



## MARINE FUEL SPECIALTIES

*Enhancing your fleet  
performance*



Your experts in navigating the  
changing world of marine fuels





# Enhancing your fleet performance



Innospec is an international specialty chemicals company with over 2,100 employees in 22 countries. We manufacture and supply a wide range of specialty chemicals to markets in the Americas, Europe, the Middle East, Africa and Asia-Pacific. Customers benefit from the strength of our worldwide manufacturing capabilities, our global distribution facilities and our world-class technology centres fitted out with state-of-the-art equipment.

We are a market leader and the world's largest supplier of marine fuel additives. For over 70 years, our industry leading experts have worked with ship owners and bunker fuel operators as trusted partners to improve fleet performance, whatever type of residual fuel is being used.

We understand the challenges our customers face daily. Whether it is the latest IMO stipulations, the new Carbon Intensity Index (CII) ratings, EU-ETS, understanding the risks of Very Low Sulphur Fuel Oil (VLSFO) or managing a transition to biofuels, we see the marine industry evolving rapidly in the face of more stringent emissions legislation.

We can provide the science and the strategies to ensure our customers are always prepared and compliant. We are continually developing the new, innovative technologies that will contribute to decarbonisation and a cleaner, greener and more sustainable future without sacrificing performance at sea. We are acutely aware of the ever-present need to improve operational efficiency and reduce fleet costs while supporting our customers as they adapt to new environmental legislation.

## Dedicated to fuels, from well to wake

As a business, we work closely with the oilfield, refinery, performance fuel, power generation and aviation industries so our understanding of fuels really does embrace everything from the 'well to the wake'. We are the fuel experts and our products are tried and tested in many different environments, whether at sea, on the road or in the air.

Our marine team comprises people with technical, scientific and customer facing backgrounds. Many of our engineers have first-hand experience of working at sea onboard ships in their previous jobs. This provides us with a unique insight and bank of knowledge to draw on when finding solutions to the everyday issues ship owners and fleet operators face when handling fuel at sea.

Not surprisingly, our fuel treatments deliver on many levels, from protecting an engine to reducing harmful emissions. We can improve fuel stability to ensure a better combustion profile. Increased combustion efficiency impacts fuel economy directly and boosts engine performance. Efficient combustion also reduces the emissions of substances harmful to human health and the environment.



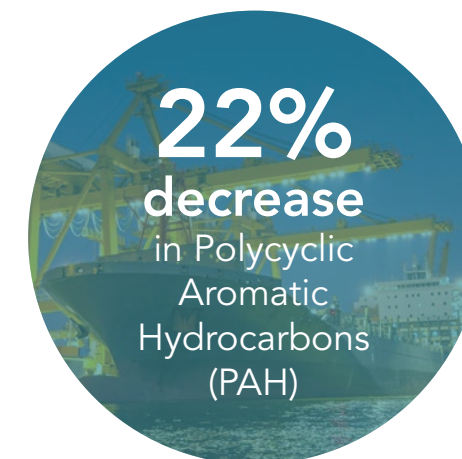
# Real world results



After decades of fleet trials, test bed data and laboratory analysis, our technologies enhance engine performance and ensure less fuel is used. This in turn reduces emissions and benefits the environment. We are working at the forefront of this new era, helping to combine operational efficiency and reliability with sustainability so we can minimise the environmental impact of transporting goods by sea.



Our cutting-edge fuel treatments are designed to boost energy efficiency and deliver fuel savings of up to 3.9%. This is helping to reduce our customers' operational costs while maintaining the optimal performance of their vessels.



Real world test results demonstrate that our additives significantly reduce emissions including a decrease of up to 22% in Polyacrylic Aromatic Hydrocarbons (PAH). This can all be achieved without sacrificing engine performance. This is great news for the environment.



With Octamar™ it is not only possible to reduce emissions but also visibly decrease black smoke by up to a remarkable 60%. This creates a safer and more pleasant working environment for all on board without compromising engine performance or reliability.



By treating fuel with Octamar™ it is possible to prevent both distillate and asphaltene sludge formation in VLSFO up to 100 %, ensuring both the fuel system and engine run clean and trouble-free. Less sludge means less wasted fuel, less unplanned maintenance and defects and better conditions for the crew.

Before



After





# Our products



We manufacture and supply a wide range of fuel treatments for the marine industry.

The performance of our Octamar™ range of combustion catalysts has been recognized by the leading ship classification society ClassNK. ClassNK independently verified the performance of our Octamar™ Ultra HF, Octamar™ Complete and Octamar™ F35C for improving fuel economy and reducing emissions. Octamar™ HF-10 Plus received a 'Statement of Fact' verifying its performance in maintaining VLSFO stability.

## Very Low Sulphur Fuel Oil (VLSFO) also when blended with biofuels up to 30%

Prevent the problems of fuel instability and bunker incompatibility by using Octamar™ HF-10 Plus and Octamar™ Ultra HF - the only additives that protect against both distillate sludge and asphaltene sludge and biofuel degradation in VLSFO.

## High Sulphur Fuel Oil (HSFO)

Improve scrubber efficiency by reducing exhaust particulates when using Octamar™ BT-25 - an additive with more than 20 years of proven performance, and Octamar™ Complete.

## Middle Distillate and Ultra Low Sulphur Fuel Oil (ULSFO)

For safe operation and to protect your engine use Octamar™ LI Series and Octamar™ Winterflow - fuel treatment with proven and verified performance.



|                             |                      | Anti-Corrosion | Ash Inhibitor | Asphaltene Dispersant Stabiliser | Biofuel Application | Cold Flow Improvement (CFPP) | Combustion Catalyst | Detergent Cleaner, Anti-Foulant | FAME Stabiliser | Lubricity Improver | Organic Ignition Improver | Stabiliser, Anti-Ageing | Soot Catalyst | Strong Biocide |
|-----------------------------|----------------------|----------------|---------------|----------------------------------|---------------------|------------------------------|---------------------|---------------------------------|-----------------|--------------------|---------------------------|-------------------------|---------------|----------------|
| VLSFO                       | Octamar™ HF-10 Plus  |                |               |                                  |                     |                              |                     |                                 |                 |                    |                           |                         |               |                |
|                             | Octamar™ Ultra HF    |                |               |                                  |                     |                              |                     |                                 |                 |                    |                           |                         |               |                |
| HSFO                        | Octamar™ BT-25       |                |               |                                  |                     |                              |                     |                                 |                 |                    |                           |                         |               |                |
|                             | Octamar™ Complete    |                |               |                                  |                     |                              |                     |                                 |                 |                    |                           |                         |               |                |
|                             | Octamar™ F35C        |                |               |                                  |                     |                              |                     |                                 |                 |                    |                           |                         |               |                |
| Middle Distillate and ULSFO | Octamar™ LI-5 Series |                |               |                                  |                     |                              |                     |                                 |                 |                    |                           |                         |               |                |
|                             | Octamar™ Winterflow  |                |               |                                  |                     |                              |                     |                                 |                 |                    |                           |                         |               |                |
|                             | Grotamar 71          |                |               |                                  |                     |                              |                     |                                 |                 |                    |                           |                         |               |                |



Very Low Sulphur Fuel Oil (VLSFO)


| Octamar™           | HF-10 Plus   | Ultra HF   |
|--------------------|--|--|
| Product Highlights | Octamar™ HF-10 Plus prevents VLSFO ageing, keeps your engine running efficiently by stabilising fuel blends, reducing sludge formation and improving combustion.   | Octamar™ Ultra HF is the multi-functional solution tailored for VLSFO. It keeps your engine running efficiently by improving fuel blend stability, ignition and combustion as well as reducing soot formation. It offers an option in your SEEMP implementation and to meeting your Carbon Intensity Index (CII) ratings.  |
| Benefits           | <ul style="list-style-type: none"><li>• Reduces VLSFO sludge in tanks, purifiers and filters.</li><li>• Prevents distillate ageing (chemical breakdown) and secures safe VLSFO heating.</li><li>• Improves combustion for stable and homogeneous fuel.</li><li>• Improves compatibility when using VLSFO.</li><li>• Provides safer fuel changeovers for ECAs.</li><li>• Unique technology keeps the whole fuel system and injectors clean.</li><li>• Optimises engine performance.</li><li>• Minimises unplanned maintenance and operational interruptions.</li><li>• Keeps storage tanks clean.</li><li>• Provides excellent stability performance of up to 30% biofuel blends.</li><li>• Significantly improves stability and minimises filter blocking.</li></ul> | <p>All the performance of Octamar™ HF-10 Plus <b>with the additional benefits:</b></p> <ul style="list-style-type: none"><li>• Combines stability, ignition and combustion benefits in one product.</li><li>• Provides cleaner running from powerful additive technology.</li><li>• Improves fuel economy and reduced fouling of exhaust gas systems.</li><li>• Reduces particulate matter, emissions and CO<sub>2</sub>e.</li><li>• Reduces exhaust system fouling.</li></ul> |
| Application        | Add Octamar™ HF-10 Plus to fuel storage tanks before bunkering to achieve best mixture. Maintain a good reserve of additive in each tank by pre-treating each bunkering to maximise fuel performance and reduce sludge and comingling issues by improving stability.   | Apply Octamar™ Ultra HF to fuel storage tanks prior to bunkering fuel to achieve the maximum effect. Enhancing vessel fuel performance, cleaner fuel handling plant, better and more complete fuel burn and efficiency, less fouling in post combustion systems such as turbo chargers, exhaust gas boilers and EGR.   |
| Verification       | <ul style="list-style-type: none"><li>• Dispersion &amp; centrifugal evaluation of marine additives under JSA standard verified by Class NK.</li><li>• Reserve Stability Number (RSN) ASTM D7061-17 test verified by Class NK.</li></ul> <div>ClassNK</div>  | <ul style="list-style-type: none"><li>• ClassNK Innovation Endorsement for eight separate field trials</li><li>• Improvement of fuel economy up to 3.9% and reduced Particulate Matter (PM) emissions by up to 60%.</li><li>• Improvement of fuel economy. Reduction of exhaust gas and other emissions.</li></ul> <div>ClassNK Innovation Endorsement</div>   |
| Treat Rate         | 1:10,000-15,000: VLSFO fuel stability and compatibility, less sludge, better operability.<br>1:4,000: maximises fuel performance, long-term thermal stability results and optimised engine performance oxygen stability results.<br>1:15,000: for VLSFO fuel stability and compatibility, reduced sludge and better operability.   | 1:6,000: maximises fuel performance, long-term thermal stability results and optimised engine performance with significant fuel economy and emission reduction.  |
| Packaging          | Non-returnable 25-litre pails.   | Non-returnable 25-litre pails and 200-litre drums.   |

High Sulphur Fuel Oil (HSFO)

| Octamar™                       | BT-25  | Complete   | F35C   |
|--------------------------------|--|--|--|
| Product Highlights             | High impact residual fuel improver.  | Groundbreaking, complete technology for scrubber vessels. It keeps your engine running efficiently by improving fuel blend stability, ignition and combustion as well as reducing soot formation. It offers an option in your SEEMP implementation and to meeting your Carbon Intensity Index (CII) ratings.   | Highly efficient, reliable technology for scrubber vessels.  |
| Benefits                       | <ul style="list-style-type: none"><li>• Delivers high performance sludge reduction.</li><li>• Perfect for “in-service” fuel tank cleaning.</li><li>• Reduces filter blocking.</li><li>• Improves compatibility.</li><li>• Safer fuel changeover.</li><li>• Cleaner separators and fuel tanks.</li><li>• Homogeneous fuel for the prevention of purifier issues and better combustion.</li><li>• Boosts fuel performance and creates better combustion.</li></ul> | <ul style="list-style-type: none"><li>• Optimises energy efficiency.</li><li>• Improves ignition and combustion profile.</li><li>• Reduces SFOC and CO<sub>2</sub>e.</li><li>• Reduces particulate matter and black smoke in exhaust gases.</li><li>• Reduces exhaust system fouling.</li><li>• Enhances fuel stability.</li><li>• Reduces sludge production.</li><li>• Low impact exhaust system cleaning - soot catalyst.</li><li>• Fuel stabiliser for overall performance boost.</li></ul> | <ul style="list-style-type: none"><li>• Optimises energy efficiency.</li><li>• Improves ignition and combustion profile.</li><li>• Reduces SFOC and CO<sub>2</sub>e.</li><li>• Reduces particulate matter and black smoke in exhaust gases.</li><li>• Reduces exhaust system fouling.</li><li>• Low impact exhaust system cleaning - soot catalyst.</li></ul>  |
| Application                    | Add Octamar™ BT-25 via chemical metering pump or manual dosage into fuel storage tanks before bunkering to achieve best mixture. Maintain a good reserve of additive in each tank by pre-treating each bunkering to maximise fuel performance and reduce sludge and comingling issues by improving stability.  | Add Octamar™ Complete via a chemical metering pump or manual dosage into bunker tanks. Maximises vessel fuel performance, cleaner fuel handling plant, better and more complete fuel burn and efficiency, less fouling in post combustion systems such as turbo chargers, exhaust gas boilers and EGR.   | Add Octamar™ F35C via a chemical metering pump or manual dosage into bunker tanks. Enhancing vessel fuel performance, better and more complete fuel burn and efficiency, less fouling in post combustion systems such as turbo chargers, exhaust gas boilers and EGR.  |
| Field Experience and Approvals | <ul style="list-style-type: none"><li>• Proven field experience with improved fuel stability, compatibility, and combustion.</li><li>• Proven high performing tank cleaning test results in thousands of vessels.</li><li>• Holds no-objection letters from all major marine engine producers.</li></ul>   | <ul style="list-style-type: none"><li>• ClassNK Innovation Endorsement for eight separate field trials.</li><li>• Improvement of fuel economy up to 3.9% and reduced Particulate Matter (PM) emissions by up to 60%.</li><li>• Improvement of fuel economy. Reduction of exhaust gas and other emissions.</li></ul> <div></div>   | <ul style="list-style-type: none"><li>• ClassNK Innovation Endorsement for eight separate field trials.</li><li>• Improvement of fuel economy up to 3.0% and reduced Particulate Matter (PM) emissions by up to 60%.</li><li>• Improvement of fuel economy. Reduction of exhaust gas and other emissions.</li></ul> <div></div> |
| Treat Rate                     | 1:15,000 – 1:25,000 maximises fuel performance, long-term stability results and optimised engine performance.  | 1:6,000: maximises fuel performance, long-term thermal stability results and optimised engine performance with significant fuel economy and emission reduction.  | 1:6,000: maximises fuel performance, long-term thermal stability results and optimised engine performance with significant fuel economy and emission reduction.  |
| Packaging                      | Non-returnable 25-litre pails.   | Non-returnable 25-litre pails and 200-litre drums.   | Non-returnable 25-litre pails and 200-litre drums.   |



Middle Distillate and Ultra Low Sulphur Fuel Oil (ULSFO)

| Octamar™                          | LI Series  | Winterflow  | Grotamar 71  |
|-----------------------------------|--|---|--|
| Product Highlights                | Optimum fuel performance and multi-functional lubricity improvers. For the enhanced version, it offers prevention to ageing during prolonged storage.  | High performing Multi-functional Cold Flow Improver.  | Grotamar 71 provides lasting protection against microbial material degradation with broad, balanced spectrum of effects, works immediately.  |
| Benefits                          | <ul style="list-style-type: none"><li>• Improves fuel lubricity.</li><li>• Improves storage stability.</li><li>• Reduces injector fouling.</li><li>• Improves corrosion resistance.</li><li>• Reduces filter blocking.</li><li>• Protects engine components – longer fuel injector- and pump life.</li><li>• Prevents bacteria growth, proactive protection.</li><li>• Improves oxidation and thermal stability for Marine Distillate containing up to 30% biofuels.</li></ul> | <ul style="list-style-type: none"><li>• Protects against wax formation.</li><li>• Improves low temperature operability.</li><li>• Reduces CFPP (Cold Filter Plugging Point).</li><li>• Reduces pour point.</li><li>• Keeps fuel pumpable and filterable in cold climate conditions.</li></ul> | <ul style="list-style-type: none"><li>• Suitable for use in all liquid hydrocarbon fuels including biofuels.</li><li>• Used for shock treatment to kill existing contamination or as preventative as part of housekeeping schedule.</li><li>• Protects and controls all common bacteria, yeasts and moulds identified in fuels.</li><li>• Protects and controls microbes present on all tank surfaces (walls, roof etc), making treatment more effective and minimises risk of re-contamination.</li><li>• Treats all dissolved/emulsified water in the fuel layer.</li><li>• Remains in the storage tank when water bottoms are drained.</li><li>• Provides protection further downstream as fuel is distributed.</li><li>• Transfers from the fuel phase into the water phase in equilibrium;<ul style="list-style-type: none"><li>- as biocide in the water phase is consumed it is replenished.</li><li>- treats any water introduced into the storage tank.</li></ul></li><li>• Reduces the risk of unplanned shutdowns/maintenance/cleaning operations.</li><li>• Stops the formation of sediments and slime which can block filters in distribution and vehicles systems.</li><li>• Helps to maintain performance of other fuel additives present, which may become deactivated by microbes.</li><li>• Helps prevent engine injector fouling in vehicles.</li></ul> |
| Application                       | Add Octamar™ LI Series manually into bunker tanks prior to bunkering to achieve best mixture.  | Add Octamar™ Winterflow by manual dosage into bunker tanks. Note: Must be applied before issues occur.  | Add Grotamar 71 at the full dosage before the full tank volume addition is advised when the tank is one third full, then the tank can be filled to capacity. Ideally agitation would help but it's not essential. Grotamar 71 can also be dosed in line which is the best option if available<br>= Preventative Treatment.<br>If contamination is severe, Grotamar 71 should be dosed immediately<br>= Shock Treatment.  |
| Field Experience and Verification | Tested and verified by Lloyds Register for: Oxidation Stability, Thermal Stability, Injector Fouling, Steel Corrosion, Fuel Lubricity, and Filter Blocking<br> Tendency, all according to defined Standard Test Methods.  | <ul style="list-style-type: none"><li>• More than 50 distillate fuels tested with proven performance to improve Cold Filter Plugging Point (CFPP) and Pour Point.</li><li>• Average CFPP response in untreated DMA = 6-7°C.</li></ul>   | <ul style="list-style-type: none"><li>• Reduces the risk of unplanned shutdowns/maintenance/cleaning operations.</li><li>• Stops the formation of sediments and slime which can block filters in distribution and vehicles systems.</li><li>• Helps to maintain performance of other fuel additives present, which may become deactivated by microbes and to prevent engine injector fouling in vehicles.</li></ul>  |
| Treat Rate                        | 1:4,000: maximises fuel performance, lubricity and long-term thermal stability results.<br>1:10,000: for optimum fuel lubricity performance.   | 1:1,000.  | 1:20,000 to 1:5,000: Preventative Treament.<br>1:2,000 to 1:1,000: Shock Treatment / Quick Kill.   |
| Packaging                         | Non-returnable 25-litre pails.   | Non-returnable 25-litre pails.  | Non-returnable 25-litre pails.   |





# Our teams and global stock points

We operate global stock points all over the world and provide dedicated technical support within each of our regions. This ensures we can provide the innovative solutions our customers need to drive efficiency, reduce emissions and enhance overall fleet performance. Our products are always in the right place at the right time. We are leading the way towards a cleaner, more efficient and sustainable future for the marine industry.

1 Algeciras, ES

2 Singapore, SG

3 Rotterdam, NL

4 Piraeus, GR

5 Ellesmere Port, GB

6 Melbourne, AU

7 Hong Kong, HKG

8 Ulsan, KR

9 Panama, PA

10 Ajman, UAE

11 Houston, US

12 Miami, US

13 Tacoma, US

14 Shanghai, CN

15 Istanbul, TR

16 Osaka, JP

17 Durban, SA

18 Auckland, NZ

19 New York, US

20 Los Angeles, US

21 Suez, EG

22 Qingdao, CN

23 Dalian, CN

24 Quangzhou, CN

25 Tianjin, CN

Major stock point

Medium stock point

Minor stock point - limited product availability







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For further information about our products and services please contact your nearest Innospec Customer Service Centre or visit [octamar.info](http://octamar.info)

