

## DESCRIPTION

AMERGY XLS PLUS lowsulfur fuel oil conditioner is a new fuel additive formulated for treating all of today's IMO 2020 compliant fuels. Today's compliant fuels have either maximum 0.5% sulfur or maximum 0.1% sulfur content for Emission Control Area (ECA). AMERGY XLS PLUS contains the latest generation detergency chemistries combined with powerful, nonchlorinated cleaning solvents, surfactants, and dispersants for minimizing the effects of fuel instability as well as the incompatibility between two or more fuels; contains corrosion inhibitors to protect fuel tank and injection equipment surfaces; and contains lubricity improvers for restoring fuel boundary lubrication properties. AMERGY XLS PLUS is suitable for use with all types of compliant fuels, which can include residual and distillate fuel grades, as well as bioderived and supplierspecified hybrid fuels.

## BACKGROUND

Compliant fuels (i.e., VLSFORM, ULSFODM, etc.) are likely comprised of a mixture of various blend components. Typically, the majority of these blend components consist of highly processed, lowsulfur distillate streams, which can originate from several refinery units. Specific lowsulfur distillates would subsequently be commingled by refiners, fuel traders, and/or physical bunker suppliers and treated with fuel stabilizers, as needed, to create stable fuels prior to delivery. In some cases, onroad diesel, which is produced globally and is readily available, may be used as a blend component where there exists an inadequate supply of lowsulfur distillate.

Depending on the quality of blend components and the efficacy of any fuel stabilizers used, even a stable fuel may become unstable after delivery to a vessel. As fuel is stored in a vessel's tanks, the effectiveness of any fuel stabilizer that may have been used beforehand will gradually decrease. Over time, fuel oxidation and instability can result in the formation of sludge that could lead to fouling of fuel tanks, piping, centrifuges, and filters.

The ingress of water, which can originate from the condensation of water from the humid marine environment or from a leaky heating coil, could increase the amount of fuel oxidation and accelerate the rate of sludge formation. Another possible source of water may originate from onroad diesel that may have been used in blending. For example, depending on the geography, onroad diesel can have a maximum allowable water content of up to 200 ppm per EN 590 for the EU and up to 500 ppm per ASTM D975 in the US.

When compliant fuels are mixed with another compliant, but incompatible, fuel from a different port and/or bunker supplier, additional sludge formation may result and potentially overwhelm fuel handling systems on board.

Highly processed, lowsulfur distillates often lack the dry lubrication properties that reduce metal-to-metal contact of fuel pumps and fuel injection equipment. In addition, lowsulfur distillates, which are often the primary blending components used in compliant fuels, have relatively lower kinematic viscosity when compared to typical high sulfur residual fuels.

As fuel pumps are designed for a minimum viscosity and fuel antiwear performance, it becomes essential to ensure that new compliant fuels are able to maintain adequate hydrodynamic lubrication in order to prevent fuel pump wear and scuffing as well as fuel pump leakage. Inadequate fuel hydrodynamic lubrication properties can result in fuel injection equipment seizing and potential engine damage. Fuel pump leakage can lead to hot start and low fuel setting start difficulties.

To overcome the abovementioned challenges, engine manufacturers have adopted a wider application of hydrodynamic lubrication and oxidation stability requirements for distillate fuel grades by stipulating the use of ISO 8217:2010 (or later) marine fuel specification. The ISO 8217:2010 revision introduced the lubricity and oxidation stability requirements for distillate fuels.

By stipulating ISO 8217:2010 (or later), bunker buyers can attain the required hydrodynamic lubrication and oxidation stability requirements set forth by engine manufacturers. However, just as fuel stabilizers can lose their efficacy, the positive effect of any lubricity additive used by the supplier to meet the lubricity specification will gradually diminish and will need to be restored.

## APPLICATION

AMERGY XLS PLUS offers engine operators a single, multifunctional fuel additive to overcome the challenges in achieving the required hydrodynamic lubrication and oxidation stability when using today's compliant fuels. AMERGY XLS PLUS is also suitable for use with fuels that contain bioderived materials (e.g., ULSFODF), which are more susceptible to water contamination and, as a result, may have decreased oxidation stability.



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AMERGY XLS PLUS has been formulated with fuel stabilizer components that include solvents, surfactants, and dispersants to prevent fuel instability and incompatibility between all different types of fuels.

Improving the compatibility between dissimilar fuels becomes essential when fuel segregation is not possible during bunkering (e.g., topping off) and also during fuel switchover, as applicable. The fuel stabilizer components in AMERGY XLS PLUS also stabilize and safely extend the storage life of fuel by preventing the fuel from readily oxidizing in fuel tanks.

The latest generation of detergents and corrosion inhibitors used in AMERGY XLS PLUS clean, protect and maintain fuel injection equipment free from deposits, varnishes, and/or lacquers that may arise from fuel contamination. Fuel contamination may inadvertently be present in fuel as water, acid wastes, used lube oils, bioderived materials, and/or other chemical foulants. Furthermore, metal surfaces that are free from deposits are better able to utilize the lubricity improves in AMERGY XLS PLUS.

Formulated with highly effective lubricity improvers, AMERGY XLS PLUS minimizes metal-to-metal contact and imparts properties that increase fuel oil film thickness. In doing so, AMERGY XLS PLUS ensures sufficient boundary lubrication and improves high frequency reciprocating rig (HFRR) test result of the treated fuel by reducing its average wear scar diameter rating.

When appropriately dosed and applied, AMERGY XLS PLUS offers excellent hydrodynamic lubrication protection and correspondingly improves the HFRR test result. In fact, when applied to a fuel with lubricity above the specification per ISO 8217, AMERGY XLS PLUS can essentially guarantee sufficient reduction of the average wear scar diameter rating to within the maximum 520  $\mu\text{m}$  HFRR specification required.

## USE

When used with each fuel delivery, the dosage rate will vary depending on the grade of fuel.

1. For low sulfur distillate fuel oil AMERGY XLS PLUS, fuel conditioner should be dosed at 1/5000 (1liter for 5 tons) of low sulfur fuel.
2. For low sulfur residual fuel oil AMERGY XLS PLUS fuel conditioner should be dosed at 1/3000 (1liter for 3 tons) of low sulfur fuel.

It is recommended that AMERGY XLS PLUS be metered continuously into the fuel. This is best accomplished by the use of a metering system (e.g., DREW Beta Metering System). Dosing in this manner assures proper mixing, dispersion, and sufficient quantities of AMERGY XLS PLUS when needed. It is usually recommended that the product be dosed to the bunkerline or lowpressure side of the fuel treatment system, but the actual dosing location may vary depending on the fuel system layout and design.

## FEATURES

- Multifunctional additive formulated for today's compliant fuels (i.e., VLSFORM, ULSFODM/DF, etc.)
- Fuel stabilizer components to prevent fuel oxidation/ instability in tanks and to clean & maintain surfaces free from sludge, deposits, and other foulants as a result of incompatibility
- Corrosion inhibitors to protect metal surfaces from fuel contamination
- Essential lubricity additives to reduce metal-to-metal contact surface wear and to prevent premature wear
- Nonchlorinated chemistry

## BENEFITS

- Maintains tanks, heaters, & filters free from sludge and other types of organic deposits
- No storage (oxidation) stability problems for fuels held in extended storage
- Minimizes the effects of fuel switchover incompatibility
- Restores lubricity to meet marine fuel specification and engine requirements
- Maintains and extends the life of fuel injection equipment
- Restores injection performance for optimized fuel metering and atomization as designed
- Reduced hazards to human health and environment



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Alternatively, AMERGY XLS PLUS can be added to lowsulfur fuel oil tanks by directly adding it to nominated bunker tanks prior to fuel delivery (e.g., via sounding tube). This will ensure that AMERGY XLS PLUS is properly mixed and dispersed throughout the fuel during bunkering.

If not used on a continuous basis, AMERGY XLS PLUS may be applied on a prescriptive basis. The prescriptive dosage consists of using the product only when the fuel fails one or more testing parameters (i.e., HFRR wear scar dia. > 520  $\mu\text{m}$ , oxidation stability > 25 g/m<sup>3</sup>, water > 0.3%, etc.) or falls below a certain threshold (e.g., < 0.05% sulfur content), or whenever a result from lubricity, fuel contamination, incompatibility and/or (oxidation) stability should arise.

Fuel stability/compatibility may be quickly determined using the FO COMPATIBILITY TESTER, available from Drew Marine. (Refer to the FO COMPATIBILITY TESTER product data sheet for technical details and ordering information about that test kit.)

## **TYPICAL PHYSICAL AND CHEMICAL PROPERTIES**

Appearance:	Clear amber liquid
Density, kg/m <sup>3</sup> @15°C:	0.9257
Flash Point, °C:	> 61°C

## **PACKAGING**

AMERGY XLS PLUS is available in 25liter (PCN 1402403) containers.



**Contact your Drew Marine representative for more information**

Drew Marine maintains Safety Data Sheets on all of its products. These documents contain health and safety information for the development of appropriate product handling procedures to protect your employees. Safety Data Sheets should be read and understood by all of your supervisory personnel and employees before using Drew Marine products.



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