



TECHNICAL DATA

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#317 KLEEN BURN

Kleen Burn is a multifunctional ashless fuel additive that is specially formulated for use in all types of home heating fuel oils.

Kleen Burn contains a highly concentrated multifunctional additive package of combustion catalysts, dispersants, detergents and a rust and corrosion prevention additives that providex the following performance benefits:

- Improved combustion of the fuel to insure a more complete burn.
- Increased BTU content due to improved combustion, thus providing more heat per gallon.
- Up to 4% increase in combustion efficiency.
- Reduced emissions, smoke and particulates.
- Improved atomization of the fuel.
- Detergency to provide cleanliness throughout the entire system.
- Dispersion of insoluble gums and resins present in low quality fuels.
- Modification of existing burner nozzle deposits, allowing for their removal and safe passage into the firebox where they are burned.
- Increased firebox cleanliness.
- Significant reductions in soot build-up and heat robbing deposits.
- Less heat transfer loss.
- Inhibition of oxidation of the fuel during storage.
- Dispersion of water present in the fuel in order to prevent icing and other problems associated with water.
- Prevention of the formation of stable fuel-water emulsions.
- Extended storage stability.
- Helps control the acidic by-products produced by the combustion of the fuel, especially those fuels that contain high amounts of sulfur.
- Helps control and eliminate the conditions that lead to foul smelling fuel, stringiness and the formation of sludge.
- Rust and corrosion protection for the entire fuel system.
- Longer fuel system life.

Improved Low Temperature Operability

Changes in the refining process of middle distillates to make ultra-low sulfur diesel fuel have resulted in chemical changes that can significantly impact the fuel's low temperature operability. These chemical changes cause an increase in the amount of total wax (n-paraffins) and wax-to-wax ratios present in the fuel. As the temperature of the ultra-low sulfur diesel fuel drops, the concentrated wax molecules can begin to rapidly precipitate out of the fuel and form large flat or irregular crystals that can quickly plug fuel lines and filters.

Kleen Burn contains a proprietary wax crystal modifier, cold flow improver, heavy wax modifier polymeric type additive system that when added to the diesel fuel before the fuel has reached its cloud point helps to prevent the formation of wax crystals. This proprietary additive system encapsulates and disperses the individual wax crystals to drastically reduce the size of the wax crystals and also allow them to flow through the fuel filters and lines and into the combustion chamber with the fuel.

Kleen Burn can significantly improve the gelling point and low temperature operability of the fuel.

Improvement in low temperature operability is dependent upon the refining process used to make the ultra-low sulfur diesel fuel and its response to the additive.

Prevention of Settling of Wax Crystals at Low Temperatures

The wax crystals forming in a fuel normally have a slightly higher density than the liquid fuel portion resulting in these wax crystals settling at the bottom of the vehicle fuel tanks and the fuel storage tanks. Kleen Burn contains a proprietary wax anti-settling agent (WASA) that is designed to prevent the paraffins and other waxy components, which can plug and clog filters and other fuel system components, from dropping out of the fuel and settling out over extended periods of time. This increases the diesel fuel's cold weather operability which reduces downtime and maintenance costs.

Coupled with the WASA is a non-alcohol jet fuel deicer/water dispersant, HydroShield, which eliminates the problems associated with entrained and/or dissolved water present in the fuel by dispersing the water into tiny droplets. These tiny droplets are suspended in the fuel so they can be carried with the fuel in controlled amounts through the fuel filters, fuel lines, and into the combustion chamber to be burned with the fuel. Because the remaining water is dispersed and suspended in the fuel, Kleen Burn prevents the formation of stable fuel-water emulsions.

HydroShield is moisture removal additive technology that contains twice the industry standard for moisture elimination. This technology combined with Schaeffer's Patented WASA (a superior wax anti-settling agent) exceeds industry standards for subfreezing protection.

TREATMENT LEVEL

1 gallon Kleen Burn to 5,000 gallons of fuel oil.

TYPICAL PROPERTIES

Specific Gravity	.9248
Flash Point °F/°C PMCC (ASTM D-93)	122°/50°
Pour Point °F/°C (ASTM D-97)	<-50/<-45.56°
Ash Content % wt. (ASTM D-482)	0
Copper Strip Corrosion Test (ASTM D-130)	1a

THIS DIESEL FUEL ADDITIVE COMPLIES WITH THE FEDERAL LOW SULFUR CONTENT REQUIREMENTS FOR USE IN DIESEL MOTOR VEHICLES AND NON-ROAD ENGINES.

THIS DIESEL FUEL ADDITIVE IS COMPATIBLE AND APPROVED FOR USE WITH DIESEL FUELS THAT MEET ASTM D975 AND BIODIESEL THAT MEETS ASTM D6751 AND BIODIESEL THAT MEETS EN 14214.