Infineum Marine Fuel Additives

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Enhancing Methanol Fuel with Additives: A Solution for Shippers

Methanol has gained prominence in the shipping industry due to its compatibility with existing dual-fuel main engines. However, methanol faces challenges related to lubricity and corrosion due to its low viscosity and hygroscopic nature. To address these issues, fuel additives play a crucial role.

The Importance of Lubricity and Corrosion Resistance

Lubricity: A Key Factor

Lubricity refers to a fuel's ability to reduce friction and wear within the engine components. In methanol engines, maintaining proper lubrication is essential to prevent excessive wear on critical parts such as fuel pumps, injectors, and valves. Without adequate lubricity, these components can suffer premature damage, leading to reduced efficiency and increased maintenance costs.

Corrosion: A Silent Threat

Corrosion occurs when fuel reacts with metal surfaces, causing gradual deterioration. In methanol engines, corrosion can affect critical components like fuel lines, tanks, and valves. Corroded parts compromise safety, increase maintenance expenses, and potentially lead to fuel leaks or system failures.

Fuel Additives: The Solution

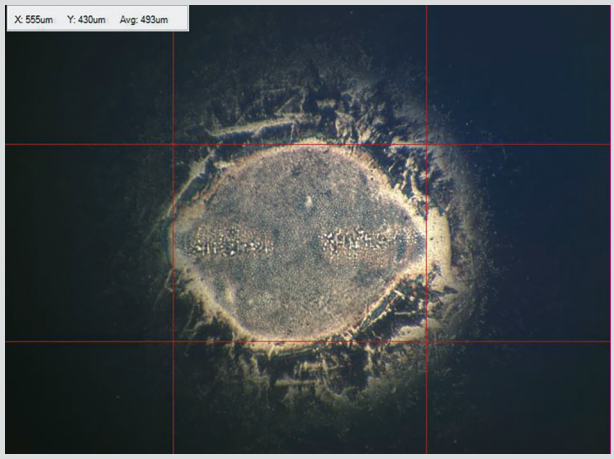
Fuel additives are chemical compounds specifically designed to enhance fuel properties.

Improving Lubricity

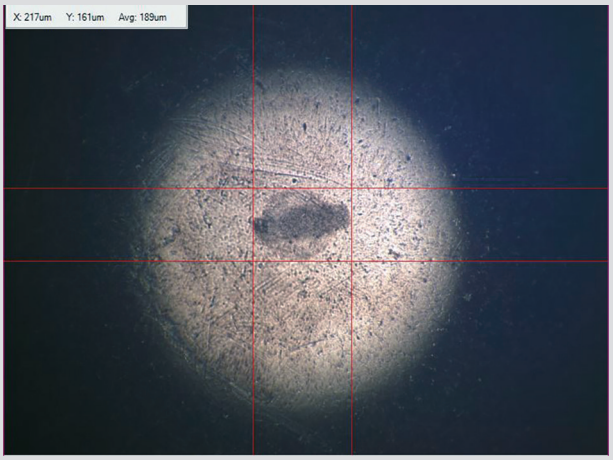
Methanol's lubricity can be significantly improved with a small amount of lubricity additives. These additives create a protective film on metal surfaces, reducing friction and wear. By incorporating them into methanol, shippers can ensure smoother engine operation and prolong the lifespan of engine components.

Mitigating Corrosion

Corrosion inhibitors are another class of additives that combat metal degradation caused by methanol. These inhibitors form a barrier between the fuel and metal surfaces, preventing corrosive reactions. By using additised methanol, shippers can safeguard their engines against corrosion-related damage.



Methanol Base



Methanol with Additive

Benefits for Shippers

Unified Bunkering Solution

One of the most significant advantages of additised methanol is its compatibility across different engine types. A major auxilliary engine manufacturer reports that additised methanol has lubricity performance equivalent to diesel, meaning shippers can use the same fuel for both auxiliary/generator engines and main engines. This simplifies logistics, reduces storage complexity, and streamlines fuel management.

Cost Savings

By minimising wear and corrosion, additised methanol reduces maintenance costs. Shippers can allocate resources more efficiently, focusing on operational excellence rather than frequent repairs. Additionally, the unified bunkering approach eliminates the need for separate fuel storage, saving valuable space onboard.

Conclusion

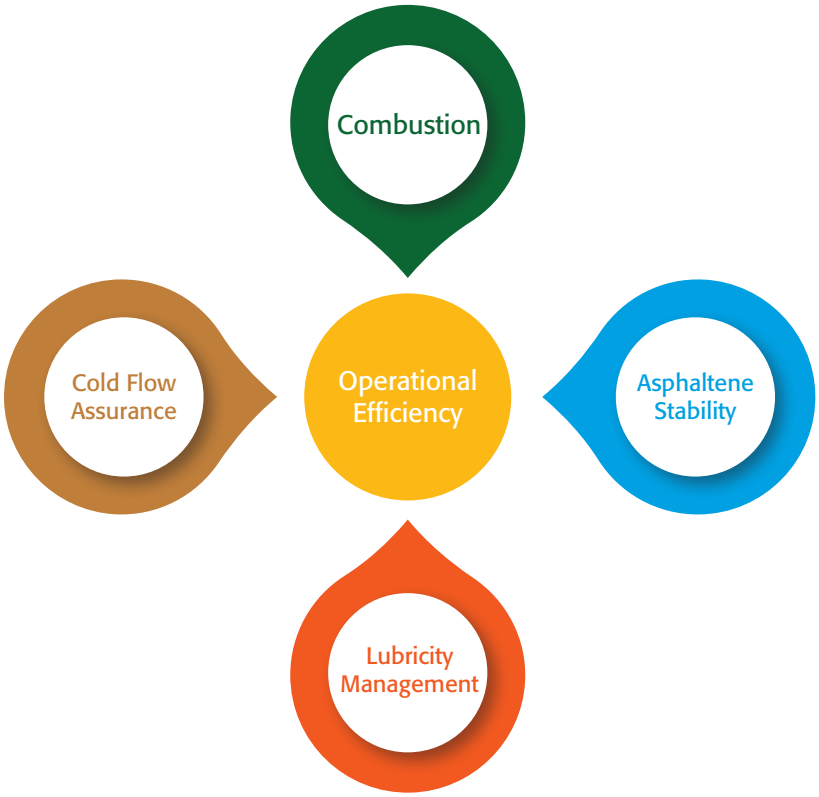
Fuel additives hold the key to unlocking methanol's full potential in shipping. Shippers should explore high-quality additives that enhance lubricity and protect against corrosion. With the right additives, methanol becomes a reliable, efficient, and environmentally friendly choice for all marine engines. So, next time you bunker, consider the power of additised methanol to achieve smoother and more sustainable shipping.

Infineum B Series Marine Fuel Additive Solutions

Infineum has developed range of marine fuel additives, the Infineum B Series, designed to meet seafarers needs now and moving towards a decarbonised future. Since 2020 there has been an increase in variable fuel quality resulting in increased issues for fuel operations onboard. Building on years of fuels technical expertise, Infineum B Series of additives was initially developed for addressing the challenges in low sulphur fuels*, however, with the drive towards decarbonisation, there are new hurdles to overcome across the whole marine fuel spectrum. Infineum B Series additives are cost-effective solutions to help vessel operators reduce maintenance costs/downtime, improve engine efficiency, improve fuel economy and emissions output to help meet the IMO objective of cutting greenhouse gas emissions of international shipping by 50% from 2008 levels by 2050.

* Very Low Sulphur Fuel Oil (VLSFO), Ultra Low Sulphur Fuel Oil (ULSFO) and Marine Gas Oil (MGO)

The Infineum B Series works to address four key areas to ensure enhanced vessel operation:



Infineum Marine Fuel Additive Slate

Application	Issue	Product Range	High Sulphur Fuel Oil (>0.5% S)	Very Low Sulphur Fuel Oil (<0.5% S)	Ulta Low Sulphur Fuel Oil (<0.1% S)	Marine Gas Oil
Fuel Cold Flow	Wax impacting storage, flow and filtration/purification	Infineum B100 series	N/A	Pour point Depressant (PPD)		CFPP & PPD
Fuel Stability/ Compatibility	Sludge/ Asphaltene control	Infineum B200 series	Fuel recovery (TSP/TSA) and improved onboard fuel handling operation (Alfa Laval spin test)			N/A
Fuel Lubricity	Metal on metal wear	Infineum B300 series	N/A	Enhanced fuel lubricity		
Combustion	Non optimal combustion	Infineum B400 series	Improved fuel combustion (CII) and reduced emissions			

Wax Management

VLSFO, ULSFO and MGO produced from low sulphur feedstock contain more wax. As temperatures decrease, wax in the fuel drops out of solution and forms wax crystals. As the temperature reduces further, the crystals continue to grow and form lattice structures within the fuel, quickly gelling the fuel, known as the pour point. As little as 1% of wax out of solution can cause this to happen. This can lead to fuel filter plugging, engine fuel starvation and solidification of wax in fuel storage tanks impacting the usage of such tanks. Cold flow additives modify the wax crystal structures to reduce pour point and prevent rapid filter plugging and plugging of tank output screens.

In addition to this ULSFOs and VLSFOs have lower viscosities which can create issues at the point of injection, cold flow additives provide flexibility to allow fuel transfer at lower temperatures so that optimum injection viscosity can be maintained.

How Infineum can help

With differences between wax distributions for MGO and VLSFOs, it is important that the right additive solution is chosen. Infineum has a wide range of wax crystal modification additives, the Infineum B100 series, ensuring that whatever your requirements we have a solution for you. To find out about our full range of wax management additives, please contact us at fuels.additives@infineum.com.

Asphaltene Management

Asphaltene deposition (or sludge) is a common concern in VLSFOs due to blending of incompatible aromatic, high sulphur fuel components with paraffinic, low sulphur components in order to meet the 0.5% sulphur limit. ISO8217 has a total sedimentation parameter to help protect vessel operators, however, the test does have its limitations when it comes to ensuring trouble-free operations over an extended period.

How Infineum can help

Infineum asphaltene dispersant chemistry has been designed to improve trouble-free operation onboard ship through enhanced fuel stability and inter fuel compatibility (e.g. at switch over or bunkering) over extended time periods. Infineum marine fuel asphaltene chemistry has proven commercial field performance and demonstrates unique capability to protect, as well as to recover fuels from severe sludge deposition. Performance can be evidenced in all suitable stability/ compatibility test protocols referenced in CIMAC's marine fuel handling guidelines as well as a new test under consideration which mimics onboard fuel operability, the Alfa Laval Spin Test. To find out about our full range of asphaltene management additives, please contact us at fuels.additives@infineum.com.

Lubricity Management

As mentioned above, the move to lower sulphur fuels (MGO, LSFO, ULSFO and VLSFO) has resulted in lower fuel viscosities. Lower viscosity fuels lead to worse lubrication and higher wear in critical high pressure fuel injection components. Infineum lubricity additives have been tested under rigorous US Navy testing protocols.

How Infineum can help

Infineum lubricity additives are designed to reduce wear in mixed lubrication systems keeping engines working for longer. For your specific lubricity management requirements and to find out about our full range of additives, please contact us at fuels.additives@infineum.com.

Combustion Management

The IMO has the objective of cutting greenhouse gas emissions of international shipping by 50% from 2008 levels by 2050. Infineum have developed a combustion improver fuel additive, which has been designed to deliver statistically significant fuel economy and emissions reduction benefits. ISO 8217 addresses fuel combustion quality through CCAI (Calculated Carbon Aromaticity Index), which as the name alludes to is a calculation using the density and the kinematic viscosity of the fuel. It is recognised, with the introduction of VLSFOs, that CCAI may not give an accurate reflection of a fuel's combustion quality due to increased utilisation of cracked cutter stock into the fuel blending pool.

How Infineum can help

The Infineum combustion improver additive will give tangible benefits to ship operators through enhanced Carbon Intensity Indicator (CII) score through enhanced fuel economy as well as significant emissions reductions.

About us

Infineum is a specialty chemicals company whose purpose is to create a sustainable future through innovative chemistry.

A joint venture between Shell and Exxon Mobil, Infineum is one of the world leaders in the formulation, manufacturing and marketing of petroleum additives for lubricants and fuels with operations and production facilities worldwide.

Delivering through powerful research and development capabilities around innovative chemistry, Infineum maintains its relentless focus on technology excellence, reliability, operational excellence and collaboration to deliver to customers *performance they can rely on.*

Infineum draws on a rich heritage that is underpinned by leading edge research and development activities. For nearly 80 years, we have been innovators of additive products, including those used in:

- Automotive, heavy-duty diesel and marine engine oils and fuels
- Diesel fuels
- Specialty applications such as transmission fluids and industrial oils

Our smart solutions have become key components of today's most demanding applications and advanced hardware systems.

Infineum is a truly world-class organisation.

Our global operations encompass:

- Worldwide production facilities
- Sales representation in more than 70 countries
- Business centres strategically located in the UK, USA, China and Singapore
- Business conducted in over 20 languages
- A global supply chain
- Multicultural business teams
- Over 2000 highly skilled and dedicated colleagues

Working with Infineum

To discuss your specific requirements and to find out more about our range of marine fuel additives please contact us at fuels.additives@infineum.com

Infineum Marine Fuel Additives

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