

ZI-CHEM 9230

Fuel Treatment Combustion Improver

INTRODUCTION

ZI-CHEM 9230 combustion and deposit modifier is a blend of oil soluble organo-metallic chemistries that have been shown to be the most effective in medium and low speed diesel engines operating on heavy and medium fuel oils. Engine test have shown that the combined ingredients in ZI-CHEM 9230 provide a synergistic effect to reduce deposits and improve combustion.

The combustion improver in ZI-CHEM 9230 is effective for both medium and slow-speed diesel engines experiencing problems related to combustion and deposits resulting from vanadium, sulfur and sodium contaminants in the fuel.

Increasing quantities of sediments exist in distillates used as fuel. These polymerize in the storage tank and this in turn creates sludge and clogs filters and centrifuges. These then cause the fuel to burn poorly, and emit soot.

Experience has shown that ZI-CHEM 9230 can operating costs of medium and low speed diesel engines in the following areas:

Data gathered from actual trials provides the following average improvements in operating costs throughout the entire fuel system. Specific savings for each area include:

A) Before combustion:

- Tank cleaning costs: reduced up to 90%;
- Sludge disposal costs reduced up to 35%;
- Purifiers overhaul costs: reduced up to 35%;
- Filters cleaning costs: reduced up to 60%;

B) During combustion:

- Injection pump costs: reduced up to 50%;
- Fuel valve costs: reduced up to 22%;
- Lubricating oil costs: reduced up to 20%;
- Turbocharger costs: reduced up to 75%'

C) After combustion:

- Exhaust valve costs: reduced up to 65%;
- Economizer costs: reduced up to 45%;

TYPICAL PROPERTIES

- Appearance: Dark brown liquid
- Solubility: Soluble in all proportions in fuel oil
- Density: 0.95 – 1.10
- pH 8.50 – 10.50
- Flash point: 60.5 oC
- Viscosity cps 1,500 – 2,000

COMMON APPLICATIONS

- Diesel Engines

PACKAGING

- 25kg open top pails with lid
- 25kg nylon bags

HANDLING & SAFETY

ZI-TECHASIA maintains a database of material safety data sheets (MSDS) on all our products. These contain health & safety information to assist in the safe and appropriate chemical handling, ensuring the protection of personnel.



FUNCTION & BENEFITS

ZI-CHEM 9230 performs many functions throughout the fuel and combustion system. Data collected from many actual use applications in addition to tests conducted with a major engine manufacturer.

The product contains emulsifying agents that disperses and prevents sludge, in addition to an effective catalyst which lowers the ignition temperature required to more effectively complete the combustion process, thus reducing carbon deposits, soot and smoking.

In addition, laboratory evaluations with test bed engines have shown that ZI-CHEM 9230 will reduce specific fuel consumption.

A summary of the main benefits and associated features and functions of ZI-CHEM 9230 that are performed throughout the fuel and combustion system include:

Benefit	Product Function & Features
Sludge in tanks reduced	Reduced tank cleaning required by up to 30% by the dispersion of existing polymerized sludge and prevention of new sludge.
Clean filters & pre-heaters	Improved operation of filters and pre-heaters by reducing sludge buildup, extending run time between cleaning
Clean centrifuges	Homogenization of fuel and dispersion of sediments eliminates centrifuge overload due to reduced sludge rejection volumes.
Injectors & fuel pump free of deposition	Needle sticking and other formations of injector nozzles are eliminated. This allows the formation of uniform fine droplets, improving combustion completeness, reducing deposition and increasing equipment life.
Combustion chamber deposition & corrosion	Free of cylinder cover-head cracks caused by carbon buildup on piston & crown surfaces. Minimizes low temperature acid corrosion & reduction of lube oil TBN (alkalinity) due to sulphur
Scavage and stuffing boxes	Elimination of carbon deposition.
Exhaust valves	Free of unburned solids due to emulsification of sludge in fuel, reduction of high temperature corrosion and blow-by, time between overhaul extended by up to 25%.
Turbo-charges clean & improved	Substantially reduce build-up of deposits of unburned solids on the gas side of turbochargers. As a result, the rated efficiency of the turbocharger can be maintained, and the frequency of water washing on the gas side can be significantly reduced.
Exhaust gas boilers clean	As with turbo charges, reduced soot and particulates in exhaust gasses reduced deposit on exhaust gas tubes, thus improving steam generation and reducing exhaust gas temperatures along with reducing acidic corrosion under deposits.
Reduces NO _x emissions	Combustion catalyst reduces emissions of NO _x and sulfur trioxide by at least 10%.
Reduced emissions	Combustion catalyst and dispersants that reduce sludge result in reduced smoke, sparks, particulates and carbon fallout by up to 25%.
Cleaner economizer surfaces	Improved heat transfer efficiency.
Eliminated exhaust gas vanadium	Combustion improver catalyst eliminates vanadium pentoxide in exhaust gas to zero and reduces exhaust system corrosion & deposition.
Reduced exhaust gas temperatures	Reduced exhaust gas temperatures by up to 30°C due to combustion catalyst and reduced deposition.

PRIMARY APPLICATION

The typical dosage rate for ZI-CHEM 9230 is in a range of 1 liter to 1,000 – 10,000 liters (1 – 10 tons) of fuel. Rates will vary depending on the contaminant levels of the fuel, engine design & operating conditions. As a basic guideline, the following rates which are based on these contaminants can be used as a starting feed rate. Since these contaminants exist in combination, the dosage rate selected should be the one corresponding to the highest level of the major contaminant present.

Contaminant: Vanadium		Contaminant: Sulphur		Contaminant: Sodium		Carbon Residue	
Level mg/L	Dose mg/L	Level %	Dose mg/L	Level mg/L	Dose mg/L	Level %	Dose mg/L
0 – 150	100	0 - 2.5	100	0 – 150	100	0 - 2.5	100
151 – 250	250	2.5 – 3.5	500	151 – 250	250	2.5 – 3.5	500
251 – 350	500	> 3.5	1.000	251 – 350	500	> 3.5	1.000
Over 350	1,000			Over 350	1,000		

FEEDING & CONTROL

It is recommended that ZI-CHEM 9230 be fed continuously into the fuel. This is best accomplished using a metering pump.

It is important to feed to a location that assures proper mixing, dispersion and sufficient quantities are available when needed at all times.

It is usually recommended that the product be added to the low-pressure side of the fuel treatment system but the actual dosing location may vary depending on the engine layout and design.

The adjacent diagram outlines the various recommended locations where treatment can be added. Typically only one of these need be used, depending on what is convenient for your application

