

Erifon HD 603HP

Hydraulic and BOP Control Fluid Concentrate

General Description

Erifon HD603 HP has been specifically formulated to prevent sticking of valves left static for long periods and to improve system life for slow moving and high load applications. Erifon HD603 HP is a fully synthetic hydraulic fluid concentrate, formulated for use at concentrations as low as 1% (dependant upon application) in fresh or potable water.

The product exhibits excellent stability, anti-wear and anti-corrosion properties. It also possesses a high resistance to microbiological attack. These features coupled with it being extremely economical in use, make Erifon HD603 HP an ideal hydraulic operating medium for equipment designed for high water based fluid.

Erifon HD603 HP is particularly well suited to operations in hazardous environments and where fluid losses may be high. Typical applications are:

High Pressure Blow-Out Preventer Systems
Steel Mills
Hot Metal Presses
Furnace Operation



The Erifon HD range has come to be regarded worldwide as the leading BOP control fluid and is in use on a majority of offshore installations, Erifon HD603 HP is the latest fluid in this range.

Salient Features

High dilution ratio As Erifon HD603HP is used at dilution ratios as high as 100:1 with fresh water it is very economical to use, even when system losses due to leakage are high. Storage space and transportation costs are also minimized. The high operating dilution does not, however, mean that performance has been compromised in any way. Erifon HD 603 HP contains a sophisticated additive package to ensure that safety and reliability of the hydraulic system are maintained.



Dilution Erifon HD603 HP is formulated for use in BOP systems at concentrations as low as 1% in fresh water. For most other applications a concentration of 2% should be satisfactory. In the case of very severe conditions, such as very high contact loads or sensitive pumping equipment, the concentration may be increased as much as 5% if required. Erifon Stack Glycol is recommended to provide anti-freeze protection.

Where conditions are much less severe it is possible to dilute Erifon HD603 HP at 1% and still achieve a high level of performance.

The MacDermid Offshore Solutions Technical Services Staff will be happy to advise of the optimum dilution to be used for a specific application.

Material Compatibility Erifon HD603 HP is inhibited to prevent corrosion of ferrous metal alloys, even when electrolytic effects prevail where multi-metal couples are encountered. The fluid will also have no adverse effect on the seal packing compounds generally used in the construction of the hydraulic systems. Paints of the cured epoxy nylon or phenolic type may be used without being significantly effected by the fluid. The painting of internal surfaces of hydraulic systems is not advised.

Anti-Wear Properties Considerable care has been taken to give Erifon HD603 HP excellent anti-wear properties, particularly where metal - metal rubbing contacts occur. This is of particular importance in modern control systems using shear - seal valves with metal - metal-sealing faces, and where hydraulic system pressures are high.

Stability Erifon HD603 HP represents a major breakthrough in dilutable hydraulic fluid stability. Earlier products, particularly those based on emulsifiable oils, were liable to become unstable and degrade in a very short period of time. This is due to the susceptibility of such products to attack by microorganisms such as bacteria or fungi. Such deterioration led to build-ups in acidity within the system, corrosion and wear due to abrasive debris being formed.

Erifon HD603 HP contains a broad-spectrum anti-microbiological package to minimize the affects of bacteria and fungal activity. This aspect alone can greatly reduce hydraulic system maintenance and repair costs. In addition, the high product stability, achieved by using soluble rather than emulsifiable products as a basis for the formulation ensures that separation does not take place.

Discharge into marine environments Erifon HD603 HP is included in the U.K. Notification Scheme for the Selection of Chemicals For Use Offshore. The Centre for Environment, Fisheries and Aquaculture Science has studied details of the chemical composition, biodegradability, bioaccumulation and the toxicological affects on marine organisms and Erifon HD603 HP has been included in the Scheme as a Category C product. This means that no notification is required provided that the discharge rate does not exceed 10 tonnes per annum per installation.



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Physical Properties

Appearance		Clear Dark Green Mobile Fluid	
Viscosity	-20 °C	-4°F	740
	0°C	32°F	82
	20°C	68°F	20
	40°C	104°F	7
Pour Point		-40 °C (-40°F)	
pH of Concentrate		10.0	
pH at 2% Dilution		9.35	
Specific Gravity		1.063	
Flash Point		N/A	
Fire Point		N/A	
IP 287 Break Point			
Soft Water 20ppm		80:1	
Test Water 200ppm		35:1	

Fluid Maintenance

The quality of water used is of great importance. Only fresh water should be used, preferably from the installation's potable water system. Filtration of incoming makeup water is recommended. It should not be assumed that potable water is automatically free of potentially damaging microorganisms, as tests by Health Authorities are testing specifically for pathogens (organisms which can cause illness), while others, which could cause fluid deterioration, could still be present. The anti-microbiological package in Erifon HD603 HP is perfectly adequate to deal with fluid contamination that enters the system by normal means (airborne, water splash, etc.) and will ensure long fluid life, but no fluid or additive pack can cope with continuous ingress of micro-organisms via the make-up water. It is preferable not to use drill water for make up, and seawater must never be used. If any doubt exists as to the suitability of water supplies, samples may be submitted to MacDermid, and these will be analyzed and a report and recommendations issued.

At its normal dilution ratio of 100:1, Erifon HD603 HP may be used at temperatures down to 0 °C(32°F). For lower temperature operation, it is necessary to add a pour point depressant to the system. MacDermid provides a product, Erifon Stack Glycol, specifically for this purpose, and the chart on page 4 shows the mix ratios of Erifon HD603 HP, Erifon Stack Glycol and water to be used for various operating temperatures. Pure glycols may be used as alternative pour point depressants, but commercially available antifreeze formulations must be avoided due to the likely interaction between additives that could detrimentally affect fluid performance.



LOW TEMPERATURE MIXING CHART				
Freezing Point °F (°C)		Erifon HD603 HP Parts	Erifon Stack Glycol Parts	Fresh Water Parts
20	(-7)	1	15	84
0	(-18)	1	32	67
-20	(-29)	1	44	55
-40	(-40)	1	53	46

The most important aspects of maintaining Erifon HD603 HP are to ensure the correct dilution and, where applicable, Stack Glycol level, and to keep the water supply free from microorganisms. Erifon HD603 HP is extremely tolerant of all types of contamination, and this means that it will not deteriorate immediately such contamination occurs. A planned program of maintenance can therefore provide advance warning of system problems, allowing them to be dealt with before they have a significant effect on system safety and reliability.

Surveys of service samples submitted to MacDermid for analysis under their Fluid Monitoring Service show incorrect dilution to be the most frequent cause of fluid failure, closely followed by bacterial contamination of the make-up water supply. Studying the rate of deterioration of these fluids suggests that a program of sample checking every two to three months is generally adequate to provide sufficient warning of impending problems. In certain circumstances, such as in particularly warm climates, or where sub-standard supplies of water cannot be avoided, monthly checks are advantageous.

The taking of samples may be made easier by the installation of suitable sample ports at strategic points about the system. It should be remembered that the sample taken would only be of use when analyzed if it is representative of fluid within the system as a whole.

Information given in this publication is based upon technical data gained in our own and other Laboratories and is believed to be true. However the material is used in conditions beyond our control thus we can assume no liability for results obtained or damages incurred through the application of the data presented herein.



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