

EMERGING TRENDS IN HYDRAULIC FLUIDS
- SAFE, ECONOMICAL & ECOFRIENDLY SOLUTIONS

By

Amit Moona – Marketing Manager

Hardcastle Petrofer India Pvt. Ltd – Mumbai

Today a plant manager is asked to handle more responsibilities than ever before. In addition to effectively managing the operation to meet production schedules, he needs to manage issues related to safety of man and equipment, shop floor cleanliness, control his plant effluent and discharge, keep cost per part ratio to a minimum, aesthetics of the components etc.

Fluids can play a vital role in ensuring the Safety as well as other requirements. Fire Resistant Hydraulic Fluid offers possible solutions to meet these needs of the industry.

Hydraulic equipments operating near heat source such as molten metal and open flame under extreme heat conditions are potential areas of fire hazard. If the oil used for hydraulic actuation in these machines is mineral oil, then in case of leakage, if this oil comes in contact with heat source it poses grave risk of a fire hazard.

The unfortunate history of costly Industrial fires caused by the accidental spraying of flammable mineral oil on to an ignition source is well documented. Therefore it is important to select a fluid after careful consideration on its effect on the performance characteristics, safety, and service life and cost economics.

In order to eliminate the potential risks of fire and at the same time maintain the balance on performance characteristics, Fire Resistant Hydraulic Fluids were developed and are now being widely used for various such critical areas in steel industry.

There are many applications for fire resistant hydraulic fluids in the steel making process. Starting with the Coke Ovens for making coke for the blast furnace, to hydraulic applications in Electric Arc Furnace, Ladle furnace, slide gate system, Continuous caster through the final rolling and coiler operations, Fire Resistant Fluids provide safer working conditions in the steel mill.

Fire Resistant Hydraulic Fluids are also widely used in Die-Casting, Aluminum, Power, Foundry & Off Shore Industry.

Many accidents have been averted ever since use of FRHF in these applications.

As with any hydraulic fluid, the best way to select a fire resistant fluid is to work closely with the fluid manufacturer in analyzing the system operation and match the equipment needs with fluid capabilities. With this approach, the right fluid will be selected to satisfy the objectives of safety and economy.

Under ISO classification Fire resistant hydraulic fluids can be broadly classified into following four categories.

HFA Type – Oil in Water Emulsions

HFB Type – Water in Oil Emulsions

HFC Type - Water Glycol Fluids

HFD Type - Anhydrous Synthetic Fluids

Among these the more popular fire resistant hydraulic fluids are the Water Glycol Fluids, which are water based and Polyol Ester Fluids which are anhydrous synthetic based.

Water Glycol Fluids

Water Glycol fluids offer an optimum combination of fire resistance, performance & cost economics. Water Glycol fluid comprises of poly-glycol thickener, glycol, water and additives. It is important to note that additives usually account for ten to fifteen percent of total fluid composition.

These additives are performance enhancing additives and include corrosion inhibitors for vapour as well as liquid phase, viscosity index modifiers, anti-wear additives for lubrication and metal passivators for copper, brass and bronze.

A little known and seldom publicized fact is that Water Glycol hydraulic fluids are true solutions and are the closest thing to permanent hydraulic fluids being offered in the market today. Unlike mineral oils, Water Glycols do not degrade by heat or metal in the system that acts as catalysts. Therefore, with little routine maintenance, these fluids offer virtually an indefinite life. It is therefore often said that, though mineral oils are '**low cost item**' – Water glycols are '**less costly system**'.

Polyol Ester Fluids

Another category of popular Fire Resistant Hydraulic Fluids are Anhydrous Synthetic based Polyol Esters. These fluids contain no water and derive their fire resistance characteristics by virtue of chemical synthesis. These are normally recommended for use at a much higher operating pressures and motor speeds, where water based fluids have their limitations.

In today's demanding market place, you can save both time and money by use of Fire Resistant Hydraulic Fluids instead of Petroleum based Hydraulic Oils.