



# EcoClean™ HSDI

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**EcoClean™** HSDI is a powerful fuel detergent technology that counteracts the problems of injector fouling and filter blocking in modern HSDI diesel engines. **EcoClean™** HSDI can help recover lost power, improve fuel economy and reduce harmful emissions for diesel fleet users.

## EcoClean™ HSDI Fuel Detergent

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**EcoClean™** HSDI is a liquid fuel detergent that prevents deposits forming in new engines and cleans existing deposits out of mid-life engines. By keeping engines 'like-new' or in a factory condition, **EcoClean™** HSDI ensures consistent performance from the engine components as well as fuel efficiency.

**EcoClean™** HSDI is designed to be added to your delivered fuel, on industrial scale fleet diesel users such as locomotives, busses and mining applications. In these situations, fuel quality is imperative to efficient fleet operations and fuel volumes warrant the addition of fuel detergents to fuel by Fuelcare injection systems.

**EcoClean™** HSDI cleans injectors, filters, pipework, pumps & tanks through an advanced anti-foulant and deposit control chemistry developed over 20 years in the U.K.

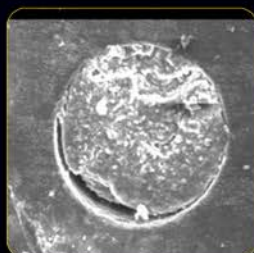


## What are Diesel Injector Deposits?

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Typical Diesel  
Injector Deposits



Deposits agglomerate throughout HSDI engines caused by fuel contaminants, engine pressures & temperatures. New high pressure fuel injectors or high pressure common rail systems create temperatures (200°C) & pressures (30,000 psi) never seen before.

Modern injection technologies are designed to facilitate compliance with stringent emission targets - increased pressures are thus required to generate adequate fuel flow through reduced injector nozzle orifices.

Coupled with changing engine designs to meet emissions targets, Diesel & Biodiesel become unstable at these pressure & temperature extremes, breaking down chemically and forming particulates that cause inefficient engine performance.

# Performance of EcoClean™ HSDI

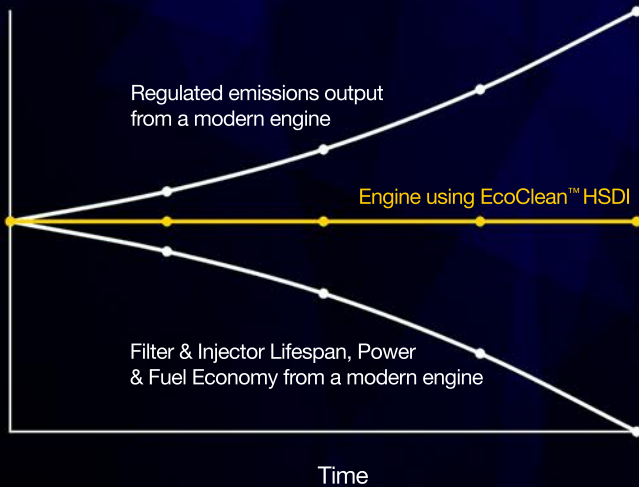
Thanks to advanced detergent chemistry, **EcoClean™ HSDI** offers the significant benefits across all modern engines & fuels:

- Prevents fuel filter & pump blocking
- Prevents injector sticking
- Improves power output
- Improves economy (2-4%)
- Increase slube oil life
- Reduces emissions (up to 45%)
- Reduces engine noise & vibration

**EcoClean™ HSDI** has proven engine & fuel performance capability from decades of independent testing.

| Engine   | Fuel |
|----------|------|
| EURO I   | HSD  |
| EURO II  | LSD  |
| EURO III | ULSD |
| EURO IV  | B5   |
| EURO V   | B10  |
| EURO VI  | B15  |

Improved performance of EcoClean™ HSDI

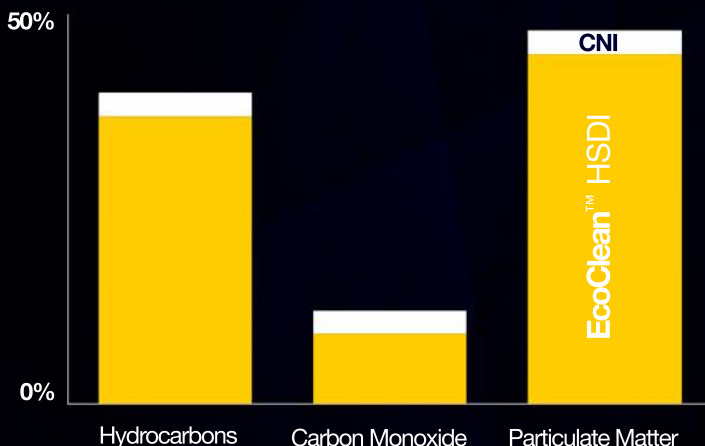


**EcoClean™ HSDI** is designed to bring mid-life engines back to 'like-new', or to prevent new engines from becoming inefficient. As such engine performance remains consistent irrespective of delivered fuel quality, fuel legislation or engine design changes.

**EcoClean™ HSDI** provides up to 45% regulated emissions savings compared engines suffering through deposition. With an optional C.N.I. (Cetane Number Improver) these savings can be extended to 47%.

Through improved fuel stability and efficiency, as well as improving injector atomisation, a clean combustion of diesel fuel follows in the engine cycle. Benefits such as improved fuel economy and reduced emissions will then follow.

Regulated Emissions Reduction Benefits



## EcoClean™ HSDI Technical Data

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**EcoClean™** HSDI is dosed at a rate of 1000ppm by volume (1 Litre of **EcoClean™** HSDI to 1000 Litres of fuel). **EcoClean™** HSDI can be added either concentrated or in a stock solution using Fuelcare **M77 additive injection systems**. Observe usual precautions for handling concentrated chemicals and blending additives into fuel. **EcoClean™** HSDI is compatible with other commonly used fuel additives and with engine and fuel system materials of construction.

## M77 Fuel Additive Injection Systems

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Fuelcare provide additive injection systems CAD designed, fabricated & tested at our engineering workshops in the UK. Designed for the application of fuel additives including **EcoClean™** HSDI in high fuel volume bunkering operations aboard superyachts, railway terminals, bus terminals and any application where fuel volumes warrant ongoing large-scale fuel dosing.

For more information about how our **M77** systems can dose **EcoClean™** HSDI into your delivered fuel, please contact Fuelcare.

Fuelcare is a private British company that specialises in improving fuel quality. Our head office & laboratory based in Shrewsbury, U.K., is dedicated to fuel engineering. All Fuelcare staff are members of the Energy Institute & IASH (Stability, Handling & Use of Liquid Fuels).



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