

# BIO KLEEN® DIESEL FUEL BIOCIDES

TECHNICAL BULLETIN 9000



*Bio Kleen® Diesel Fuel Biocide* is a dual-phased (effective in both diesel fuel and water) biocide that kills microbes in fuel, including bacteria and fungus. Use this product to rid your fuel system of microbial contamination.

## Benefits

Dual-Phase – effective in both diesel fuel and water

Effective as a “quick-kill” biocide and for long-term diesel fuel maintenance

Kills microbes (bacteria and fungus) that grow in dispersed and free water associated with diesel fuels

Prevents fuel-filter plugging – helps prevent fuel system failures

Protects fuel system components against organic acids created by microbial growth – prevents fuel tank corrosion

Improves fuel performance

Reduces engine maintenance costs

Effective in all diesel fuels, including Ultra Low Sulfur Diesel (ULSD), biodiesel and biodiesel blends

### ACTIVE INGREDIENTS:

4-(2-Nitrobutyl)morpholine .....	81.0% by wt
4,4'-(2-Ethyl-2-nitrotrimethylene)dimorpholine .....	5.0% by wt
INERT INGREDIENTS.....	14.0% by wt
TOTAL.....	100% by wt

PART#	PACK	SHOCK TREATMENT	MAINTENANCE TREATMENT
9016-09	9/1 16-Ounce	320 Gallons	880 Gallons
9128-04	4/1 One-Gallon	2,500 Gallons	7,000 Gallons
9055	55-Gallon Drum	146,300 Gallons	387,200 Gallons

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## For Use in Hydrocarbon Preservation to Control the Growth of Problem Microorganisms Associated with Fuel

### Directions for Use

Use slug dosage or intermittent metering of **Bio Kleen® Diesel Fuel Biocide** to attain “shock-treatment” concentrations of contaminated diesel fuel tanks or for maintenance-treatment concentrations. STORE ABOVE 50°F.

#### Shock treatment of diesel fuel bulk-storage or equipment tanks:

Treat total capacity of each tank – not the amount of fuel in the tank at the time of treatment. Add 1 ounce of **Bio Kleen** to each 20 gallons of equipment fuel tank capacity (see treatment ratio chart on the other side). After treatment has been added, fill the tank with diesel fuel to maximum capacity so that the rising level of diesel fuel treats the entire interior walls of the tank.

#### Maintenance treatment of diesel fuel bulk-storage or equipment tanks:

Treat total capacity of each tank at the ratio of 1 ounce of **Bio Kleen** to each 55 gallons of diesel fuel in the tank (see treatment ratio chart on the other side). After treatment, fill the tank to maximum capacity.

#### Shock treatment and maintenance treatment:

Recirculate fuel in tank for 30 minutes following treatment, if possible. Let diesel fuel set for eight hours before using to achieve maximum effectiveness. Treatment may result in additional accumulations of water and dead microbes at the bottom of the tank. If so, pump or drain tank bottoms to complete tank clean-up.

#### When to use a biocide:

Make visual inspections of bulk-storage tanks. Dark, slimy growth may be detected at the interface area between the diesel fuel and the water-bottom or throughout the fuel. A “rotten egg” odor may also be detected. Look for slime on interior walls of tanks and in the sump area – check water drawn from the sump area for slimy debris. Microbial growth can multiply rapidly and may form into long strings and form mats or globules. These are the most common signs of contamination and require immediate treatment.

#### Develop a treatment schedule:

Shock treatment may be performed to solve contamination problems, followed by maintenance treatments at regularly scheduled intervals. Or, the shock treatment may be repeated every three months. Following treatment of the tank, inspect filters frequently until plugging no longer occurs.

#### Practice good housekeeping:

Although **Bio Kleen** is a dual-phase biocide and is effective in both diesel fuel and water, it is recommended that accumulated water be drained or pumped regularly from tank bottoms and that sump areas be drained. Filtering is also recommended to remove fungal debris. Inspect filters and screens regularly. A good maintenance program can reduce microbial growth and increase effectiveness of shock and maintenance treatments.

### TYPICAL PHYSICAL PROPERTIES OF BIO KLEEN DIESEL FUEL BIOCIDES

Color	Yellow to Brown
Density (lbs/gal)	8.83
Sulfur Content	<15 parts per million (ppm)
Flash Point	160°F.
Pour Point	50°F.
Solubility	
In Diesel Fuel	Completely Soluble
In Biodiesel and Biodiesel Blends	Completely Soluble
In Kerosene	Completely Soluble
Shipping and Handling	
Part Nos. 9016, 9128	Consumer Commodity ORMD
Part No. 9055	UN3142, Disinfectant, Liquid Toxic, N.O.S., (4-(2-Nitrobutyl) Morpholine)

Use of Bio Kleen Diesel Fuel Biocide will not harm diesel oxidation catalysts or diesel particulate filters on 2007 or newer engines.

This diesel fuel additive complies with the federal low sulfur content requirements for use in diesel motor vehicles and nonroad engines.