

DESCRIPTION

FERROCLEAN cleaning treatment is a unique, patented, highly effective water-based cleaner containing penetrating, dissolving and dispersing agents. FERROCLEAN removes, dissolves and disperses iron oxide deposits from diesel cooling water systems while providing a temporary passivating film to protect the base metal from corrosion. FERROCLEAN was developed as an enhanced alternative to traditional acid based cleaners used for iron oxide removal. Iron fouling in cooling water systems can negatively affect the overall operation of the system resulting in reduced operating efficiency, increased maintenance costs and downtime as well as shortened equipment life.

FERROCLEAN effectively removes iron oxides without the hazards of handling or subjecting the system metallurgy to metal loss associated with using strong acid solutions. FERROCLEAN can also loosen and disperse light organic debris or light mineral scale trapped in the iron oxide deposits. Depending on the type and amount of organic deposits or mineral scale present, a traditional precleaning, using an alkaline or an acid cleaner, may have to be considered prior to using FERROCLEAN.

FERROCLEAN is not recommended for use on galvanized metal. Contact your Drew Marine representative for details on cleaning galvanized metal with FERROCLEAN.

APPLICATION & USE

FERROCLEAN is an effective cleaner for removing iron oxides without the need for neutralization. Using good quality fresh water, circulate a maximum 10% solution of FERROCLEAN through the equipment. Depending upon the extent of the fouling, the solution strength, contact time, and temperature may have to be adjusted. Elevated temperatures will improve the cleaning process. In the event of a heavily fouled cooling water system, more than one cleaning may be required. Maintain the pH of the cleaning solution in the range of 5.8-6.2. If pH rises above 6.8, then drain some of the cleaning solution and add fresh FERROCLEAN to bring pH up to recommended range.

After the cleaning process has been completed using FERROCLEAN, the system should be drained and thoroughly flushed with fresh water. A quality corrosion inhibitor, such as MAXIGARD®, LIQUIDEWT™, or DREWGARD® XTA should then be immediately used to protect the system.

For a precommissioning cleaning to remove iron oxides, circulate a solution of 3-5% FERROCLEAN through the equipment. If cleaning is to be performed without heat, circulate for several days, depending on the severity of the deposits. If heat, 49-65° C, is applied, then circulation can be reduced to less than a day, again, depending on the severity of the deposits.

For a precommissioning cleaning to remove iron oxides from a boiler that has not been coated with a protective grease, circulate a 3% solution of FERROCLEAN through the system for 24 hours at 70° C. After cleaning and fresh water flushing, complete final fresh water flush with a 1% solution GC to reduce flash rust.

The following supplies are required to perform the cleaning procedure described below (Diesel Engine Cooling Systems (Out of Service)):

1. Circulating pump - either electric or air-driven, which would be capable of circulating the water system 1-2 times per hour.
 2. Mixing tank. An open end, 100-liter drum, such as DREW Air Diaphragm Pump System (PCN 1AA8981), or equivalent, is suitable.
 3. Steel piping, flexible hoses, fittings and valves as required to perform the job.
- IMPORTANT:** This should include a vent pipe leading from the top of the engine system to an upper deck area outside of the engine room.
4. Protective clothing for personnel. This includes goggles, rubber gloves, rubber aprons, etc. See Safety Data Sheet.
 5. Sufficient FERROCLEAN to prepare the required cleaning solution (maximum 10% dilution) based on the normal water capacity of the system being cleaned.

Cleaning Diesel Engine Cooling Systems (Out of Service)

- A. Where possible, connect the discharge side of the circulating pump to the lowest practical point on the diesel cooling system using a length of flexible hose and the appropriate fittings. Using a second section of flexible hose with fittings, connect a cleaning solution return with a valve from the highest point on the cooling jacket system to the top of the mixing tank, which is the suction supply for the circulating pump.
- B. Add approximately 100 liters of fresh water to the tank.
- C. Before commencing the cleaning, heat the water in the cooling system until it reaches a temperature of 60-82° C. The heat can be provided by a heating coil or steam line in the cleaning solution mixing tank or a system heat exchanger.
- D. Secure the engine. This only applies if the engine had to be run to heat the water.
- E. Be sure all valves in the mixing tank, pump, return and vent system are open. Start the chemical circulating pump and adjust the flow rate so that the level of the solution in the mixing tank remains constant.



Contact your Drew Marine representative for more information

F. Add sufficient FERROCLEAN to the mixing tank to prepare the required proportions of cleaning solution based on the water volume in the system. An equal amount of water will need to be drained from the system before adding FERROCLEAN.

G. Continue circulation and maintain the cleaning solution temperature for a minimum of 12 hours. As the cleaning progresses the system water may start to change to a dark green/black color. The system pH will drop to 5.0 - 6.0.

H. Drain and flush the system with fresh water. Continue flushing the system with fresh water until the discharge water is completely clear.

I. Inspect the cooling system interior for cleanliness. Repeat the procedures if the system is not completely clean.

J. Disconnect the vent system and the cleaning system from the engine. Secure all inlet and outlet cleaning points.

K. Fill the engine system with distillate or good quality fresh water and add the correct amount of corrosion inhibitor prior to returning the equipment to service.

NOTE: Should foaming occur during cleaning, we recommend the addition of an antifoam agent. Contact your local Drew Marine representative for further information.

TYPICAL PROPERTIES

Appearance:	Light yellow liquid
Specific Gravity @ 25°C:	1.14
Flash Point (PMCC):	None
Freeze Point:	-7.7°C
pH (neat product):	5.0

NOTE: Always wear the appropriate personal protective equipment when using this product.

PACKAGING

FERROCLEAN cleaning treatment is available in 25-liter pails (PCN 6675401).

IMPORTANT INFORMATION

Drew Marine maintains Safety Data Sheets on all of its products. Safety Data Sheets contain health and safety information for your development of appropriate product handling procedures to protect your employees.

Our Safety Data Sheets should be read and understood by all of your supervisory personnel and employees before using Drew Marine products.

FEATURES

- Water-based cleaner
- Penetrates and disperses deposits
- Patented formulation
- Passivates
- No objectionable odor
- Contains emulsifiers and dispersing agents
- Contains antifoam
- Non-flammable

BENEFITS

- Easily disperses in water
- Decreases maintenance costs
- Increases equipment life
- Increases operating efficiency
- Dissolved deposits will not redeposit
- Effective removal of oxides
- Safe for use on aluminum, brass, copper, mild steel, and stainless steel
- Protects metallurgy from corrosion after cleaning
- Prevents flash rusting
- Can be used where there is light oil contamination or mineral scale trapped in the iron oxide deposits
- Low foam



Contact your Drew Marine representative for more information

**Drew Marine**[®]

400 Captain Neville Drive
Waterbury, CT 06705 USA
1-973-526-5700
Drew-Marine.com