JMN SPECIALTIES, INC.

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PRODUCT BULLETIN

Background Discussion on JMN Specialties, Inc.
FUEL CONDITIONERS

General Description

There are generally 3 different kinds of fuel oil: light, medium, and heavy. The difference between them is basically determined by the degree of refinement.

Light includes jet and diesel #2. This is used for trucks, buses, and heavy equipment. In general, and not in a technical sense, we refer to this as ""**diesel**"" fuel.

Medium includes Diesel #3 and #4.

Heavy is also called Bunker and/or Residual fuel.

Medium and Heavy fuels are generally referred to as ""**bunker**"" fuels. There is a broad spectrum of bunker fuels, and these are used for ships, stationary generators, boilers, and a variety of other commercial applications.

The Problems

As a lesser-refined petroleum product, bunker fuels exhibit some very unique characteristics. The high degree of impurities produces an array of problems that are addressed by JMN's FUEL ADDITIVE 10, FUEL CONDITIONER 77, FUEL SPEC 1224, FOB 5, and VANADIUM CONDITIONER.

Metals Vanadium is just one of the metals typically found in bunker/residual fuels. If left untreated, these can cause carbon deposits on the piston face, cylinder walls and exhaust valves. In boilers, the presence of metals can cause severe carbon deposits in the firebox. JMN's VANADIUM CONDITIONER facilitates a more complete burn of these metals, thus reducing related problems.

Water Both diesel and bunker fuels typically have some degree of water. JMN's FUEL ADDITIVE 10 and FUEL CONDITIONER 77 formulations both contain a detergent dispersant package that carries water through the system, and it is then turned in to steam and eliminated through the exhaust pipe. The presence of water in hydrocarbon fuels creates an opportunity for the formation of microbial growth (also referred to "diesel bug's"). This situation is often related to storage problems. JMN's FUEL SPEC 1224 is formulated to inhibit microbial growth. Signs of microbial growth include a loss of power, increased black smoke, and a buildup of a black slime type of substance in the fuel filters. This is particularly evident when using a Raycor-type filter/separator. JMN's FUEL SPEC 1224 kills microbial growth. JMN also sells a super concentrated biocide (FOB-5) for more severe infestations. If a customer suspects microbial growth is present, please contact us for more specific treatment information, such as treatment procedures and treat rates.

Tar Residual fuel can often look like tar. It is black and sticky and sometimes has to be heated just to push it through the lines to get to the engine or boiler. Tar is a natural component in fuel oils. The grade of petroleum that is below Residual Fuel is called ""asphaltic"", which is in fact, tar. When mixed with gravel, this becomes asphalt. JMN's Fuel Conditioners, FUEL ADDITIVE 10 and FUEL CONDITIONER 77 will solubilize a portion of the tar and acts to retard the formation of tar like asphaltines. It also keeps tar in suspension so that is it easier to handle.

Sludge In storage the heavier molecules drop to the bottom of the tank and result in a heavier compound, or sludge buildup. This is similar to the tar problem. Any quality additive should contain a dispersant, which acts as a fuel stabilizer that prevents molecules from dropping out of suspension and forming sludge. JMN's Fuel Conditioners, FUEL ADDITIVE 10 and FUEL CONDITIONER 77contain Class 3 dispersants. In a range of 1 to 3, 3 is the highest quality dispersants available. If sludge is allowed to buildup in the bottom of the tank, it hardens and becomes almost un-treatable. Eventually, the tank must be emptied and steam cleaned to remove the sludge buildup. Downtime and costs of a major clean out can be avoided with regular use of FUEL ADDITIVE 10 or FUEL CONDITIONER 77.

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Black Smoke is generally a result of unburned hydrocarbons. FUEL ADDITIVE 10, FUEL CONDITIONER 77, and VANADIUM CONDITIONER are all combustion catalysts and produce a more complete burn.

High in Sulfur

High sulfur fuels result in a range of gases that can cause serious health hazards.

Sulfur is a natural corrosive and will cause damage to all metal parts. FUEL ADDITIVE 10, FUEL CONDITIONER 77, and VANADIUM CONDITIONER contain corrosion inhibitors which protects the metal from corrosion and rust.

In a heated, super-pressurized environment like the combustion chamber, the sulfur in fuel combines with water, which is also present in fuel, to form sulfuric acid. When this is eliminated through the exhaust valves and up the stack, damage to metal parts will occur. FUEL ADDITIVE 10, FUEL CONDITIONER 77, and VANADIUM CONDITIONER have an advanced buffer that neutralizes acid.

Use of FUEL ADDITIVE 10, FUEL CONDITIONER 77, or VANADIUM CONDITIONER will reduce the amount of ""acid rain"" generated by commercial operations.

FUEL ADDITIVE 10, FUEL CONDITIONER 77, and VANADIUM CONDITIONER neutralize all downstream variants of sulfur gases generated by neutralizing the acids that form these gases.

The content of sulfur in bunker fuels varies, but a high quality bunker fuel might contain anywhere from 1% to 3% sulfur. In some markets we have seen sulfur content as high as 7%. Without an additive, sulfur can be extremely damaging to an engine, so using FUEL ADDITIVE 10 10, FUEL CONDITIONER 77, or VANADIUM CONDITIONER on a regular basis is an important maintenance practice.

Product Information and Recommendations

JMN's Fuel Conditioners are technologically advanced formulations designed to eliminate the problems typically associated with bunker fuels. Excessive carbon formation, combustion chamber and smoke stack corrosion, dangerous emissions related to sulfur are efficiently and economically reduced with FUEL ADDITIVE 10, FUEL CONDITIONER 77, and VANADIUM CONDITIONER.
JMN Specialties, Inc. can also custom blend an additive package that is suited for your particular needs. Give us a call, we are *"The Chemical Solution"*.

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