in helping the UK achieve its 2050 net zero target for greenhouse gas emissions.**

Our renewable diesel fuel is available for delivery to any site in the UK within 48 hours. We can even have it with you on the very same day if needed, made possible with our emergency delivery service.

With a fleet of over 800 tankers and strategically located depots across the UK, we're ready to help you lessen your environmental impact with HVO whenever you are.



# What is HVO?

Increase your corporate social responsibility, reduce your environmental impact



## Extended 10-year storage lifespan

HVO has a reduced need for regular testing due to its renewable properties and has a much longer storage life than regular diesel.



## Cut greenhouse gas emissions by up to 90%

HVO eliminates up to 90% of net CO<sub>2</sub> and significantly reduces nitrogen oxide (NOx), particulate matter (PM) and carbon monoxide (CO) emissions.



## Cleaner air with year round performance

Reduced particulate production during combustion reduces the ageing of engine oils.



## Meets EN 15940:2016 specifications

Tried and tested product; it's clean, safe and endorsed by a wide range of OEMs.

HVO fuel is a FAME-free and fossil-free environmentally-friendly alternative to mineral diesel with a wide range of OEM approvals for use in modern vehicles, generators, construction machinery and industrial power systems.

HVO is part of the paraffinic family of fuels. Paraffinic diesel is a high-quality and clean liquid fuel with zero sulphur or aromatic content.

It's synthetically made through the hydrotreatment process from vegetable oils or animal fats which allows it to significantly reduce harmful emissions when used in diesel vehicles and machinery.

There's no need to modify existing infrastructure – you can simply top up and go.







**Did we mention that HVO also has a storage life of up to 10 years?**

Say hello to a reduced risk of degradation and goodbye  
to the need for regular testing.



# Start reducing your carbon footprint today

HVO is invaluable in helping the UK achieve its 2050 net zero target for greenhouse gas emissions



## Compatible

HVO fuel is a drop-in alternative to diesel and is compatible with existing fuelling infrastructures



## Clean

Zero FAME, sulphur and fossil content. Free from aromatics, sulphur and metals



## Approved

Tested and tried product; it's clean, safe and endorsed by a wide range of OEMs



## Lifespan

Up to 10-year storage lifespan with a reduced need for regular testing



## Performance

Unlock year-round performance in all seasons, even in low temperatures



## Sustainable

Improve your green credentials by reducing greenhouse gas emissions by up to 90%





Say hello to safer handling, reduced emissions and cleaner burning – simply top up your existing stocks and go.





# An immediate solution to reduce air pollution without costly engine modifications

Up to 90% reduction in harmful emissions

The road to a greener future is essential for many businesses, with 11,900 large UK corporations legally required to report their emissions. One of the main benefits of using HVO is the significant reduction in greenhouse gas emissions:



**=-30% of PM (fine particulates)**  
**=-30% of Hydrocarbons (HC)**  
**=-25% of Carbon Monoxide (CO)**  
**=-10% of Nitrogen Oxides (NOx)**

Results based on more than 450 heavy duty emissions test on city driving cycle brought back to representative fleet (Euro II to Euro VI)

With the growing drive to tackle the root causes of climate change, both public and private sectors are under huge pressure to reduce their environmental impact. We're passionate about providing sustainable alternatives and we believe Crown HVO fuel is invaluable in doing so, thanks to its plethora of green and operational benefits.

Hydrotreating vegetable oils is a modern way to produce high-quality diesel fuels from completely renewable materials which can be regrown when stock is needed.

The crops that are used to produce HVO fuel bypass damage to the environment, the natural ecosystem and the drive for global deforestation.

HVO fuel offers the best overall coverage between environmental, operational and performance parameters, providing the perfect platform to build a NRMM and MCP fleet that's fully compliant with all relevant legislation.





HVO is approved for use by a wide range of OEMs

**CATERPILLAR**



**DAF**



**IVECO**





# Crown HVO is revolutionary



Reduces notifiable emissions



All-year-round performance



Approved drop-in alternative to diesel



Biodegradable and non-toxic



# ionising businesses

## Why choose HVO fuel?

### **Just top up and go**

Ease of use is a primary concern when considering a new fuel. With Crown HVO, there's no need to modify existing infrastructure – you can simply top up and go – thanks to a wide range of OEM approvals.

HVO is 100% hydrocarbon (0% oxygen) and meets EN15940 standard for paraffinic fuels, ASTM D975 19B and Fuel Quality Directive 2009/30/EC Annex II, allowing it to be used and handled as a drop-in alternative to fossil diesel in most cases.

### **Cleaner and greener air**

Air pollution is a key concern for our planet. Climate change and legally binding environmental commitments to reduce greenhouse gas emissions mean that we must look at alternative solutions for generating power. Crown HVO eliminates up to 90% of CO<sub>2</sub> and significantly reduces NO<sub>x</sub>, PM and CO emissions.

In addition, it's 100% hydrocarbon, biodegradable, sustainable and renewable. Reduced particulate production during combustion reduces ageing of engine oils and improves air quality.

### **All-year-round performance**

Crown HVO has excellent low temperature performance, with a high cetane number of up to 90 and low cloud point of -32°C which provides improved cold start performance, clean combustion and less chance of waxing in extreme temperatures.

### **Reduced maintenance and safer handling**

Crown HVO is produced using a highly controlled hydrogenation and isomerisation process. This removes impurities from the fuel and leaves a consistent, quality and paraffinic product. With no bio, FAME or sulphur content, there's less chance of degradation, increasing its shelf life to up to 10 years.

Thanks to its high purity and flashpoint, Crown HVO has improved safety, storage and handling compared to regular diesel, meaning there's less need for regular fuel testing – with good storage and tank maintenance.





## **Zero FAME, sulphur and fossil content**

Crown HVO is a valuable product for businesses to meet their environmental and corporate social responsibility requirements. Its burn properties reduce particulate production, helping increase the lifespan of emission control systems as well as improving engine cleanliness.

## **Biodegradable, sustainable and non-toxic**

Synthesised from waste fats and vegetable oils via hydrogenation and isomerisation, Crown HVO is significantly less harmful to our planet than mineral diesel fuels, with reduced soot in engines and exhaust systems, lower emissions and more efficient burning than traditional diesel.

## **Tried and tested product**

HVO is clean, safe and classified as readily biodegradable and non-toxic.

Many events and UK festivals, including Glastonbury, have already made the move to HVO to power their generators and transportation.





# Who can use Crown HVO?

With a paraffinic petrochemical structure, HVO is almost identical to fossil diesel and can therefore be used and handled as a drop-in alternative to fossil diesel without needing to amend infrastructure or clean out existing stock. However, while similar to regular diesel in terms of energy content, density, viscosity and flash point, HVO fuel presents many benefits over the fossil fuel.

## **Crown HVO is commonly used in:**

- Commercial boilers
- Agricultural tractors and machinery
  - Boats and vessels operating within inland waterways
  - Portable generators at events, festivals and film productions
  - Construction equipment and machinery
  - Industrial trucks and tankers





# Technical specifications

Tried, tested and true to nature

Crown HVO outperforms fossil diesels in several key areas which are outlined in the table below.

Parameter	Units	Test Method	Specification	Typical Value
Appearance	-	ASTM D4176-2	Clear and bright	Clear and bright
Density at 15°C	kg/m <sup>3</sup>	EN ISO 12185	0.770 - 0.790	0.780
Viscosity at 40°C	mm <sup>2</sup> /s	EN ISO 3104	2.0 - 4.0	2.8
Sulphur Content	mg/kg	EN ISO 20884	5 maximum	<5
Flash point	°C	EN ISO 2719	61 minimum	>70
Cloud point - Summer - Winter	°C	EN 23015	-15 maximum -34 maximum	< -15 < -34
CFPP - Summer - Winter	°C	EN116	-15 maximum -34 maximum	< -15 < -34
Water Content	mg/kg	EN ISO 12937	200 maximum	40
Ash Content	% m/m	EN ISO 6245	0.001 maximum	<0.001
Initial Boiling Point	°C	EN ISO 3405	180 minimum	>180
Recovered at 250°C	% v/v	EN ISO 3405	<65	<20
Recovered at 350°C	% v/v	EN ISO 3405	85 minimum	>98
95% recovered at	°C	EN ISO 3405	360 maximum	>95
Cetane Number	-	EN 15195	70 minimum	80
Cetane Index	-	EN ISO 4264	70 minimum	80
CFPP	°C	EN 116	-15 to -34	
Carbon Residue (on 10% distillation residue)	% m/m	EN ISO 10370	0.1 maximum	<0.01
Oxidation Stability	g/m <sup>3</sup>	EN ISO 12205	25 maximum	<5
Copper Strip Corrosion 3hr/50°C	-	EN ISO 2160	1 maximum	1a
Net Heat of Combustion	MJ/kg	ASTM D4809	42 minimum	44
Particulate Matter	mg/kg	EN 12662	10 maximum	<1
Lubricity/HFRR	µm	EN ISO 12156-1	400 maximum	350
Renewable Diesel	% v/v	-	100	100
Fatty Acid Methyl Ester	% v/v	-	0	0
Total Aromatics	% m/m	EN 12916	1 maximum	<1
Polycyclic Aromatics (PAH)	% v/v	SS 155116	0.02 maximum	<0.02

The above are typical figures and we reserve the right to alter the specification without notice. Nothing on this specification constitutes a guarantee.



## The decarbonisation of our roads

The decarbonising of our transport sector is increasingly urgent and important in the race to address climate change, with about 27% of UK greenhouse gas (GHG) emissions currently coming from this sector.

In addition, for the benefit of the population's health, there is a need to improve air quality in many of the UK's towns and cities, where road transport emissions are one of the biggest contributors to localised pollution.

The UK Government has already taken steps, with the launch of its 'Road to Zero' strategy: a long-term plan that will ultimately end the sale of new conventional petrol and diesel cars and vans by 2040.

The Institution of Mechanical Engineers believes sustainable and low carbon fuels such as Crown HVO offer an immediate opportunity to accelerate the decarbonisation of road transport.

Crown HVO fuel complies with BS EN 15940 being the British Standard for paraffinic diesel fuel which is a new generation of cleaner transport fuel for use in road vehicles.

If your vehicle is still within the manufacturer's warranty or if you have taken out mechanical breakdown insurance, we recommend you check with the manufacturer or insurer that use of our product will not affect your cover. We cannot be held responsible for any issues with your vehicle connected to its age or pre-existing condition.











## How is Crown HVO better than diesel?

As a synthetic product, HVO's molecules are consistent and uniform which allows HVO to perform much better in several areas:

- Cleaner burn reduces emissions
- Improved cold temperature performance – improves cold start properties in winter
- Better combustion and filterability than other diesel products
- HFRR lubricity of around 350 microns represents “best in class” compared to EN590 diesel
- Drop-in alternative for regular diesel (conforming to EN15940) and approved by various OEMs
- Up to 10-year shelf life, depending on the storage conditions

## Crown HVO at a glance

- Greenhouse gas emissions are 90% lower than mineral diesel
- Manufactured from 100% renewable raw materials
- Delivery mileage is carbon offset
- Meets EN 15940:2016 specifications
- Tried and tested product; it's clean, safe and endorsed by a wide range of OEMs
- Free from aromatics, sulphur and metals
- Excellent cold-weather performance
- Reduced particulate production during combustion reduces the ageing of engine oils and improves cold start properties and air quality
- Fully biodegradable
- Suitable for a large number of engines, generators and machinery





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