



# CLEANING AGENTS

Product catalog January 2020  
Including comparison- and problem & solution guide

# CLEANING AGENTS

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# ETC 400 GREASE REMOVER

*A very efficient general purpose degreaser, emulsifying, economical, ready to use, containing petroleum solvents, emulsifiers and surfactants.*

## FEATURES & BENEFITS

- Effective cleaner
- Rinses off with water
- Non-acid, non-alkaline
- Saves time and effort
- Cost effective; Leaves no residue
- Does not streak or stain
- Suitable for use with most equipment



## DIRECTIONS FOR USE

ETC 400 is recommended for cleaning and degreasing, applied by brush, hand spray, immersion, soaking or any other conventional method.

Apply undiluted ETC 400 over soiled areas and allow to penetrate the area for ca. 15-30 minutes before rinsing off with water. Parts can be cleaned in a bath of ETC 400, undiluted for heavy soil, for medium to light soiling use a solution of 10 - 30 % ETC 400 in water. Allow parts to be soaked for at least 30 minutes before washing off with water. For stubborn deposits, agitation by scrubbing will assist the cleaning operation.

## PRODUCT PROPERTIES

Appearance	Light yellow liquid
Density	ca. 0,78 kg/lit
Flash point	40°C
<b>Compatibility</b>	
Metal	Not known
Rubber	May swell



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# ETC 401 GREASE REMOVER, HD

*Penetrates and dissolves grease, oil and grimy soils forming a soluble mixture which can be rinsed away with water.*

## APPLICATIONS

- Cargo tank cleaning of mineral oils and petroleum based chemicals
- Cleaning oil coolers, fuel oil preheaters, lube oil heat exchangers
- Cleaning and degreasing of cooling water systems prior to descaling operations
- Degreasing double bottom, deep tanks, and bilges etc.
- Removal of general oil contamination from machinery and engine room
- Cleaning/degreasing of boilers
- Soak cleaning of machinery parts

## FEATURES & BENEFITS

- Wide application range, from tank cleaning to heavy duty degreasing
- Wide cleaning spectrum, effective on mineral oils and petroleum based chemicals
- Powerful solvent with quick penetration and emulsifying properties
- Rapid rinsing, leaving clean, oil-free surfaces
- Safe to use on most metal surfaces, painted surfaces and tank linings
- Recommended for use with high pressure and steam cleaning equipment

## DIRECTIONS FOR USE

ETC 401 may be applied undiluted by brushing, wiping or spraying. Hose off with fresh or salt water 10-20 minutes after applying. Where hose rinsing is not possible, use a sponge to apply rinse water. Thoroughly rinse to avoid streaking.

For use in solvent pans or tank cleaning of parts, tools, etc., apply ETC 401 undiluted or cut with 4 parts mineral spirit. Soak parts until the soil is softened and rinse with water or wipe with a clean cloth.

ETC 401 is used to clean deck plates, tank tops, machinery, bilges and for general deck and engine room maintenance.

For cleaning oil from tanks, it is sprayed full strength on contaminated surfaces and allowed to soak in before being hosed off with fresh or salt water.

ETC 401 is suitable for steam cleaning.

For stubborn deposits, agitation by scrubbing will assist the cleaning operation.

## PRODUCT PROPERTIES

Appearance	Clear, yellow liquid
Density	ca 0,84 kg/lit
Flash point	43°C
Compatibility	
Metal	Not known
Rubber	May swell



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# ETC 402 RIG WASH

*A multi purpose degreaser developed to meet onshore and offshore requirements*

## APPLICATIONS

- Removal of grease, oil, sludge, carbon deposits, general dirt and grime
- Engine room cleaning
- Cargo tank cleaning
- Accomodation cleaning for bulkheads, decks, toilets and galley
- Cleaning of most types of plastics and vinyls
- Cleaning of soiled textiles as rugs, mats, overalls etc.
- Cleaning of glass fibre boats, hulls and painted surface

## FEATURES & BENEFITS

ETC 402 RIG WASH - eco degreaser - with it's new formulation is a revolutionary multi purpose degreaser especially developed to meet the onshore and offshore requirements from both environmentally and efficiency points of view.

ETC 402 RIG WASH - eco degreaser - is a water based cleaner, non-toxic, non-caustic, free from hydrocarbon solvents and fully biodegradable, completely safe to the environment and to people handling it.

ETC 402 RIG WASH - eco degreaser - is compatible with oily water separators. Splits after cleaning, releasing the oil phase for reclamation. Safe disposal without any risk of water pollution.

ETC 402 RIG WASH - eco degreaser - is effective and economical in use and safe on all materials. Can be used in non-ventilated areas.

ETC 402 RIG WASH - eco degreaser - contains an advanced surfactant with exceptional solvency power on grease and oily matters.

ETC 402 RIG WASH - eco degreaser - can be used for all types of cleaning and degreasing and may be applied by brush, as air spray or used in ultrasonic tanks, immersion soak tanks and high or low pressure spray appliances.

## DIRECTIONS FOR USE

May be used neat or diluted by up to 50 parts of water according to the amount and type of soil to be removed. Cargo tank cleaning after mineral-, animal-, vegetable- and fish oils.

Spot cleaning, hand sprayed neat or diluted up to 1 - 5 parts water and left for about 20 - 30 minutes before washing off with water. For stubborn deposits agitation by scrubbing will assist the cleaning operation.

ETC 402 RIG WASH - eco degreaser - may be used to clean the majority of tank coating materials, light metals, plastic and textiles.

## PRODUCT PROPERTIES

Appearance	Light yellow liquid
Density	ca 1,0 kg/lit
Flash point	none
PHconc.	ca 11,5
Biodegradable	Yes
<b>Compatibility</b>	
Metal	do not use on aluminum
Rubber	may soften some rubber

**Packaging**  
200 litre drums  
25 litre cans



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# ETC 403 OIL SPILL DISPERSANT

*Biodegradable product containing low-aromatic hydrocarbon with high dispersing efficiency and low toxicity.*

## APPLICATIONS

- Dispersal and clearance of mineral oils, crude oils, residual fuel oils, diesel fuel oil, kerosene, white spirit and lubricant oils
- For use on oil spills that may occur during loading or discharging of cargo or bunkers
- For cleaning of spills on deck, ships side, piers, wharves, etc.

## FEATURES & BENEFITS

- Concentrated blend of dispersants and solvents
- Low toxicity
- Biodegradable
- Rapid efficient dispersal of a wide range of oil residues. Converts hydrocarbons into very fine emulsions
- Ready to use
- Cost effective
- Economical cleaner
- Reduces fire hazard
- Does not contribute to pollution

## DIRECTIONS FOR USE

### Oil Spills at Sea

Used undiluted by direct spraying to clean up environmental oil spills at sea. It can be applied by hand spray, work boats with mounted spray booms, or fire hoses with injectors. Allow some time for the oil to absorb ETC 403 and then disperse mixture by vigorous agitation using fire hoses, ships propeller, breaker boards towed behind work boats, etc.

### Oil on Beaches and Shore Line

ETC 403 should be applied neat by spraying over oiled areas. Allow time for the oil to absorb ETC 403 then follow by washing down the beach or rocks, etc. The incoming tide may fulfil this purpose. The treatment rate depends on the type and thickness of oil spilt, also on the age and condition. Under conditions where it is a thin slick of oil, 1 litre of ETC 403 is enough to treat approximately 10 m<sup>2</sup> of oilcontaminated surface. In many cases, several applications may be needed.

### Oil spill on Deck

Remove as much of the oil as possible, then spray ETC 403 over area covered by the oil and allow some time for it to be absorbed. Disperse the mixture with water by means of a fire hose. Depending on type of oil it may be necessary to use several applications.

### Tank cleaning

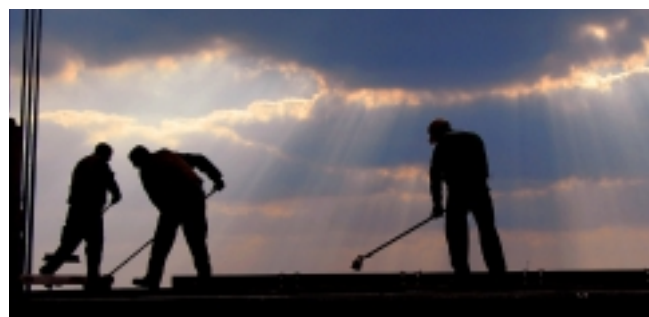
ETC 403 may also be used for tank cleaning as an ecologically more acceptable cleaner than other types. ETC 403 may be used by injection at 0,1-2% or recirculation at 1-5%.

### Other Shipboard Cleaning Operations

ETC 403 can be used for general shipboard oil contamination. Cleaning bilges and engine parts. Cleaning of heat exchangers and degreasing diesel engine cooling water systems, etc.

## PRODUCT PROPERTIES

Appearance	Golden brown liquid
Density	ca 0,8 kg/lit
Flash point	75°C
<b>Compatibility</b>	
Metal	No known effect
Rubber	No known effect



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# ETC 404 TANK CLEANING

*Superior heavy duty solvent emulsifier, containing petroleum solvents, emulsifiers and surfactants. Can be used as a tank cleaner or for general degreasing.*

## APPLICATIONS

- Cargo tank cleaning of mineral oils and petroleum based chemicals
- Cleaning of oil coolers, fuel oil preheaters, lube oil heat exchangers
- Cleaning and degreasing of cooling water systems prior to descaling operations
- Degreasing double bottom, deep tanks and bilges, etc
- Removal of general oil contamination from machinery and engine room
- Cleaning/degreasing of boilers

## FEATURES & BENEFITS

- Wide application range
- Wide cleaning spectrum
- Powerful solvent with quick penetration and emulsifying properties
- Rapid rinsing
- Safe to use on most metal surfaces, painted surfaces and tank linings
- Effective in machine and manual spraying and rock and roll cleaning procedures
- Cost effective - reduces manual cleaning
- Reduces cleaning time
- Minimises downtime

## DIRECTIONS FOR USE

### Oil Spills at Sea

ETC 404 is formulated for cleaning double bottom, deep tanks, wing tanks etc., used for fuel oils, using the rock and roll method of cleaning at sea where mechanical cleaning is not possible. It can also be used for local cleaning and degreasing of engine rooms and on deck, and may be applied by brush, air spray, immersion, soaking or any other conventional means.

### Soak Method

Put parts to be cleaned into a bath of ETC 404 undiluted for heavy soil, for medium to light soiling use a solution of between 10-30% ETC 404 in water. Parts should be soaked for at least 30 minutes before washing off with water.

### Spraying Method

Spray ETC 404 neat over all soiled areas. Allow time for ETC 404 to act, between 15-30 minutes, then rinse off with high pressure water hose. For stubborn deposits, agitation by scrubbing will assist the cleaning operation.

### Rock and Roll Method

Cleaning of double bottom and deep tanks at sea, recom-

mended time to clean and gas-free under normal circumstances would be 5 days.

[A] Heat the remaining fuel in tank, trimming the vessel as required to assist in stripping tank.

[B] Flush tank with sea water, stripping constantly.

[C] After flushing, ensure all suction and discharge valves in the engine room are closed.

[D] Dose tank with ETC 404 through sounding pipe or man-hole, between 1-2 litres per 1.000 litres of water for 75-80% of capacity of tank to be cleaned.

[E] Fill tank to around 25% capacity with sea water and add ETC 404. Raise the temperature up to 60°C maximum and maintain this temperature for 24 hours.

[F] Top up tank to 75-80% capacity with sea water, continue to heat to 60°C maximum for 48-72 hours.

[G] Discharge and strip tank. Fill to 50-60% capacity with sea water and allow 2 hours rinsing time.

[H] Discharge tank and strip, flushing tank with sea water for 2 hours, stripping continuously. When completed, inspect tank from manhole to ascertain if second cleaning is required.

[I] Add second dose of ETC 404, fill tank with sea water 75-80% capacity and raise the temperature to 60°C maximum. Maintain this for 48-72 hours. In calm seas leave solution in tank for as long as possible and recirculate or agitate with air or steam.

[J] Discharge and strip tank, flush with sea water, stripping continuously for 2 hours.

[K] To gas-free, fill tank with sea-water to overflow through vents and sounding pipes, discharge and strip completely.

### Rock and roll cleaning dosage chart

Fuel oil viscosity centistoke at 50°C	ETC 404 per tonne of water	
	1st stage	2nd stage
Over 320 and sludge tanks	1 litre	1 litre
180 - 320	1 litre	0,75 litre
30 - 180	0,75 litre	-
Up to 30	0,5 litre	-

### Cargo Tank Cleaning after Mineral Oils

Direct injection into tank washing machines is recommended. A dose rate of between 0,1% - 2,0% i.e. 1-20 litres per tonne wash water. Best results are obtained when water is heated to a temperature of between 65-80°C and not less than 50°C. Slops should be constantly striped from the tank and transferred to a holding tank or pumped ashore to slop tanks. Recirculating method of cleaning when using tank washing

machines, it is recommended to use a solution strength of 0,5% - 3,0% mixed in tank about to be cleaned. Best results are obtained when water is heated to a temperature of 65 - 80°C and not less than 50°C.

Dose rate and results will vary depending on amount of contamination and number of tanks cleaned with this solution.

After cleaning, slop water should be pumped ashore or to ship's slop tanks.

Spot cleaning with ETC 404 can be done by spraying neat over tank surfaces to be cleaned, left for at least 30 minutes and up to 2 hours if time will allow. Using tank washing machines or high pressure hoses, wash down tank walls. Best results are achieved with hot water between 60°-80°C. Keep stripping tank slops and transfer to holding tank/slop tank.

### Degreasing Marine Diesel Engine Cooling Water Systems

To avoid interference with the cooling water corrosion treatment the diesel engine cooling water system should be cleaned regularly from oil deposits.

#### In Service Cleaning

This method can be undertaken with engine running at normal speed.

[A] Take 0,25 litre cooling water sample, for future comparison, and let it stand in a clear glass container.

[B] Calculate the amount of ETC 404 required for a solution of 0,5% i.e. 5 litres per 1.000 litres in cooling water system. Drain off similar amount of cooling water from engine if necessary. Slowly and intermittently, add the cleaner to the cooling system via either the expansion or return tank.

[C] After 5 hours, take 0,25 litres of cooling water sample, this should be allowed to stand in a clear glass container until any oil has risen to the top. By comparing the thickness of the oil level with that of the first sample, the progress of the cleaning operation can be gauged. A sample should be taken every 5-6 hours to monitor the cleaning process.

[D] The cleaner can be left in the engine for a few days until a convenient port is reached where the engine can be drained.

[E] Drain off the complete engine cooling system and thoroughly flush with clean water prior to re-filling with water of the required quality, to which an appropriate anti-corrosion treatment should be added.

#### Out of Service Cleaning

This method may be used when engine is stopped.

[A] Take 0,25 litre sample of cooling water for future comparison, and allow it to stand in a clear glass container.

[B] Drain the cooling system and flush out with water, then refill the system.

[C] Calculate the amount of cleaner required for a solution strength of 2% i.e. 20 litres per 1.000 litres of cooling water. Drain off similar amount of cooling water from engine if necessary. Add ETC 404.

[D] Circulate the solution through the system and heat until

the water reaches a temperature of about 60°C.

[E] Continue circulation of the solution through the system for a minimum of 5 hours.

[F] Take sample of cleaning solution from the system after a minimum of 5 hours and compare with sample taken at the beginning to ascertain that cleaning is completed.

[G] When cleaning is completed, drain off the cooling water system and thoroughly flush with clean water, prior to re-filling and adding an anti-corrosion treatment.

### Cleaning of the Oil side of Lube Oil Heat Exchangers

Cleaning is best done by the recirculating method using a heated 15% solution of ETC 404.

[A] Isolate the oil supply and disconnect the heat exchanger oil inlet and outlet, drain off any oil remaining.

[B] Connect the discharge side of a portable pump to the lower heat exchanger connection and the suction side of the pump to the bottom outlet of a 200 litre drum.

[C] Complete the circuit by connecting the upper connection to the top of the drum.

[D] Add the required solution to the drum and arrange an immersion heater or live steam within the drum to raise the temperature of the cleaner to 65-75°C and maintain the level throughout the cleaning operation. If it is not possible to heat, the operation will need to be extended.

[E] Use the pump to maintain circulation for 12-15 hours. When the cleaning is completed, disconnect the lower heat exchanger and drain out cleaner.

[F] Connect a high pressure fresh water supply to the upper heat exchanger connection, and rinse until the water runs clean from the lower connection.

[G] When rinsing is complete, disconnect the high pressure water supply and thoroughly drain and dry the heat exchanger.

## PRODUCT PROPERTIES

Appearance	Clear light amber
Density	ca. 0,9 kg/lit
Flash point	ca. 70°C
<b>Compatibility</b>	
Metal	no known effect
Rubber	may swell.



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# ETC 405 TANK CLEANING SELF SPLITTING

*All-purpose degreaser with self-splitting emulsifiers, used for engine room and cargo tank cleaning. It allows the slop water to break into two separate oil and water phases.*

## APPLICATIONS

- General cleaning of machinery spaces, bulkheads, decks, bottom plates and any oil/grease soiled areas
- Bilge and tank top cleaning to gas free standard
- All cleaning where slops are required to pass through oily water separators
- Cargo tank cleaning of mineral oils and petroleum based chemicals
- Degreasing and cleaning engine cooling water systems
- Degreasing the oil side of fuel and lube oil heat exchangers
- Cleaning/degreasing of boilers

## FEATURES & BENEFITS

- Formulated to produce an emulsion that breaks on standing in a short time
- Works in conjunction with oily water separators to meet current IMO recommendations
- Highly effective, economical solvent cleaner
- Rapid penetration
- Slop emulsions break into two distinct phases
- Water phase completely free of chemicals
- Allows oil residues to be reclaimed
- Reduces disposal costs and associated problems
- Low toxicity, non corrosive

## DIRECTIONS FOR USE

ETC 405 can be used for local cleaning and degreasing of engine rooms. It may be applied by brush, spray, immersion, soaking, or any other conventional means. Depending on state and nature of soiling ETC 405 may be used neat or up to 30% solution with fresh water.

Allow a residence time of at least 30-60 minutes where possible, to ensure good penetration of soiling. Wash down all surfaces using hot water if possible and high pressure water jet. Bilge and tank top cleaning. If soiling is more tenacious, use ETC 405 neat.

Apply by spray and leave for 30-60 minutes before washing down with high pressure water jet. The emulsion residue after cleaning must be allowed to separate in a holding tank for at least 3 hours before passing through an oily water separator. For best result from the splitting action of ETC 405 it is important that no other type of detergent cleaner is used in the engine room.

### Cargo Tank Cleaning after Mineral Oils

Direct injection method into tank washing machines is recommended for this product. A dose rate of between 0,1% - 3,0% i.e. 1-30 litres per tonne wash water. Best results are obtained when water is heated to a temperature of between 65-80°C and not less than 50°C.

Slops should be constantly striped from the tank and transferred to a holding tank. Allow slops to settle and "break". The time for this will vary depending on amount of ETC 405 used and type of oil being cleaned. In most cases, 12 hours should be sufficient before the water phase can be removed.

Recirculating method of cleaning when using tank washing machines, it is recommended to use a solution strength of 0,5% - 3,0% mixed in tank about to be cleaned. Best results are obtained when water is heated to a temperature of 65 - 80°C and not less than 50°C.

Dose rate and results will vary depending on amount of contamination and number of tanks cleaned with this solution. After cleaning, slop water should be pumped ashore or to ship's slop tanks.

Spot cleaning with ETC 405 can be done by spraying neat over tank surfaces to be cleaned, left for at least 30 minutes and up to 2 hours if time will allow. Using tank washing machines or high pressure hoses, wash down tank walls. Best results are achieved with hot water between 60° and 80°C. Keep stripping tank slops and transfer to holding tank/slop tank and allow time for slops to break before removing the water phase.

### Cleaning/Degreasing of Boilers

**[A]** Find the source of contamination and rectify this problem before starting the cleaning operation.

**[B]** Dilute ETC 405 according to the degree of contamination. Between 2-10% of ETC 405 in water is suggested. For heavy contamination, up to 20% solution may be required, e.g. 1% solution is 10 litres per 1.000 litres water.

**[C]** Dose the required amount of solution through the steam drum manhole. Re-secure steam drum manhole cover, vent air valve on steam drum.

**[D]** Boiler can now be fired for at about 4 minutes then shut down for 10-20 minutes. Keep repeating this process until the solution has reached a temperature of 50-60°C. Repeat this operation for 12-18 hours keeping the solution at the optimum temperature which will promote agitation and circulation of liquid to give better cleaning efficiency.

**[E]** Drain down boiler by opening all drain valves and remov-

ing manhole covers. Use a high pressure hose to flush drums, tubes and headers starting at the top. After flushing boilers, secure and refill.

### Degreasing Marine Diesel Engine Cooling Water Systems

When diesel engine cooling water systems become contaminated with oil and grease, the system should be cleaned to remove oily deposits as they can interfere with the cooling water corrosion treatment.

#### In Service Cleaning

This method can be used with engine running at normal speed.

**[A]** Take 0,25 litre cooling water sample, for future comparison, and allow it to stand in a clear glass container.

**[B]** Calculate the amount of ETC 405 required for a solution of 0,7% i.e. 7 litres per 1.000 litres in cooling water system. Drain off similar amount of cooling water from engine if necessary. Slowly and intermittently, add the cleaner to the cooling system via either the expansion or return tank.

**[C]** After 5 hours, take 0,25 litres of cooling water sample, this should be allowed to stand in a clear glass container until any oil has risen to the top. By comparing the thickness of the oil level with that of the first sample, the progress of the cleaning operation can be gauged. A sample should be taken every 5-6 hours to monitor the cleaning process.

**[D]** The cleaner can be left in the engine for a few days until a convenient port is reached where the engine can be drained.

**[E]** Drain off the complete engine cooling system and thoroughly flush with clean water prior to re-filling with water of the required quality, to which an appropriate anti-corrosion treatment should be added.

#### Out of Service Cleaning

This method can be used when engine is stopped.

**[A]** Take 0,25 litre sample of cooling water for future comparison, and allow it to stand in a clear glass container.

**[B]** Drain the cooling system and flush out with water, then refill the system.

**[C]** Calculate the amount of cleaner required for a solution strength of 2% i.e. 20 litres per 1.000 litres of cooling water. Drain off similar amount of cooling water from engine if necessary. Add ETC 405.

**[D]** Circulate the solution through the system and heat until the water reaches a temperature of about 60°C.

**[E]** Continue circulation of the solution through the system for a minimum of 5 hours.

**[F]** Take sample of cleaning solution and compare with sample taken at the beginning to ascertain that cleaning is completed.

**[G]** When cleaning is completed, drain off the cooling water system and thoroughly flush with clean water, prior to re-filling and adding an anti-corrosion treatment.

### Cleaning of the Oil side of Lube Oil Heat Exchangers

Cleaning is best done by the recirculating method using a heated 25% solution of ETC 405.

**[A]** Isolate the oil supply and disconnect the heat exchanger oil inlet and outlet, drain off any oil remaining.

**[B]** Connect the discharge side of a portable pump to the lower heat exchanger connection and the suction side of the pump to the bottom outlet of a 200 litre drum.

**[C]** Complete the circuit by connecting the upper connection to the top of the drum.

**[D]** Add the required solution to the drum and arrange an immersion heater or live steam within the drum to raise the temperature of the cleaner to 65-75°C and maintain the level throughout the cleaning operation. If it is not possible to heat, the operation will need to be extended.

**[E]** Use the pump to maintain circulation for 12-15 hours. When the cleaning is completed, disconnect the lower heat exchanger and drain out cleaner.

**[F]** Connect a high pressure fresh water supply to the upper heat exchanger connection, and rinse until the water runs clean from the lower connection.

**[G]** When rinsing is complete, disconnect the high pressure water supply and thoroughly drain and dry the heat exchanger.

### PRODUCT PROPERTIES

Appearance	Clear light amber
Density	ca. 0,9 kg/lit
Flash point	> 61°C
<b>Compatibility</b>	
Metal	no known effect
Rubber	may swell



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# ETC 406 AIR COOLER CLEANER

*Biodegradable, highly effective cleaner for in service cleaning of soiled diesel engine air coolers, scavenging air systems and turbochargers*

## APPLICATIONS

- In-service cleaning of diesel air coolers and scavenge trunking systems
- Air spray cleaning whilst diesel engine is stationary
- For use in soak bath or cleaning tanks
- Light carbon removal from machinery parts

## FEATURES & BENEFITS

- Formulated to remove oil, grease and carbon deposits from air coolers and scavenging systems
- Efficient and economical
- Permits in service cleaning and reduces down-time
- Renders surfaces oil-repellent
- Maintains and stabilises air cooler efficiency
- Saves time, maintenance costs. Avoids risks of damage
- Leaves no residue and has no harmful effect on engine
- Non-flammable, non-explosive and has no flash point
- Biodegradable

## DIRECTIONS FOR USE

Tests show that vessels using correct type of injection equipment with chemical cleaners such as ETC 406 suffer no degradation of cylinder liner lubrication and liner wear rates are not increased. Large engines will normally require two injectors per cooler, but one injector is usually sufficient for medium and small engines.

### In-service cleaning

The general principle is to inject a solution of ETC 406 into the air trunking upstream of the charge air cooler, followed by a clean water rinse. For efficient cleaning of air coolers it is necessary to use correctly installed dosing and injection equipment.

To calculate the amount of solution required to clean an air cooler, calculate or find the cross-sectional area of the cooler and use 3 litres of cleaning solution per square meter or as table below:

Engine HP	Solution mix. with 30% ETC 406
6.000-12.000	3,5 litre mix
12.000-24.000	5,5 litre mix
24.000 or more	7 litre mix

For in-service cleaning, a solution mix of 30% ETC 406 in fresh water is recommended. For the exhaust side of the turbocharger, use solution mix of 15%.

The appropriate dose of cleaner is to put in the dosing pot and inject up-stream of the air-cooler or turbo charger for a period of about 10 minutes. After a further 10 minutes, a similar quantity of fresh water is injected. Rate and frequency of application depends mainly on the condition of the air coolers. However, for an initial dosage we recommend injection every 24 hours.

After initial cleaning period, the cleaning effect should last for 48 hours of operational time. Although frequency of cleaning may vary, calculated cleaning dose should remain the same.

### Hand spray Cleaning

In this situation the engine must be stopped. Open an appropriate air trunking inspection cover. Open air cooler drain valves. Using a pressure hand spray, apply undiluted ETC 406 all over the cooler coils. Allow ETC 406 to penetrate the deposits for a minimum of 1 hour, then use a high pressure lance or water jet to wash off the loosened deposits. After satisfactory cleaning, removal of deposits and flushing through with fresh water, close air cooler drains.

### Soak Method

This method may be used for machine parts with stubborn carbon deposits. Put parts to be cleaned into a bath of 1 part ETC 406 and 1 part of water, allow deposits to be broken down and loosened before removal. Then rinse off with water.

### Dosing Procedure

[A] Check that all valves are closed.

[B] Thoroughly mix up a 30% solution of ETC 406 and fresh water and pour this into the dosing pot through the filter funnel, closing filter valve after.

[C] Open valve allowing compressed air to the injector nozzle.

[D] Open valves to balance trunking pressure in dosage vessel. Emulsion solution will now be drawn down into the injector and be atomised in the scavenge air trunking. It should take about 10 minutes to empty the dosage vessel.

[E] Close all valves.

[F] After a residence time of 10 minutes, repeat sequence of operation above using one full dosing vessel of fresh water.

[G] Repeat this procedure every 24-48 hours, depending on the requirements of the type of engine and sizes of air coolers.

## PRODUCT PROPERTIES

Appearance	Colourless pale liquid
Density	ca 1,04 kg/lit
Flash point	none
PH	ca 13,5 in concentrate
Biodegradable	Yes
<b>Compatibility</b>	
Metal	No known effect
Rubber	No known effect



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# ETC 407 CARBON REMOVER. LT

*A waterbased blend designed to remove baked on and carbonised soils on valves, burner tips and other engine parts*

## APPLICATIONS

- Removal of carbon type deposits from burner cups, fuel injectors and all components fouled by carbon, resin or varnishes
- Cleaning oil side of fuel heaters, oil coolers, etc.
- Removal of carbon based deposits from fuel and lube oil filters
- Direct engine parts i.e.; pistons, piston rings, valve springs, connecting rods

## FEATURES & BENEFITS

- High solvency
- Contains no cresylic acid or chlorinated hydrocarbons
- Requires no water seal
- Non flammable
- Penetrates and softens stubborn carbon deposits and varnishes
- Safer for the user
- Safer for the environment
- Non-corrosive to most metals
- Pleasant to use
- Simple cleaning process, minimising water spotting and corrosion

## DIRECTIONS FOR USE

### Soaking method

Place the parts to be cleaned in a pan or drum of suitable size with enough ETC 407 to cover. Allow to soak until deposits are completely dissolved or loosened, normally after 4-8 hours. Remove and rinse with water. Some small amounts of deposits that may remain can be removed by light brushing. Dry with a cloth or compressed air.

For heavy or tenacious deposits, agitation will assist in the cleaning. For carbonised deposits, heat the solvent to 55-60°C. Allow the parts to stand in the solution until the deposits loosen, up to 24 hours. Remove and rinse with a stream of water. Brush lightly if necessary. Dry with a cloth or compressed air.

### Brush method

For in-place cleaning of large, heavy pieces. ETC 407 can be applied with a brush. Continue brushing with ETC 407 until the deposits are saturated, loosened and removed. Sponge or spray with water to rinse, then dry with a cloth.

## PRODUCT PROPERTIES

Appearance	Colourless liquid
Density	ca 1,06 kg/lit
Flash point	none
PH conc.	ca 13,5
Biodegradable	Yes
<b>Compatibility</b>	
Metal	Not known
Rubber	Not known



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# ETC 408 ELECTRO CLEANER

*Non-flammable quick drying chlorinated solvent for cleaning and degreasing electrical equipment. Dissolves grease, tar, wax, oil, and other soils on contact*

## APPLICATIONS

- Rapidly dissolves oil and grease
- Complete evaporation leaving surfaces clean and dry
- Quick yet controlled evaporation rate
- Harmless to properly applied electrical insulation
- Non-corrosive, can be used on all normal components with no risk of corrosive damage
- Non flammable
- Prevents condensation of moisture on windings and electrical parts
- Specially designed for marine electrical systems and equipment

## FEATURES & BENEFITS

- Rapidly dissolves oil and grease
- Complete evaporation leaving surfaces clean and dry
- Quick yet controlled evaporation rate
- Harmless to properly applied electrical insulation
- Non-corrosive, can be used on all normal components with no risk of corrosive damage
- Non flammable
- Prevents condensation of moisture on windings and electrical parts
- Specially designed for marine electrical systems and equipment

## DIRECTIONS FOR USE

ETC 408 is applied undiluted to electrical equipment. ETC 408 can be applied by soaking or dipping in a tank or bucket, by brushing, or by wiping with a clean lint-free cloth or by spraying with a hand gun spray.

Once the deposits of grease and dirt have been flushed away, the remaining solvent should be immediately helped to evaporate by using low pressure, high volume, clean compressed air. ETC 408 may possible affect some types of rubber and plastic. Either remove rubber and plastic parts from components or test on small areas for any reaction before cleaning.

ETC 408 must only be used in sufficiently ventilated areas and is always to be used neat.

## PRODUCT PROPERTIES

Appearance	Blue liquid
Density	ca. 1,25 kg/lit
Flash point	None
pH	ca. 13,5
<b>Compatibility</b>	
Metal	no known effect
Rubber	may affect some types of rubber and plastic.



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# ETC 409 MP CLEANER ENVIRONMENT ADAPTED

*Alkaline, mild, multi purpose cleaner with wetting agents that allow rapid penetration to remove light oil or dirt from any surface.*

## APPLICATIONS

- Accommodation cleaning of woodwork, leather, desks, etc
- Cleaning of toilets and showers
- Cleaning of reefer boxes
- Cleaning of windows and potholes
- Cleaning of dishes
- Cleaning of hospitals
- Hand laundry cleaning

## FEATURES & BENEFITS

- Contains wetting agents
- Very economical
- Non-flammable
- Pleasant odour
- Leaves surfaces residue free
- Biodegradable
- Acceptable for use in food areas

## DIRECTIONS FOR USE

Depending on the degree of contamination ETC 409 should be mixed with warm water at a rate of 100 ml to 500 ml per 10 litres, i.e. 1-2 cups of ETC 409 to a bucket of water.

ETC 409 can be applied by mops, brushes or rags, or dip the soiled items into the ETC 409 solution. After cleaning, rinse off with cold or warm water.

## PRODUCT PROPERTIES

Appearance	Clear liquid
Density	1,0 kg/lit
Flash point	None
pH	10,5
<b>Compatibility</b>	
Metal	no known effect
Rubber	no known effect



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# ETC 410 MP CLEANER ENVIRONMENT ADAPTED

*A unique blend of cleaning agents and a non-flammable cleaner for a broad range of deck, offshore, hotel and galley applications.*

## APPLICATIONS

- Biodegradable
- Non-flammable
- Fresh odour
- Completely soluble in water
- Will not persist in the environment
- Does not need special handling and storing
- Multipurpose cleaning
- Can deodorise
- Compatible with fresh or sea water
- Leaves no oily film

## FEATURES & BENEFITS

- Biodegradable
- Non-flammable
- Fresh odour
- Completely soluble in water
- Will not persist in the environment
- Does not need special handling and storing
- Multipurpose cleaning
- Can deodorise
- Compatible with fresh or sea water
- Leaves no oily film

## DIRECTIONS FOR USE

- For general cleaning apply ETC 410 cleaner as a 1-10% solution to soiled surface by brushing, swabbing or spraying. For heavy duty cleaning and light degreasing of public areas, floors, tiles, walls, paintwork, etc. it can be used in a concentration between 5-25%. Allow ETC 410 to penetrate and work into the soil for several minutes, scrub, then rinse with water to provide a clean, film-free surface. ETC 410 is more effective when used with hot or warm water. It is also applicable in high pressure spray applications at a 1% concentration.

## PRODUCT PROPERTIES

Appearance	Green liquid
Density	ca 1,0 kg/lit
Flash point	none
PH conc.	ca 11,5
<b>Compatibility</b>	
Metal	No known effect
Rubber	No known effect



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# ETC 411 AIR COOLER CLEANER HD

*Biodegradable, highly effective cleaner for in service cleaning of soiled diesel engine air coolers, scavenging air systems and turbochargers*

## APPLICATIONS

- In-service cleaning of diesel air coolers and scavenge trunking systems
- Hand spray cleaning whilst diesel engine is stationary
- For use in soak bath or cleaning tanks
- Light carbon removal from machinery parts

## FEATURES & BENEFITS

- Formulated to remove oil, grease and carbon deposits from air coolers and scavenging systems
- Efficient and economical
- Permits in service cleaning and reduces down-time
- Renders surfaces oil-repellent
- Maintains and stabilises air cooler efficiency at maximum
- Saves time, maintenance costs and avoids risks of damage when dismantling. Leaves no residue and has no harmful effect on engine
- Product in water solution is non-flammable, non-explosive and has no flash point

## DIRECTIONS FOR USE

Tests show that vessels using correct type of injection equipment with chemical cleaners such as ETC 411 suffer no degradation of cylinder liner lubrication and liner wear rates are not increased. Large engines will normally require two injectors per cooler, but one injector is usually sufficient for medium and small engines.

### In-service cleaning

The general principle is to inject a solution of ETC 411 into the air trunking upstream of the charge air cooler, followed by a clean water rinse. For efficient cleaning of air coolers it is necessary to use correctly installed dosing and injection equipment.

To calculate the amount of solution required to clean an air cooler, calculate or find the cross-sectional area of the cooler and use 3 litres of cleaning solution per square meter or as table below:

Engine HP	Solution mix. with 20% ETC 411
6.000-12.000	3,0 litre mix
12.000-24.000	4,5 litre mix
24.000 or more	6 litre mix

For in-service cleaning of air cooler and air-side of turbochargers, a solution mix of 25% ETC 411 in freshwater is recommended. For the exhaust side of the turbocharger, a solution mix of 10% ETC 411 in fresh water should be used.

The appropriate dose of cleaner is to put in the dosing pot and inject up-stream of the air-cooler or turbo charger for a period of about 5-10 minutes. After a further 5-10 minutes, a similar quantity of fresh water is injected to rinse off the emulsified deposits. Rate and frequency of application depends mainly on the condition of the air coolers. For an initial dosage we recommend injection every 24 hours. After initial cleaning period, the cleaning effect should last for 48 hours of opera-

tional time. Although frequency of cleaning may vary, calculated cleaning dose should remain the same.

### Hand spray Cleaning

The engine must be stopped. Open an appropriate air trunking inspection cover and air cooler drain valves. Using a pressure hand spray, apply undiluted ETC 411 all over the cooler coils. Allow ETC 411 to penetrate the deposits for a minimum of 1 hour, then use a high pressure lance or water jet to wash off the loosened deposits. After satisfactory cleaning, removal of deposits and flushing through with fresh water, close air cooler drains.

### Soak Method

This method may be used for machine parts with stubborn carbon deposits. Put parts to be cleaned into a bath of undiluted ETC 411 and allow deposits to be broken down and loosened before removal. Then rinse off with water.

### Dosing Procedure

- [A] Check that all valves are closed.  
 [B] Thoroughly mix up a 25% solution of ETC 411 and fresh water and pour this into the dosing pot through the filter funnel, closing filter valve after.  
 [C] Open valve allowing compressed air to the injector nozzle.  
 [D] Open valves to balance trunking pressure in dosage vessel. Emulsion solution will now be drawn down into the injector and be atomised in the scavenge air trunking. It should take about 10 minutes to empty the dosage vessel.  
 [E] Close all valves.  
 [F] After a residence time of 10 minutes, repeat sequence of operation above using one full dosing vessel of fresh water.  
 [G] Repeat this procedure every 24-48 hours, depending on the requirements of the type of engine and sizes of air coolers.

## PRODUCT PROPERTIES

Appearance	Slight yellow liquid
Density	ca 0,96 kg/lit
Flash point	> 61°C
pH	11,5
<b>Compatibility</b>	
Metal	No known effect
Rubber	May swell slightly



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# ETC 412 CARBON REMOVER HD

*A blend of powerful solvents designed to break down carbon deposits*

## APPLICATIONS

- Removal of carbon type deposits from burner cups, fuel injectors and all components fouled by carbon, resin or varnishes
- Cleaning oil side of fuel heaters, oil coolers, etc.
- Removal of carbon based deposits from fuel and lube oil filters
- Direct engine parts i.e.; pistons, piston rings, valve springs, connecting rods
- Non-corrosive to most metals

## FEATURES & BENEFITS

- Use cold, no heating required
- Dissolves fast deposits containing carbon, resin or varnishes
- Simple and economical to use by soaking or circulating method
- Eliminates need for hard scraping
- Can be recycled for future use

## DIRECTIONS FOR USE

### Soak Method

This method is the most appropriate way of cleaning deposits from components and machine parts. The soak tank should initially be mixed with ETC 412 and fresh water. Dilution rate is depending on deposits. The items for cleaning are then dipped into the solution. A wire basket can be used for small components. Immersion time will depend upon the nature of the deposits to be removed.

Light deposits will be removed in 1 hour, whereas heavy oxidised deposits may need overnight soaking. The components should be removed and then rinsed thoroughly with water before handling.

### Circulation

Where in-situ cleaning is required, ETC 412 can be used neat and circulated through the unit in question. Time required for this process will again depend on extent of fouling and may take up to 24 hours.

**[A]** Before circulation with ETC 412, blow compressed air or steam through the system to begin with, to remove as much as possible of the residual oil.

**[B]** Connect the end of the oil system to a pump, fill the system with ETC 412 and circulate.

**[C]** Continue circulation through the system for 4-24 hours. The time needed to do the cleaning will depend on the deposits involved.

**[D]** Heated ETC 412 will enhance the effectiveness, the temperature should not exceed 50°C.

**[E]** When cleaning is completed, drain out the ETC 412 and flush the system with water or a petroleum solvent such as gas, oil or mineral spirit.

The ETC 412 cleaning process has been specially designed so that cleaning, by soaking or by circulation, can be achieved with maximum efficiency and with the minimum use of ETC 412.

## PRODUCT PROPERTIES

Appearance	Slight yellow liquid
Density	ca 1,04 kg/lit
Flash point	> 61°C
pH	ca 11,5
<b>Compatibility</b>	
Metal	Not known
Rubber	May swell slightly



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# ETC 413 LIMESTONE REMOVER POWDER

*A dry acid cleaner formulated to remove water and rust scale deposits*

## APPLICATIONS

- Removal of water scale from boilers
- Descaling of Diesel Engine cooling systems
- Removal of water scale and rust from Condensers, Evaporators, Calorifiers, HeatExchangers etc

## FEATURES & BENEFITS

- Safe and easy handling and storage
- Fast and effective scale remover
- Inhibitors protect normal construction metals
- Contains a wetting agent
- Can be used in most shipboard systems
- Free flowing powdered acid
- Reduces cleaning, time-cost effective
- Does not require equipment disassembly for cleaning
- Does not require special test apparatus

## DIRECTIONS FOR USE

For large systems or components the most effective descaling is accomplished by circulation. In the case of small components, the soak method in an immersion bath can be used.

If the equipment to be cleaned is contaminated by oil, grease or sludge, pre-cleaning with ETC 400, ETC 401, ETC 404, ETC 411 or ETC 412 is necessary.

ETC 413 should normally be mixed with fresh water to form a solution of between 1-10% depending on the extent of scaling. Whenever possible, the solution should be heated to 60°C.

Calcium sulphates and heavy iron oxides may need stronger acid solutions. The strength of the acid can be sufficiently enhanced by adding 1 part sodium chloride (common salt) to 20 parts of ETC 413. If salt is not available an acceptable alternative is to dissolve ETC 413 in sea water. After use of ETC 413, 0,5% solution of ETW 500 in fresh water should be circulated for 2-4 hours or until an acceptable pH value is obtained around pH 7. This will neutralise any remaining acidity and passivate steel surfaces. Rinse with fresh water. ETC 413 should not be used on aluminium, zinc, tin or galvanised surfaces for which a special grade cleaner should be used.

### Descaling of Boilers

### Recirculation Cleaning

Generally the most efficient cleaning method is to use a

recirculation system, heating the cleaning solution to 60°C throughout the operation. Live steam heating will cause an increase in solution level for which allowance must be made.

**[A]** Open the superheater and boiler drum vents to prevent gas build-up during the cleaning process.

**[B]** Connect a non-collapsible hose from the suction side of a portable pump to the water-drum blowdown flange.

**[C]** Connect a steam supply hose to the water-wall header or to the water-drum blow down flange opposite the pump suction connection.

**[D]** Connect a mixing tank to the circulation suction line between the pump and water-drum blowdown flange, or arrange to gravity feed the solution directly into the boiler.

**[E]** Connect the delivery side of the pump to the auxiliary feed line so that the circulation solution will flow into the boiler through the economiser to the steam drum, then via the boiler tubes to the water-drum and out through the blow-down flange connection.

**[F]** Arrange to check the circulating acid solution for temperature during the cleaning process.

**[G]** When all connections are secure, half-fill the boiler with fresh water. Slowly add the calculated amount of ETC 413 to the mixing tank to make up the 5-10% solution in water heated to 60°C.

**[H]** As the cleaner crystals dissolve, start the circulation pump, the circulation flow rate should be maintained at 30cm/second for between 4-8/hours.

**[I]** Apply head (steam) to maintain the cleaning solution at 60°C.

**[J]** If needed, add fresh water until the solution level in the steam drum is 10 cm over the tube sheet. Do not cover the tube sheet by more than this amount initially if live steam heating is used, as this may raise the water level considerably during the cleaning process. The solution level should be maintained at 3/4 of the upper gauge glass throughout the operation.

**[K]** Thoroughly flush the boiler with clean, fresh water. An alkaline neutraliser should be added to the final rinse to remove any remaining acidity and passivate steel surfaces. For this purpose use a 0,5% solution of ETW 500 and circulate for 2-4 hours or until an acceptable pH value is obtained (minimum pH = 7).

**[L]** Remove the circulation system and heating equipment. Refill the boiler with distilled water, test and add the appropriate water treatment chemicals before returning the boiler to service.

## Descaling of Diesel engine cooling systems, Condensers, Evaporators, Calorifiers, Heat exchangers

### Recirculation Cleaning

Generally the most efficient method is to use a recirculation system, using a 1-10% solution heated to 60°C for the duration of the cleaning operation. The process will need sufficient cleaning solution to fill the water side of the heat exchanger plus up to 50 litres for the circulation system.

**[A]** Isolate the heat exchanger from the water circuit and drain.

**[B]** Fit suitable valves in place of the heat exchanger cleaning lugs and drain off any remaining water. If cleaning plugs are not fitted, use the water inlet and outlet connection.

**[C]** Connect the discharge side of an acid proof portable pump to the lower heat exchanger connection and the suction side of the pump to the bottom outlet of a 200 litre open top drum.

**[D]** Complete the circuit by connecting the upper heat exchanger connection to the top of the drum.

**[E]** Arrange an immersion heater in the drum with sufficient capacity to maintain the solution at 60°C throughout the operation.

**[F]** When the connections are secure add the appropriate amount of fresh water to the drum and slowly add the ETC 413. When dissolved, start the circulation pump and heating system. Maintain the heat and circulation for between 4-6 hours, checking the solution temperature regularly.

**[G]** Thoroughly flush the heat exchanger with fresh water. Add an alkaline neutralising agent to the final rinse to remove any remaining acidity and passivate steel surfaces. For this purpose use a 0,5% solution of ETW 500 and circulate until an acceptable value is obtained (minimum pH=7).

**[H]** After the rinsing, remove the circulation system, remove the temporary valves, replace the cleaning plugs and reconnect the heat exchanger to the normal water supply.

### Soak Cleaning

If a recirculation system can not be arranged, the following hot soak method will produce an acceptable cleaning method.

**[A]** Isolate the heat exchanger from the water circuit and drain.

**[B]** Remove both cleaning plugs. If plugs are not fitted, use water inlet and outlet connections. Replace the lowest plug with a valve to which a steam hose should be connected, the upper valve must be vented to atmosphere.

**[C]** Using fresh water at 60°C, mix sufficient cleaner at 5% solution to fill the heat exchanger three quarters full. Carefully pour the solution into the heat exchanger through the top valve.

**[D]** Use live steam to maintain solution temperature at 60°C.

**[E]** The heat exchanger must now be thoroughly flushed with fresh water. If possible, add an alkaline neutralising agent to the final rinse to remove any remaining acidity and passivate steel surfaces. For this purpose, use a 0,5% solution of ETW 500. Connect the hose delivering the rinsing solution to the upper heat exchanger valve and remove the steam supply from the lower valve. The water discharging from the lower valve may be drained into the bilges.

**[F]** After rinsing, remove the temporary valves, replace the cleaning plugs and reconnect the heat exchanger to the normal water supply.

### Dosage

ETC 413 should be used at a maximum 10% solution. Stronger acid solutions may be prepared by using a 10% solution containing a mixture of 20 parts ETC 413 and 1 part sodium chloride (common salt).

## PRODUCT PROPERTIES

Appearance	White crystals
Density	ca 2,1 kg/lit
pH 1% solution	ca 1,2
<b>Compatibility</b>	
Metal	no known effect
Rubber	no known effect



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# ETC 414 PIPE CLEANER

*An biodegradable, powerful biologically active formulation, specially developed to protect sewage vacuum systems*

## APPLICATIONS

- For clearing blocked pipes and systems where the pipe "fall" is insufficient or the system is overloaded
- Cleaning sewage holding tanks without the need of entry
- Restarting septic sewage treatment plant

## FEATURES & BENEFITS

- Clears pipes and systems blocked by deposits
- Cleans sewage holding tanks without the need for entry of personnel
- Re-activates biological activity in systems which have been turned septic by the use of aggressive cleaning products
- Eliminates the odours associated with systems which are overloaded or blocked
- Extremely cost-effective, saves time, money and manpower
- Eliminates the need for hazardous chemicals
- Keeps system in optimum operational condition
- Biodegradable

## DIRECTIONS FOR USE

ETC 414 is designed to degrade excess residual waste products on shipboard sanitation pipework systems, holding tanks and marine sewage treatment plant. The obnoxious smells in toilet areas and scuppers normally associated with overloaded or blocked systems are eliminated.

### Pipe Cleaning

Maintenance dosing will keep galley and sewage pipes clear and clear deposits. A liquid solution should be prepared by mixing 0,25ltr of ETC 414 in 20 litres of hand hot (35°C) fresh water and left for 10 minutes. Whilst constantly agitating this solution, 0,5 litre should be dosed in sinks, scuppers, showers, drains, waste disposal units etc. each evening until the blockage is cleared. A maintenance dose once or twice a week can then be applied to keep the pipes in clean condition.

Alternatively, the pipes should be isolated and filled with the solution and left for up to 48 hours before draining. If necessary, further applications should be made until the draining run clear.

### Tank Cleaning

Holding tanks and sewage treatment plant can be cleaned periodically or prior to entry without the use of dangerous toxic chemicals and without men having to enter tanks. Tanks and sewage treatment plant should be flooded and pumped empty to clear excess soil before cleaning.

Holding tanks must be fitted with an air manifold connected to a low pressure air line of sufficient volume to gently turn the

mass of water within the tank. In sewage treatment tanks the normal air supply will suffice.

The tank should be filled to 75% capacity with fresh sea water and the air supply turned on. Approximately 0,5 ltr of ETC 414 per gallon of fresh hand hot (35°C) water should be mixed and left for 10-15 minutes before dosing the tank. Dosing can be either direct or via the nearest toilet.

The tank should then be filled and left with the air on for at least 48 hours. The dose rate should be approximately 0,5 ltr per 400 litre tank capacity with a minimum dose of 50 ltr. Although ETC 414 is designed for use in cold (4°C minimum) sea water, performance will improve with luke warm (35°C) fresh water or sea water.

### Sewage Treatment Plant

Direct dosing to the sewage treatment plant or via the nearest toilet will greatly enhance the biological activity and keep the plant at peak operating efficiency. Ineffective or septic sewage treatment can be re-activated and maintained in peak operating efficiency by dosing ETC 414 direct into the tank or via the nearest toilet. To re-activate the plant, 0,5-1 litre of ETC 414 should be mixed with 4-8 litres of lukewarm (35°C) fresh water, left for 10-15 minutes, and then dosed into the tank. Maintenance dosing of 0,1-0,25 litre will keep the system operating effectively. This should be done at regular intervals of 1-2 weeks.

## PRODUCT PROPERTIES

Appearance	Clear liquid
Density	ca. 1,25 kg/lit
pH	ca. 0,1
<b>Compatibility</b>	
Metal	corrosive
Rubber	no known effect.



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# ETC 415 REEFER CLEANER CONCENTRATED LIQUID

*Formulated to meet the marine industry's requirements for performance and safety. Containing a unique blend of cleaning agents and a bactericide*

## APPLICATIONS

- Effective cleaning of cargo rooms, refrigerated holds and freezer-chambers
- Cleaning of bulkheads
- Deodorising cargo holds
- All galley equipment, culinary ware, floor, plastic coated wallpapers, painted surfaces
- Showers, toilets, sinks
- Grills ovens, counter tops, provision store, refrigeration room

## FEATURES & BENEFITS

- Biodegradable
- Non-flammable
- Fresh odour
- Completely soluble in water
- Will not persist in the environment
- Can deodorise
- Compatible with fresh or sea water
- Leaves no oily film

## DIRECTIONS FOR USE

For general cleaning and disinfection, apply ETC 415 cleaner as a 2-10% solution to soiled surface by brushing, swabbing or spraying. Allow ETC 415 to penetrate and work into the soil for several minutes, scrub, then rinse with water to provide a clean, film-free surface. Very effective for dissolving of grease, blood and protein. It is also usable in high pressure washer.

## PRODUCT PROPERTIES

Appearance	Light yellow liquid
Density	ca. 1,13 kg/lit
Flash point	n.a.
pH	ca. 13,5
<b>Compatibility</b>	
Metal	avoid aluminium
Rubber	no known effect



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# ETC 416 DRAIN CLEANER

*Biologically active liquid formulation, containing a blend of patented bacterial strains and chemical cleaners*

## APPLICATIONS

- To be used in all types of systems where there is overloading, smells and blockages occurring in the sewage pipework and equipment.

## FEATURES & BENEFITS

- Unique liquid biological formulation for ease of use
- Replaces other cleaners which would previously cause the biological sewage system to malfunction
- Cleans toilets, sinks, showers, etc.
- Digests grease, oil, protein, fat, starch and other solid waste materials
- Biodegradable

## DIRECTIONS FOR USE

ETC 416 is specifically designed to clean toilets, sinks, showers, pipelines and other parts which make up the waste collection and treatment system of the vessel. It will enhance and maintain the efficient operation of marine sewage treatment systems, so reducing obnoxious smells in toilet areas. These smells are the result of a system which is not handling the waste products efficiently and blockages may be the result.

Grease, fats sewage, starch and other organic compounds are digested by ETC 416. The degradation of paper, protein, waste product residuals and other odorous materials is also enhanced. ETC 416 cleans more efficiently and effectively than materials using conventional cleaning products. The use of cleaning materials containing hazardous chemicals such as acids, bleaches etc., can be eliminated.

Use daily as a normal toilet cleaner. Lift up seat, and pour ETC 416 to adequately cover the surface of the toilet bowl. Scrub vigorously with toilet brush. Daily use of ETC 416 down scuppers, sinks, etc. will keep pipes clear and free from grease, fats and other solid waste materials.

## PRODUCT PROPERTIES

Appearance	Colourless liquid
Density	ca. 1,25 kg/lit
Flash point	n.a.
pH	ca. 14
<b>Compatibility</b>	
Metal	avoid aluminium, zinc, tin, brass.
Rubber	no known effect.



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# ETC 420 MULTI PURPOSE CLEANER HD

*Non-flammable cleaner, highly effective and perfect for a broad range of deck, offshore, hotel and galley applications.*

## APPLICATIONS

- Soot stains
- Cleaning of bulkheads
- Precleaning prior to painting
- Showers, toilets, sinks
- Mess area, table tops, floors
- Grills ovens, counter tops, refrigeration room, reefer boxes
- Ventilator fan blades, louvers and exhaust hosing surfaces
- Accommodation cleaning of woodwork, leather, desks, etc
- Cleaning of hospitals

## FEATURES & BENEFITS

- Biodegradable
- Non-flammable
- Fresh odour
- Completely soluble in water
- Will not persist in the environment
- Does not need special handling and storing
- Leaves surfaces residue free
- All purpose cleaning
- Compatible with fresh or sea water
- Leaves no oily film

## DIRECTIONS FOR USE

For general cleaning and degreasing, apply ETC 420 cleaner as a 5-25% solution to soiled surface by brushing, swabbing or spraying. Allow ETC 420 to penetrate and work into the soil for several minutes, scrub, then rinse with water to provide a clean, film-free surface. ETC 420 is more effective when used with hot or warm water. It is also applicable in high pressure spray applications at a 1% concentration.

## PRODUCT PROPERTIES

Appearance	Light green
Density	ca. 1,10 kg/lit
Flash point	None
pH	ca. 13
<b>Compatibility</b>	
Metal	no known effect
Rubber	no known effect



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# ETC 423 LIMESTONE REMOVER LIQUID

*Liquid acid cleaner formulated to remove water and rust scale deposits*

## APPLICATIONS

- Removal of water scale from boilers
- Descaling of Diesel Engine cooling systems
- Removal of water scale and rust from Condensers, Evaporators, Calorifiers, HeatExchangers etc

## FEATURES & BENEFITS

- Safe and easy handling and storage
- Fast and effective scale remover
- Inhibitors protect normal construction metals
- Contains a wetting agent
- Liquid acid

## DIRECTIONS FOR USE

For large systems or components the most effective descaling is accomplished by circulation. In the case of small components, the soak method in an immersion bath can be used.

If the equipment to be cleaned is contaminated by oil, grease or sludge, pre-cleaning with ETC 400, ETC 401, ETC 404, ETC 411 or ETC 412 is necessary.

One part ETC 423 should normally be mixed with up to 5 parts of fresh water depending on the extent of scaling. Whenever possible, the solution should be heated to 60°C.

Calcium sulphates and heavy iron oxides may need stronger acid solutions. The strength of the acid can be sufficiently enhanced by adding 5% sodium chloride (common salt) to a solution of 1 part of ETC 423 and 1 part fresh water (for example 5 kg salt to 100 litres solution). If salt is not available an acceptable alternative is to dilute ETC 423 in sea water. After use of ETC 423, 0,5% solution of ETW 500 in fresh water should be circulated for 2-4 hours or until an acceptable pH value is obtained around pH 7. This will neutralise any remaining acidity and passivate steel surfaces. Rinse with fresh water. ETC 423 should not be used on aluminium, zinc, tin or galvanised surfaces for which a special grade cleaner should be used.

### Descaling of Boilers

#### *Recirculation Cleaning*

Generally the most efficient cleaning method is to use a recirculation system, heating the cleaning solution to 60°C throughout the operation. Live steam heating will cause an increase in solution level for which allowance must be made.

[A] Open the superheater and boiler drum vents to prevent gas build-up during the cleaning process.

[B] Connect a non-collapsible hose from the suction side of a portable pump to the water-drum blowdown flange.

[C] Connect a steam supply hose to the water-wall header or to the water-drum blow down flange opposite the pump suction connection.

[D] Connect a mixing tank to the circulation suction line between the pump and water-drum blowdown flange, or arrange to gravity feed the solution directly into the boiler.

[E] Connect the delivery side of the pump to the auxiliary feed line so that the circulation solution will flow into the boiler through the economiser to the steam drum, then via the boiler tubes to the water-drum and out through the blow-down flange connection.

[F] Arrange to check the circulating acid solution for temperature during the cleaning process.

[G] When all connections are secure, half-fill the boiler with fresh water. Slowly add the calculated amount of ETC 423 to the mixing tank to make up the solution according to the extent of scaling, heated to 60°C.

[H] Start the circulation pump, the circulation flow rate should be maintained at 30cm/second for between 4-8/hours.

[I] Apply head (steam) to maintain the cleaning solution at 60°C.

[J] If needed, add fresh water until the solution level in the steam drum is 10 cm over the tube sheet. Do not cover the tube sheet by more than this amount initially if live steam heating is used, as this may raise the water level considerably during the cleaning process. The solution level should be maintained at 3/4 of the upper gauge glass throughout the operation.

[K] Thoroughly flush the boiler with clean, fresh water. An alkaline neutraliser should be added to the final rinse to remove any remaining acidity and passivate steel surfaces. For this purpose use a 0,5% solution of ETW 500 and circulate for 2-4 hours or until an acceptable pH value is obtained (minimum pH = 7).

[L] Remove the circulation system and heating equipment. Refill the boiler with distilled water, test and add the appropriate water treatment chemicals before returning the boiler to service.

### Descaling of Diesel engine cooling systems, Condensers, Evaporators, Calorifiers, Heat exchangers

#### *Recirculation Cleaning*

Generally the most efficient method is to use a



recirculation system, using a mix of 1 part ETC 423 and 5-10 parts of fresh water depending on the extent of scaling, heated to 60°C for the duration of the cleaning operation. The process will need sufficient cleaning solution to fill the water side of the heat exchanger plus up to 50 litres for the circulation system.

**[A]** Isolate the heat exchanger from the water circuit and drain.

**[B]** Fit suitable valves in place of the heat exchanger cleaning lugs and drain off any remaining water. If cleaning plugs are not fitted, use the water inlet and outlet connection.

**[C]** Connect the discharge side of an acid proof portable pump to the lower heat exchanger connection and the suction side of the pump to the bottom outlet of a 200 litre open top drum.

**[D]** Complete the circuit by connecting the upper heat exchanger connection to the top of the drum.

**[E]** Arrange an immersion heater in the drum with sufficient capacity to maintain the solution at 60°C throughout the operation.

**[F]** Arrange to check the circulating acid solution for temperature during the cleaning process.

**[G]** When the connections are secure add the appropriate amount of fresh water to the drum and slowly add the ETC 423. When dissolved, start the circulation pump and heating system. Maintain the heat and circulation for between 4-6 hours, checking the solution temperature regularly.

**[H]** Thoroughly flush the heat exchanger with fresh water. Add an alkaline neutralising agent to the final rinse to remove any remaining acidity and passivate steel surfaces. For this purpose use a 0,5% solution of ETW 500 and circulate until an acceptable value is obtained (minimum pH=7).

**[I]** After the rinsing, remove the circulation system, remove the temporary valves, replace the cleaning plugs and reconnect the heat exchanger to the normal water supply.

### Soak Cleaning

If a recirculation system can not be arranged, the following hot soak method will produce an acceptable cleaning method.

**[A]** Isolate the heat exchanger from the water circuit and drain.

**[B]** Remove both cleaning plugs. If plugs are not fitted, use water inlet and outlet connections. Replace the lowest plug with a valve to which a steam hose should be connected, the upper valve must be vented to atmosphere.

**[C]** Using fresh water at 40°C to avoid liberation of chlorine gas, mix sufficient cleaner, one part ETC 423 with 4-5 parts fresh water, to fill the heat exchanger three quarters full.

Carefully pour the solution into the heat exchanger through the top valve.

**[D]** Use live steam to maintain solution temperature at 60°C.

**[E]** The heat exchanger must now be thoroughly flushed with fresh water. If possible, add an alkaline neutralising agent to the final rinse to remove any remaining acidity and passivate steel surfaces. For this purpose, use a 0,5% solution of ETW 500. Connect the hose delivering the rinsing solution to the upper heat exchanger valve and remove the steam supply from the lower valve. The water discharging from the lower valve may be drained into the bilges.

**[F]** After rinsing, remove the temporary valves, replace the cleaning plugs and reconnect the heat exchanger to the normal water supply.

### Dosage

ETC 423 should be used at a maximum of 1 part ETC 423 to 1 parts fresh water, solution. Stronger acid solutions may be prepared by using 1 parts ETC 423 to 1 parts fresh water and 5% sodium chloride (common salt).

### PRODUCT PROPERTIES

Appearance	Colourless liquid
Density	ca 1,08 kg/lit
Flash point	n.a.
pH	ca 1,3
<b>Compatibility</b>	
Metal	corrosive to steel
Rubber	No known effect



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# ETC 424 SEPARATOR DISC CLEANER

*Cleaning of all types of separators and separator discs*

## APPLICATIONS

- Cleaning of all types of separator and separator disc
- Cleaning of disassembled unit parts.

## FEATURES & BENEFITS

- Completely soluble in water
- Cleans down to metal surfaces
- Concentrated blend of surfactants and solvents
- Contains no chlorinated hydrocarbons
- Does not attack stainless steel
- Formulated to remove heavy tenacious deposits
- Allows cleaning of discs without dismantling of disc stacks
- Permits in-situ cleaning avoiding dismantling of unit
- Reduces cleaning time
- Cost effective
- Easily diluted, no mixing
- Easy to use
- Safer to use
- Does not harm discs
- Dissolved deposits do not re-deposit

## DIRECTIONS FOR USE

ETC 424 may be used neat or diluted with four to eight parts water depending upon the severity and quantity of deposits. The time for a cleaning operation will vary from 30 minutes to 4 hours depending on the severity of contamination. All cleaning with heated solution, maximum 60°C, together with slight agitation, will shorten the cleaning time and improve the results. After the unit or parts have been satisfactorily cleaned,

they should be rinsed thoroughly with fresh water to remove all traces of contamination and ETC 424.

Any suitable metal container or dip tank can be used to clean the parts.

It is recommended that ETC 424 is not used on zinc, tin, galvanised or anodised aluminium surfaces.

### Method of Cleaning

*Separators can be cleaned by;*

**[A]** Removing the separator disc stack and soaking in a solution of ETC 424. Circulating the solution and heating will enhance the cleaning.

**[B]** Removing the separator discs and dismantling stack, then soaking discs in ETC 424. Circulating and heating the solution will enhance the cleaning. Discs can be sprayed if soaking tank is not available. In some cases scrubbing discs may be required.

**[C]** In-situ cleaning of separators, this can be done on certain types of separators only, using a recommended in-situ cleaning plant.

## PRODUCT PROPERTIES

Appearance	Colourless liquid
Density	ca 1,3 kg/lit
Flash point	none
pH	ca 1,0
<b>Compatibility</b>	
Metal	Corrosive to mild steel, cast iron, aluminium and alloys, brass, tin or galvanised material.
Rubber	No known effect.



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# ETC 430 HAND CLEANER

*Efficient hand cleaner, which removes the most severe, oil, grease and grime.  
Contains no petroleum solvent derivatives.*

## APPLICATIONS

Removal of industrial grime, oil and grease from the hands and other parts of the body.

## FEATURES & BENEFITS

- Pleasant perfume
- Very effective with both hot, cold, hard or soft waters
- Effective and useful for the most severe soiling
- Can be used safely day after day
- Mildly antiseptic properties
- Contains emollient to promote good skin condition
- Easy to disperse

## SAFETY AND HANDLING

Hazards	Not applicable.
Protective measures	Not applicable
Spillage	May be slippery. Flush away with water or soak with absorbent material.
Fire	Not applicable

### First Aid

Eyes	Promptly wash eyes with lots of water while lifting eye lids.
Skin	Not applicable.
Inhalation	Not applicable.
If swallowed	Do not induce vomiting. Get medical attention. Never make an unconscious person vomit or drink fluids

### Handling

IMDG Class/page	not listed
UN Number	not listed
ADR	not listed

### Packaging

4,5 kgs plastic containers

EverTec or any associated or subsidiary company's warranties of fitness and merchant ability, if any, as well as any express warranties regarding this product shall not be effective or actionable unless the goods are used as directed herein and in no other manner due to potential hazards from improper use of the goods described herein.

## DIRECTIONS FOR USE

ETC 430 should be massaged onto the soiled skin without the use of water. The skin should then be rinsed with clean water and dried thoroughly on a towel or tissue. Because of the mildness of the product to the skin, it may be used for cleaning of all areas of the body, if required.

In most cases 3-5 gr. of ETC 430 is sufficient to clean hands.

## PRODUCT PROPERTIES

Appearance	Light white
Density	ca. 1,00 kg/lit
pH	ca. 8,8
Flash point	Not applicable
<b>Compatibility</b>	
Metal	not known
Rubber	not known.



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# COMPARISON GUIDE - CLEANING AGENTS

EVERTEC	DREW	NALFLEET	UNITOR/ROCHEM	VECOM	MARITECH	FERRYL	OTHERS
<u>ETC 400</u>	-	-	-	-	-	-	-
<u>ETC 401</u>	Oil and Grease Remover	Maxiclean 1 9-044	Coldwash HD, Tankclean, Tank Clean HD	Degreaser H.F., Degreaser G.P., Degreaser HD/B-14, Degreaser B-24 B	Marisol HD, Cleaning Marisol LD Fluid	-	Neptun Cleaner, Degreaser 60, Statiol Magro 40
<u>ETC 402</u>	Drew Clean 2000, Enviromate	Citricent	Enviroclean, Alkleen safety liquid, Aquabreak PX	Veclean GP / Tankcelam, HCF	Marisol CD	-	Biosolv Titan, Ecoclean
<u>ETC 403</u>	OSD/LT	Maxiclean 2 9-010	Seacare O.S.D.	Oil spill dispersant B-1425 GI	-	-	Oil Spill Eradicator Marichem Oil spill emulsifier, Ecodis
<u>ETC 404</u>	TC #4	9-040 Tank & Bilge cleaner	Seaclean, Degreaser T.C., Tankclean H.D., Tankleen	Tank Clean at Sea/B-1430 Tankclean, Degreaser H.D., Degreaser H.F.	Marisol TC	-	Norus Degreaser 202, Seaclean
<u>ETC 405</u>	Maxi-break cleaner, O.W.S	Maxibreak Plus	Cleanbreak	Veclean Clear Break	Marisol QS	-	Norus Degreaser 99, Marichem Bilge Cleaner
<u>ETC 406</u>	-	-	ACC LT	-	-	-	-
<u>ETC 407</u>	SNC 2000 Carbon Remover	9-051	Carbosolv, Carbon Clean LT	Carbon Remover Carbon Remover N	Marisol CR	-	Desooter Petrosol cleaner, H.P. miljömico
<u>ETC 408</u>	Drew-Electric	9-041 Fast	Electroquick NF, Electrosolv Quick Dry	ECS Fast Dry, ECS Medium Dry	Marisol EC	Electroclean	Electrical Cleaner, Rocol safety solv., cleaner, CRC contact cleaner
<u>ETC 409</u>	-	-	-	-	-	-	Marichems General cleaning & solvent, Norus Miljörens, Cleanosol, Micro forvask Petroclean Industrirent Electrolux F42 Neptun cleaner Univers.rens Snowclean Marin P Proclean 82
<u>ETC 410</u>	Enviromate 2000 Edge	9-088 Detergent cleaner	H.P. Wash, Fore & Aft Uni-wash Cleanall	Veclean GP, HPC NF/B3 M.P. Cleaner/TP02 Galley Clean.	Marisol AP	Cabin-Clean	Norus Air Cooler Cleaner, Marichem ACC
<u>ETC 411</u>	ACC-9	9-040 ACCCC	Air Cooler Cleaner	Air Cooler Cleaner H.D./B80	Marisol AC	-	Marichem Carbon remover
<u>ETC 412</u>	Carbon remover, Solvent cleaner	9-051	Carbon remover	Carbon remover B-85	Marisol HD	-	Norus Acid Cleaner, Marichem descaler powder
<u>ETC 413</u>	SAF-ACID, descaling compound	9-068 SAF Acid	Descalex powder	Descalant F/BAS	Marisol LR	-	ASE
<u>ETC 414</u>	-	-	-	-	Marisol PC	-	Norus Skumrengör
<u>ETC 415</u>	LAC	9-065	Alkleen Liquid, Alkawash	Water Based Alk. HD/B-2 liq.	Marisol RC	Fermaid	Diminex Klor
<u>ETC 416</u>	Ameroid MSD-PAK organic waste treatment, Drainguard	-	Gamazyme TD500L, Gamazyme 700FN	-	-	-	-
<u>ETC 420</u>	LAC Edge	Alcaline -65	Alkleen liquid	W.b. Alkaline HD/B2 Liquid	Marisol LC	-	Norus Universalrens HD, Marichem alkactive liquid, Valvoline truckcleaner
<u>ETC 423</u>	Descaler IT	-	Descaling liq.	Descalant HD/bA 60	-	-	Norus Descalant liquid, Marichem descaler 555
<u>ETC 424</u>	Disc.CL, DC disc cleaner	-	Disc Cleaner	Separator cleaner	Marisol DC	-	Marichem disc cleaner



# PROBLEMS & SOLUTION GUIDE - CLEANING AGENTS

REQUIREMENT	SOLUTION	PRODUCT (S)
Cargo tank cleaning after mineral oils.	Solvent emulsion cleaner and waterbased cleaners.	ETC 400, ETC 401, ETC 402, ETC 403, ETC 404, ETC 405, ETC 409
Cargo tank cleaning after drying, semi-drying and non drying natural oils and fats.	Saponifying and emulsifying detergents.	ETC 402, ETC 415, ETC 409
Cargo tank cleaning after general chemical cargoes.	Emulsifying detergents.	ETC 402, ETC 409, ETC 415
Cargo tank sanitising and deodorising.	Wash with aqueous cleaner solution.	ETC 402, ETC 409, ETC 415
Hydrocarbon gas-freeing.	Following normal or specific cleaning, wash with aqueous cleaner solution.	ETC 402, ETC 409, ETC 415
Fuel and lube oil tank cleaning.	Heavy duty degreasers and emulsifying agents for roll cleaning method.	ETC 400, ETC 401, ETC 404, ETC 409
Removal and passivation of rust and oxidation from ferrous and non-ferrous metals.	Special purpose inhibited acid cleaner.	ETR 300, ETR 301, ETR 303
General shipboard cleaning.	General purpose solvent emulsion cleaner or aqueous cleaners.	ETC 402, ETC 410
General removal of carbonaceous oil varnish and grease residues.	Special purpose solvent.	ETC 407, ETC 409, ETC 411, ETC 412
Removal of small oil spills on board.	Detergents, dispersants and emulsifiers.	ETC 400, ETC 401, ETC 402, ETC 403, ETC 404, ETC 409
Oil spills on sea, in harbours, beaches and rocky shores.	Low toxicity, biodegradable oil spill dispersant.	ETC 403
Cleaning electrical apparatus.	Special purpose volatile non-inflammable solvent.	ETC 408
Degreasing marine diesel engine cooling water systems.	Heavy duty solution of solvent emulsion cleaners.	ETC 400, ETC 401, ETC 404, ETC 405
Removal of grease and carbon based deposits from turbochargers.	Special purpose solvent.	ETC 406, ETC 407, ETC 411, ETC 412
Removal of grease and carbon based deposits from the air side of air coolers and other heat exchangers.	Special purpose solvent.	ETC 411, ETC 412
Cleaning the oil side of the lube oil heat exchangers.	Solvent emulsion cleaners.	ETC 400, ETC 401, ETC 404, ETC 405

# PROBLEMS & SOLUTION GUIDE - CLEANING AGENTS

REQUIREMENT	SOLUTION	PRODUCT (S)
Cleaning the oil side of the lube oil heat exchangers.	Solvent emulsion cleaners.	ETC 400, ETC 401, ETC 404, ETC 405
Cleaning the oil side of fuel oil heaters.	Heavy duty solution of solvent emulsion cleaner or fuel oil treatment compound.	ETC 404, ETC 411
Removal of water scale from the water side of heat exchangers.	Inhibited acid cleaner.	ETC 413, ETC 423
Removal of water scale from boilers.	Inhibited acid cleaner.	ETC 413, ETC 423
Cleaning sinks, toilets, showers & sewage systems from grease, fat sewage, starch and other organic compounds. General Accommodation Cleaner.	Special purpose biochemical.	ETC 416
Cleaning of separator disc stacks from tenacious deposit and scale.	Special purpose detergents.	ETC 402, ETC 410 ETC 424
Cleaning and degreasing of concrete and cement.	Soak disc's in a solution of emulsifying and special inorganic inhibited acid solvent. Detergent containing emulsifying and inorganic acids.	ETR 300, ETR 301, ETR 302



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