

PURANOL™

for Ethanol-Diesel Blends



E-Diesel by Pure Energy™

E-Diesel fuel, originated by the Pure Energy Corporation, is the future of low-cost alternative diesel fuel formulation. For the first time, Pure Energy's patented additive system, Puranol™ (U.S. Patent Nos. 6017369, 6183524 and 6074445), allows ethanol to be "splash-blended" with diesel. Fleet Managers can now buy a truly superior performance fuel designed to operate in unmodified diesel engines, while meeting strict regulatory standards.

Puranol™ Blended E-Diesel Meets Regulatory Requirements for PM

International, U.S. and state regulatory agencies continue to impose increasingly stricter requirements on compression-ignition (diesel-powered) engine emissions in an effort to control the level and types of exhaust emissions from vehicles used in both on- and off-road applications. The Clean Air Act Amendments drastically cut the allowable limits of sulfur found in diesel fuel based on strong environmental evidence of its effect on particulate and other emissions. As a proprietary fuel, Pure Energy's E-Diesel significantly reduces particulate matter. Regulation is now in place not only on sulfur as a diesel particulate matter (PM), but oxides of nitrogen (NOx), carbon monoxide (CO), and other harmful compounds. Fleet Managers can help meet regulatory standards at a fraction of the cost using E-Diesel created by Pure Energy—the first company to formulate and blend pure oxygenated diesel fuel.

It is expected that the EPA will also propose a rule on the sulfur content in diesel fuel which will require major changes to improve existing diesel quality. Puranol™ based E-Diesel helps meet these requirements.

The Solution is Patented by Pure Energy

An inherent problem of combining ethanol with diesel is that the mixture has to be heated and blended in steps. This is not only an expensive process, but the resulting milky-white fuel is subject to separation when exposed to small amounts of water or lower temperatures, such as those found in winter driving conditions.

Pure Energy Corporation's scientists developed and patented the first effective means to blend diesel and ethanol in solution. At the heart of this invention is a proprietary additive package called Puranol™. Pure Energy's E-Diesel fuel is clear and stable. Unlike other technologies requiring expensive step-blending or dedicated special-purpose production facilities, Puranol™ allows for "splash-blending" directly at the terminal. One million test miles have proven Pure Energy's E-Diesel performs in cold temperatures without separating and significantly reduces exhaust emissions.

Puranol™ Means No Changes to Existing Systems

With Pure Energy's E-Diesel, no changes are required to existing fuels infrastructure. Fleet Managers can economically meet regulatory standards without changing fuel delivery systems. No retrofits or changes to existing diesel engines are needed to use Pure Energy's E-Diesel and the greater lubricity factor coupled with the "cooler burn" of Pure Energy's E-Diesel reduces maintenance costs for diesel fleets.

One Million Miles on Pure Energy's E-Diesel

Puranol™ based E-Diesel has undergone extensive testing since 1997. Working with fuel suppliers, urban fleets, ethanol companies and OEMs, including Archer Daniels Midland, the Chicago Transit Authority, and Waste Management Inc., Pure Energy has demonstrated the environmental, technical, and commercial viability of E-Diesel. With one million miles of operation in heavy-duty diesel engines (bus and truck fleets), Puranol™ based E-Diesel blend has shown superior fuel performance characteristics, such as excellent cold start properties, improved lubricity (less engine wear), significant emissions improvement of black smoke (PM) and oxides of nitrogen (NOx), extended fuel storagability, and ease of blending with minimum cost premium.



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You should be using Pure Energy's Puranol™ based E-Diesel Fuel now.

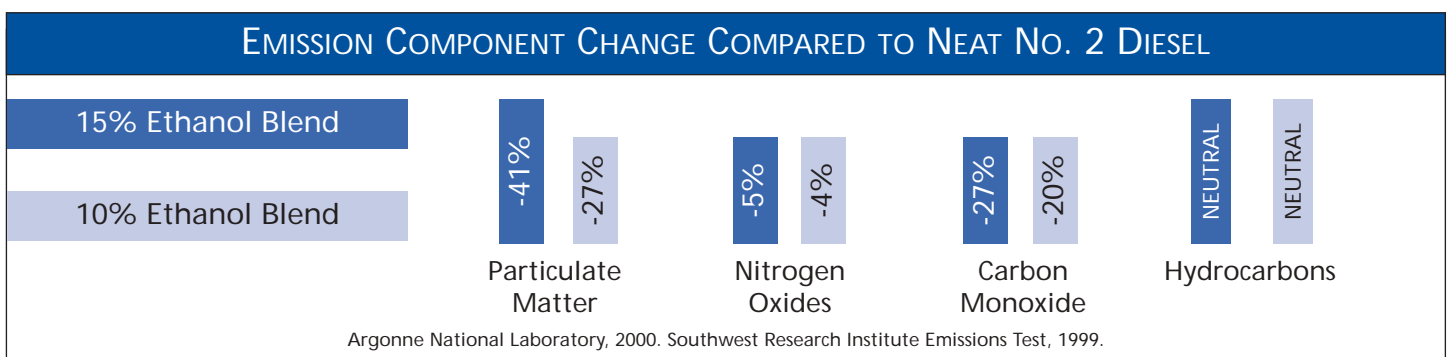
Splash-Blended • Readily Biodegradable • Less Vehicle Maintenance • Available Now

The Time is Now

The U.S. Environmental Protection Agency's (EPA) 2002 stringent emission standards will require fleets to meet a 0.1 gram standard PM and a 2.0 gram standard NOx level from all diesel engines—a reduction target of 50% or higher from present day levels. The proposed 2007 EPA standards will further cut the emissions to 1/10th of 2002 levels.

Fleet operators will have to switch, either to costly and mostly unavailable Ultra Low Sulfur Diesel (USLD), or upgrade to a 0.1 gram converter kit at a cost of \$20,000 per vehicle. Translated to cost penalty on fuel used, it will cost an additional \$0.14 per gallon of diesel. Puranol™ E-Diesel contributes significantly toward meeting the 2002 standards in a practical and cost effective manner. With a 1% additive dosage for most parts of the country, Puranol™ E-Diesel costs as little as \$0.05 per gallon premium, making it a cost-effective and practical solution to meeting the 2002 EPA objectives.

Blend Composition:	83%-94% No. 2 Diesel, 5%-15% fuel-grade ethanol, 1%-2% Puranol™ additive (higher dosage for use in extreme temperatures and wet conditions). The blend is flexible and can be engineered for different applications and geographic regions.
Low Temperature Performance:	Pure Energy's E-Diesel fuel is stable to -21°F and maintains fuel flow with no phase separation or gelling to even lower temperatures.
Sulfur:	Sulfur is reduced 16%-20% from the base diesel. Reductions in sulfur have been linked to reducing PM emissions. U.S. and international regs. are continuing to drive sulfur levels down significantly.
Blending:	The fuel can be splash- or in-line blended at the terminal. No costly blending equipment is required for distribution.
Energy Content:	126,000 to 132,000 BTU/gal. vs. No. 2 Diesel at 135,000 BTU/gal. The energy content of E-Diesel is similar to No. 1 Diesel. While theoretical energy calculations and lab tests predict a 4% lower fuel economy (on a 10% ethanol blend), on-road bus performance showed no fuel economy penalty, while long haul trucks follow lab results.
Water Tolerance:	E-Diesel remains stable when exposed to normal water accumulations in storage and distribution.
Cost:	Estimate \$0.05 to \$0.07 above No. 2 Neat Diesel and cost competitive with No. 1 Diesel. A cost-competitive alternative; potentially better than the pricing expected for future low-sulfur diesels.
Emissions:	Reductions in NOx, CO and PM with E-Diesel. Southwest Research Institute has done HD emissions testing. Argonne National Lab has completed LD engine tests. (See test results in chart below.)



Pure Energy's Puranol™ based E-Diesel is available today.

For more information about E-Diesel and other engineered fuel formulations, please contact:

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