

# Fluoroguard™

## Polymer Additive

### Improves Properties of Compounds

## Technical Information

### Fluoroguard™/Acetal Benefits

Fluoroguard™ incorporation in acetal improves properties of the compounds. The major improvements are:

- Reduced melt viscosity
- Increased wear resistance
- Increased flex fatigue resistance
- Reduced coefficient of friction

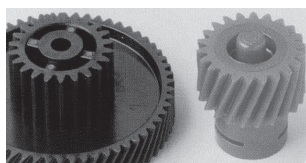
These property enhancements will provide a competitive edge for Fluoroguard™/acetal compounds over the currently available materials for polymer gears and bushings.

### Melt Viscosity

Fluoroguard™ improves the flow properties of polymer compounds. The melt viscosity of Fluoroguard™/acetal compounds was examined using a capillary rheometer at 210 °C (410 °F). It has been observed that Fluoroguard™ reduces the melt viscosity of acetal resins. For example, 1% Fluoroguard™ reduces the shear viscosity of Delrin® 100P and Delrin® 500P by 35% and 16%, respectively, at 1000 s<sup>-1</sup> shear rate.

### Coefficient of Friction

Fluoroguard™ reduces the coefficient of friction (COF) of acetal. COF of acetal was found to reduce, depending on the Fluoroguard™ loading. For example, 1% Fluoroguard™ loading in acetal (Delrin® 500P) reduces the static COF by 30% and dynamic COF by 20%, when the contact surfaces were acetal and metal.



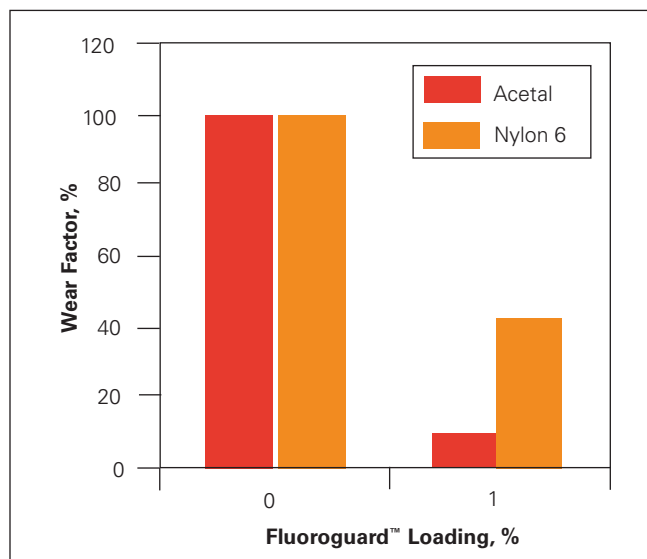
### Flex Fatigue

It has been found that Fluoroguard™ increases the flex fatigue resistance of Delrin®. For example, Fluoroguard™ compounds (0.5 or 1% Fluoroguard™) withstood more than 180,000 and 430,000 flex cycles, respectively; whereas, the control withstood only about 40,000 cycles with an applied bending stress of 5,000 psi.

### Wear

Fluoroguard™ significantly improves the wear resistance of polymer compounds. It has been observed that the addition of 1% Fluoroguard™ reduces the wear (ASTM 3702 vs. 1018C Steel at 40 psi, 50 ft/min) of acetal by 97% and nylon 6 by 58% (Figure 1).

Figure 1. Polymer/Fluoroguard™ Wear



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Replaces: H-79796-1  
C-10692 (3/16)