



## Technical Bulletin

# Protect-O-Lube Plus Reduces Water in Ethanol Fuels

A lot of talk these days concerns the use of ethanol in all grades of gasoline and the ever increasing push towards E85 fuel.

The negative talk is probably warranted. There are numerous drawbacks to an ethanol additized gas as well as ethanol based fuel such as E85 (85% ethanol, 15% gasoline).

Ethanol is a very effective "consumer" of water or moisture from condensation. It is so effective that when all available supplies of water in a tank has been consumed, ethanol will actually attract or draw additional water into its environment from the atmosphere. The actual term for this action is "Hygroscopic".

Additional drawbacks to water and/or ethanol in fuel include but are not limited to the following:

Potential for "Phase Separation" –gas and ethanol separating; creating layers of different octane ratings and different levels of ethanol concentration.

Water allows for rust and scale.

Greater than 10% ethanol gasoline mix in a non flex-fuel vehicle can void warranty. Increased vapor pressure; increased rate of

evaporation.

Poor storage stability.

Highly reduced upper cylinder lubrication.

Increased stress on piston rings (compression ring specifically).

Ethanol is highly solvent- it can attack rubber fuel lines, fiberglass tanks, engine sensors and the resins/glues used in fuel pump assemblies.

The use of Protect-O-Lube Plus No. 403 and Protect-O-Lube No. 400 can overcome many of the above drawbacks listed above.

The dispersants in these products will help to prevent phase separation. Corrosion inhibitors stop rust and scale. These products will help to stabilize the vapor pressure and greatly enhance storage stability. Oxidation inhibitors stop fuel breakdown and polymerization in its tracks. Oiliness additives lubricate the upper cylinder area and allows for peak piston flexibility for maximum performance.

Additionally, Protect-O-Lube Plus No. 403 and Protect-O-Lube No. 400 contain powerful acid neutralizers to stop corrosive wear and help prevent the formation of carbon deposits in the combustion chamber.

Lastly, these products are very effective in the control and dispersion of water accumulations. In fact, Protect- O-Lube Plus No. 403 will disperse 400 ppm of water when used at a ratio of 1:300. The amount is linear so as the ratio increases the amount of water dispersed decreases.

Please find a helpful chart below:

So the next time you are in a discussion about ethanol blended gasoline or E85 you will be informed and have a solution.

Gallons treated with One gallon of N. 403	Water Dispersed
300	400 ppm
600	200 ppm
1,200	100 ppm
2,400	50 ppm
4,800	25 ppm

