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POWER SERVICE
Diesel Additives

Quick Reference Guide--- Trouble Free ULSD Recommendations

I: Moisture Control- Late Fall & Early Spring

- Bottom sample all fuel storage tanks and pump out when levels exceed 1”.
- Drain any free water from vehicle storage tanks.
- Add **Clear Diesel w/Petrofresh** to both storage and vehicle tanks as an effective fuel system drier

II: Bacteria/Fungi Control- Late Fall, Early Spring & Quarterly

- ULSD is less stable than either LS or HS and can not suspend moisture-- resulting in a fuel that is more prone to bacteria/fungi growth. When the “bug” problem becomes severe, fuel filters are plugged with slime. Moderate to high bacterial/fungal contamination in tanks is becoming very common when a bottom sample is taken and tested.
- Recommend treatment using a dual-phase biocide using **BioKleen** both in late fall and early spring. Add Clear Diesel if needed to disperse water and sludge.

III: Winter Fuel Treatment

- Treat all fuel with an effective antigel/deicer winter additive such as **Diesel Fuel Supplement + Cetane Boost** beginning October 15th thru March 30th. Due to the higher cloud point, and increased use of Biodiesel blends, we recommend treating with our winter additive when temperatures are at +15F instead of waiting till the temperatures are forecast to be 0F. For maximum winter protection, instead of double treating with our winter additive we recommend as an option a **dual treatment** program of adding both, **Diesel Fuel Supplement and Clear Diesel** at the recommended dosage level of 5gal/7500 for both products. Clear Diesel will prevent the major problem of icing that occurs with the use of ULSD.
- Power Service antigel additives are effective in Biodiesel Blends. Blends up to a B-2 require no additional additive treatment. For Biodiesel blend greater than a B-5 double treat the fuel for maximum protection against gelling.
- Replace primary and secondary fuel filter in late fall as part of a pre-winter tune up and consider using a “winter” fuel filter element.
- Drain fuel/water separators on a daily basis.
- Use **Diesel 911** when a fuel emergency arises to rapidly degel & deice a fuel system.

IV: Summer Fuel Treatment

Treat all fuel/Biodiesel blends with **Diesel Kleen + Cetane Boost** during the summer months for maximum performance and maximum lubrication of injection pumps and injectors. The thermal and oxidative stabilizers will keep fuel from forming Asphaltenes and gums which will prematurely plug fuel filters Almost 50% of ULSD fuel does not meet the ASTM minimum of 520 microns (HFRR) and 75% of the fuels do not meet the EMA 460 micron specification. **Slick Diesel Lubricity Improver** added to Diesel Kleen + Cetane Boost will improve the fuels lubricity equal or better than provided by high sulfur fuel. The fuel economy savings or reduction in burn rate per hour exceeds the cost of additive treatment when used continually during the summer months.



Problems & Solutions: Ultra Low Sulfur Diesel (ULSD)

Effective June 1, 2006, 80% of all diesel fuel being produced at refiners all across the country is ULSD. In many areas today, the only diesel fuel available is ULSD. **All ULSD No.2 diesel, as well as Biodiesel blends, need to be treated with Power Service premium additives year around to eliminate fuel related performance problems.**

ULSD PROBLEMS	POWER SERVICE SOLUTION	PERFORMANCE BENEFITS
INADEQUATE LUBRICITY- <u>50% of the Terminal fuel does not meet the 520 micron HFRR ASTM specification</u>	Diesel Fuel Supplement + Cetane Boost & Diesel Kleen + Cetane Boost	Contains Slick Diesel Lubricity Improver to maximize fuel lubricity protecting pumps and injectors. Exceeds the lubricity requirements for <u>all</u> diesel engines
REDUCED POWER	Diesel Fuel Supplement + Cetane Boost & Diesel Kleen + Cetane Boost	Contains Cetane Improver to increase Cetane up to 6 numbers. Contains thermal stabilizers to stop Asphaltenes from plugging fuel filters
REDUCED FUEL ECONOMY- (up to 4% loss due to the reduced btu's of ULSD)	Diesel Fuel Supplement + Cetane Boost & Diesel Kleen + Cetane Boost	Cetane Improvers & strong detergents function as a synergist to clean up injectors and provide maximum conversion of btu's to power. <u>Fuel economy improvement exceeds cost of additive</u>
FUEL GELLING/ICING	Diesel Fuel Supplement + Cetane Boost	Contains multiple cold flow improvers and wax antissettling agents to maximize protection against fuel gelling. Effective in Biodiesel blends up to a B-20
MOISTURE/CONDENSATION/ICING	Clear Diesel w/Petrofresh	Effectively dries out the fuel system. Use during the winter along with one of our winter antigel additives to eliminate icing problems associated with the use ULSD. Clear Diesel w/Petrofresh should also be used as part of a Tank Maintenance Program throughout the year
MICROBIO PROBLEMS	BioKleen & Clear Diesel w/Petrofresh	Keeps fuel tanks and fuel systems free from bacteria & fungi which can corrode tanks and plug filters. Biodiesel blends are more prone to microbio growth. Quarterly treatment is recommended for maximum control of this serious problem.
EMERGENCY FUEL PROBLEMS	Diesel 911	Effectively deices and reliquifies gelled fuel. Contains Slick Diesel Lubricity Improver for extra protection. If product use becomes very frequent; we recommend a dual treatment program using Diesel Fuel Supplement and Clear Diesel

Power Service Retail Products are Color Coded for easy use:

White for Winter: Use Diesel Fuel Supplement + Cetane Boost during winter months. Part numbers available are 16oz, 32oz and 80oz

- 16oz: treats 40 gallons
- 32oz: treats 100 gallons
- 80oz: treats 250 gallons
- 2-2 ½ gallon, drums, totes: treat rate is 1gal/1500 gallons

Silver for Summer: Use Diesel Kleen + Cetane Boost during summer months. Part numbers available are 16oz, 32oz and 80oz

- 16 oz treats 40 gallons
- 32oz treats 100 gallons
- 80oz treats 250 gallons
- 2-2 ½ gallon, drums, totes: treat rate is 1gal/1500 gallons

Red for Emergency: Use Diesel 911 for emergencies to effectively reliquify gelled fuel and de-ice a fuel system

- 32oz & 80 oz bottles available
- 2-2 ½ gallon and drums



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