



## FR Fluid-Glycol

Phillips 66® FR Fluid-Glycol is a water-glycol based fire-resistant hydraulic fluid developed for use in industrial hydraulic systems operating in areas subject to fire hazards. It contains sufficient water to snuff out a fire resulting from ignition of a fluid leak. It is suitable for use in hydraulic systems operating at 2,000 to 3,000 psi, and can withstand intermittent pressure spikes up to 5,000 psi.

FR Fluid-Glycol is formulated with diethylene glycol, 40% water and select additives that provide lubricity, wear protection and corrosion protection. It has good antiwear properties to ensure long life for hydraulic pumps and motors. Special rust and corrosion inhibitors provide corrosion protection in both the liquid phase and the vapor phase. The high water content provides fire resistance if the fluid comes into contact with an ignition source. This product contains less than 60 parts per billion (ppb) phenols, and does not contain any nitrites or nitrosamines. It is compatible with other water-glycol type fire-resistant hydraulic fluids. This product meets the performance requirements for an ISO HFC fire-resistant water-glycol hydraulic fluid.

FR Fluid-Glycol is compatible with most hydraulic pumps, including vane, piston and gear pumps. It is safe to use with most packing and seal materials except polyurethane and silicone. Cork shaft seals should be replaced with Buna N or other synthetic rubber. Leather packing should be avoided and zinc or cadmium-plated components should not be used.

## Applications

Hydraulic systems on equipment operating in areas subject to fire hazards, such as:

- Steel and aluminum mills
- Molding and metal die casting machinery
- Welding machines
- Foundries
- Furnace charging equipment
- Open hearth and basic oxygen furnace (B.O.F.) equipment
- Power transmission plants

FR Fluid-Glycol meets the requirements of the following OEM specifications:

- ISO HFC (fire-resistant water-glycol mixture, >35% water)
- Denison Hydraulics HF-4
- U.S. Steel 171

**Caution:** FR Fluid-Glycol should **not** be used in systems where operating temperatures exceed 175°F (79°C). This product contains water and should not be stored at temperatures over 130°F (54°C). In addition, this product is **not** recommended for use as a conventional antifreeze coolant for automotive or industrial applications.

## Water-Glycol Based Fire-Resistant Hydraulic Fluid





## Features/Benefits

- Fire-resistant for safety
- Excellent wear protection for hydraulic pumps and motors
- Excellent rust and corrosion protection
- Good foam resistance
- Glycol content protects against freezing
- Compatible with other water-glycol fluids

## FR Fluid-Glycol

Typical Properties	
<b>ISO Grade</b>	<b>32/46</b>
Specific Gravity @ 60°F	1.08
Density, lbs/gal @ 60°F	9.00
Color, Visual	Red
Freezing Point, °C (°F)	-55 (-48)
Viscosity	
cSt @ 40°C	39.3
cSt @ 100°C	8.5
SUS @ 100°F	198
SUS @ 210°F	54.7
Viscosity Index	202
Four-Ball Wear, ASTM D4172, Scar Diameter, mm	0.48
pH (neat)	9.7
Rust Test, ASTM D665 A&B	Pass
Water, wt %	40

## Health & Safety Information

For recommendations on safe handling and use of this product, please refer to the Safety Data Sheet via <http://www.phillips66.com/EN/products/Pages/MSDS.aspx>.