

Erifon Systems Cleaner (US)

Anti-Microbiological Treatment for Contaminated Systems

General Description

Erifon Systems Cleaner is a highly effective biological treatment for use in systems suffering from microbiological and other forms of contamination. Supplied as a concentrate, it is effective against a wide variety of microorganisms, breaks down sludge deposits and neutralizes acid degradation products. It is also widely used to flush new control systems prior to control fluid installation, hence improving fluid and system service life.

Salient Features

Improves Service Life The use of Erifon Systems Cleaner to flush new control systems prior to commissioning can greatly enhance the operational life of the control fluid, and therefore the safety and reliability of the system, by eliminating microbiological and other contaminants which might cause deterioration.



The high activity of Erifon Systems Cleaner also makes it ideal for the shock treatment of control systems that are in operation and have been found to be suffering from severe microbiological contamination.

The presence of microorganisms such as bacteria or fungi in a system can lead to numerous operating problems. Microbiological activity breaks down the chemicals used as additives in control fluids, reducing their effectiveness in protecting the system.



Acid by-products are then formed, which if allowed to persist will promote corrosion of vital components. Finally, microbiological debris is frequently abrasive, causing wear between sliding contact surfaces, and also blocking small bore lines, ports and filter elements. **Bacteriacidal and Fungicidal action** Erifon Systems Cleaner contains a package of broad-spectrum anti-microbiological agents, which act to kill bacteria, fungi and other microorganisms within the system. It is vital to achieve as near a total kill as possible, because surviving organisms can mutate into more resistant varieties that will be more likely to thrive once normal system operation recommences. For this reason, continual dosing of systems with treatments to control the level of organisms present is not recommended except under special circumstances.

Contaminant Dispersal The surfactant properties of Erifon Systems Cleaner help to break down deposits of contamination within the system, dispersing them and further enhancing the effectiveness of the anti-microbiological agents. Oil and grease are also removed from internal surfaces, and Erifon Systems Cleaner may therefore also be used when converting system to water based control fluids.

Acid Neutralization The high pH value imparted by the presence of Erifon Systems Cleaner helps to neutralize any pockets where acid residues are found. This ensures that there will not be further acid corrosion once the cleaning operation has been completed.

Physical Properties

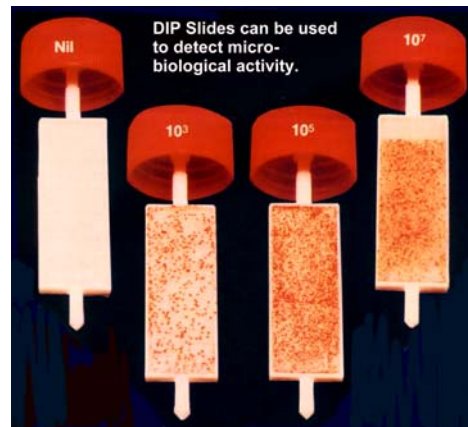
Appearance	Pale Yellow mobile liquid
pH Value: Concentrate	10.5 – 11.5
2% Mix with Potable Water	10.0
Viscosity (cSt) @ 20°C (68°F)	28
Solubility	
Water	Partially Soluble
Polar Solvents	Partially Soluble
Hydrocarbons	Insoluble
Specific Gravity @ 15.6°C (60°F)	1.120
Foam Number @ 1% Concentration	25
Pour Point	-20°C (-4°F)
Effectiveness of Anionics	Positive
Effectiveness of Non-ionics	Positive
Flash Point	Above 60°C (140°F)



Using Erifon Systems Cleaner

It is common for newly manufactured components and complete systems to contain pockets of microbiological contamination, often due to residues of machining coolant and other debris. If left within the system, these colonies can multiply to a level where they will not be totally eliminated by the anti-microbiological properties of the control fluid itself. The effects may not become apparent for some time, possibly not until the system has been in use over a long period. Rectification, particularly where subsea production systems are involved, can be a complex and costly exercise. By carrying out a flushing operation using Erifon Systems Cleaner, the system operation begins in a sterile environment, greatly reducing the possibility of microbiological related problems being encountered in the future. Where an existing system has been contaminated, there is no of action, further stressing the need for the treatment of new systems. Once action is needed, Erifon Systems Cleaner has proved to be an useful tool in rectifying the problem.

Erifon Systems Cleaner is supplied in concentrate be used either in aqueous solution or, where system requires lubrication of components, in the control fluid. Where it is to be used in a dilutable control fluid, such fluid, the fluid should first be prepared at its normal dilution, and the Erifon Systems Cleaner then added appropriate level. Because of the high anti-microbiological activity of Erifon Systems Cleaner, for dilution does not have to be of a particularly high standard, but on no account should seawater be used, as precipitation or flocculation may occur.



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water used

Erifon Systems Cleaner is generally used at a concentration of approximately 2% in the carrier medium. To be completely effective, the cleaning solution should be circulated throughout the system under treatment, and allowed to remain for a period of between twenty-four and forty-eight hours. At the end of this "soak" period, the system should be completely drained before recharging with fresh control fluid. An intermediate water flush is not advised, due to the possibility of recontamination and low residual levels of Erifon Systems Cleaner will have no detrimental effect on the new fluid. The MacDermid range of control fluids and support products has been designed to be fully compatible.



The specific details of a treatment program will vary depending on the type of system and the circumstances. The two main uses of Erifon Systems Cleaner are to prepare new control systems prior to installation of the control fluid itself, and the treatment of existing systems that have become seriously contaminated with microorganisms. MacDermid's staff can advise on the best approach to a specific application, and it is recommended that samples from the system be submitted to MacDermid for analysis before any action is



taken. The most effective time to carry out any operation using Erifon Systems Cleaner is when the system is most accessible. In the case of new systems, during or immediately after factory acceptance testing is frequently convenient for both BOP and subsea production control systems. For operational BOP systems, full cleaning can only be carried out with the stack on deck, or, for subsea production control systems, with the aid of diver or ROV intervention (unless the system has been designed to allow flushing to take place without these aids).

General Flushing Procedure

Regardless of the type of system or the specific circumstances involved the general procedure to be used when carrying out a flushing operation with Erifon Systems Cleaner can be broken down into a series of steps. There are minor variations depending upon whether the system is new or in service, and these are included in the following suggested approach.

1. Prepare a 2% solution of Erifon Systems Cleaner. Add a water-soluble dye for visual detection. In new systems, fresh control fluid should be used as the carrier medium (diluted at the normal operating level where appropriate), and the HPU (hydraulic power unit) reservoir filled with the resulting Erifon Systems Cleaner solution. In operational systems, the appropriate volume of Erifon Systems Cleaner is added to the HPU reservoir.
2. The fluid in the HPU reservoir should be thoroughly agitated using an air line. The resulting foam will clean internal reservoir surfaces that would otherwise be inaccessible.
3. The accumulators on the HPU should be fully discharged to waste, and then rapidly recharged from the HPU reservoir to create maximum turbulence. This operation should be repeated twice more. Accumulators are one of the most common areas of a system in which microorganisms thrive.
4. Using the HPU as a power source, flush Erifon Systems Cleaner solution through all surface control panels, hook-up hoses and subsea valves. Where necessary, break lines at the subsea end of the control system to bleed "dead" portions of the system, and then reconnect. Cycle valves three times.
5. Operate each system function three times to flush the main hydraulic feed(s) and actuators. Where the system is of a total loss type, it may be possible to temporarily feed the fluid discharge ports back to the HPU reservoir (i.e. in the case of a BOP on deck). Where this is not possible, the fluid depletion in the HPU reservoir must be replaced with fresh Erifon Systems Cleaner solution.
6. When bleeding a section of a system, it is important to know when Erifon Systems Cleaner solution has arrived at a discharge point, observe that dyed fluid is present. For detection subsea, Oceanic LTF leak tracer fluid can be added to the Erifon Systems Cleaner Solution at a level of 5%. This provides a strong color contrast when discharged from a port into the surrounding seawater.
7. Allow the entire system to "soak" for a period of between twenty-four and forty-eight hours. In the case of working systems, normal operations can be carried out provided that the concentration of Erifon Systems Cleaner is maintained.



8. At the end of the soak period, drain the HPU and accumulator package, and immediately recharge with fresh control fluid. The accumulators should be charged and discharged to waste a total of three times, and then left charged with control fluid.
9. Use the fresh control fluid to displace the Erifon Systems Cleaner solution from the control system. Operate all functions as in step 6 to ensure complete removal.
10. Removal of Erifon Systems Cleaner can be confirmed either by a cessation of the appearance dyed fluid at the discharge point.
11. For systems already installed, recommence normal operations. On new systems, take measures to minimize the possibility of contaminant ingress prior to installation. Where a system is likely to be in storage for a considerable period of time (i.e. in excess of six months) fill with Oceanic EPF equipment preservation fluid. This is substituted for the control fluid in steps 9 and 10, and replaced with control fluid prior to system installation offshore.

Once the control fluid has been successfully installed in a system, it is recommended that advantage be taken of the MacDermid Fluid Monitoring Service, as a part of a planned maintenance program.

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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