eurochem®

aviation, marine and industrial chemicals

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aviation, marine and industrial chemicals

COMPANY PROFILE

EUROCHEM *was established in Athens, Greece in 1981, and soon became the leading manufacturing company in Chemical compounds and detergents, for cleaning and maintenance.*

Our current production range includes over 2000 Chemical products for ***AVIATION****,* ***MARINE, INDUSTRIAL USE, SPRAY-AEROSOLS*** *as well as* ***INSTITUTIONAL*** *and* ***HOUSEHOLD DETERGENTS,*** *in various packaging (bulk, drums, pails, cans, plastic bottles, aerosol).*

EUROCHEM *functions according to the International Quality Standards and is certified with the* ***Quality Standard ISO 9001 & 14001***

For design, production, and sales of:

A. Cleaning and maintenance Chemicals for Marine,
Aviation and Industrial use.
B. Detergents.

The majority of them are manufactured under U.S. Military Specifications and most of them are approved by authorized organizations such as: The U.S. Army (QPL), Boeing, Public Power Corporation, The Greek Navy,
The Greek State General Chemical Laboratory etc. and in general has all the approvals and certificates.

Eurochem's activities are expanded all over the world, supplying Shipping, Aviation and Industry Companies with its variety of products.

In 1990 ***EUROCHEM*** *became the head of the* ***EUROCHEM GROUP*** *of Companies making a turnover of 20.000.000 U.S.D. per year.*

Our Company's continuous research in the field of Chemical technology, together with our experienced professional personnel, ensures quality and reliability.

EUROCHEM *is proud to offer its customers*

«The complete solution in Maintenance»

EUROCHEM S.A.
4 RAFAILIDOU St. 177 78 TAVROS, ATHENS, GREECE
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E-mail: eur98@otenet.gr - http://www.eurochemgr.com

Certificate Of Assessment

International Quality Certification

hereby grants to:

EUROCHEM S.A.

4 RAFAILIDI STR., TAVROS, GR-17778

whose management system is in conformance with the standard:

ELOT EN ISO 9001:2015

the right to be listed in the IQC Registry for the following scope(s):

DESIGN, DEVELOPMENT, PRODUCTION AND SALES OF:

A. CLEANING AND MAINTENANCE CHEMICALS FOR MARINE, AVIATION AND INDUSTRIAL USE

B. DETERGENTS

Signed **CEO**

on behalf of IQC

This Certificate Number	**GR/035/2018-1**
ISSUED ON	**23/11/2018**
IS VALID UNTIL	**22/11/2021**

IQCERT INTERNATIONAL QUALITY CERTIFICATION

Doiranis 191 Str., GR-17673 Kallithea, Hellas

Certificate Of Assessment

International Quality Certification

hereby grants to:

EUROCHEM S.A.

4 RAFAILIDI STR., TAVROS, GR-17778

whose management system is in conformance with the standard:

ELOT EN ISO 14001:2015

the right to be listed in the IQC Registry for the following scope(s):

DESIGN, DEVELOPMENT, PRODUCTION AND SALES OF:

A. CLEANING AND MAINTENANCE CHEMICALS FOR MARINE, AVIATION AND INDUSTRIAL USE

B. DETERGENTS

Signed **CEO**

on behalf of IQC

This Certificate Number	**GR/035/2018-3**
ISSUED ON	**23/11/2018**
IS VALID UNTIL	**22/11/2021**

IQCERT INTERNATIONAL QUALITY CERTIFICATION

Doiranis 191 Str., GR-17673 Kallithea, Hellas

Certificate Of Assessment

International Quality Certification

hereby grants to:

EUROCHEM S.A.

4 RAFAILIDI STR., TAVROS, GR-17778

whose management system is in conformance with the standard:

ELOT EN ISO 27001:2013

the right to be listed in the IQC Registry for the following scope(s):

DESIGN, DEVELOPMENT, PRODUCTION AND SALES OF:

A. CLEANING AND MAINTENANCE CHEMICALS FOR MARINE, AVIATION AND INDUSTRIAL USE

B. DETERGENTS

Signed **CEO**

on behalf of IQC

This Certificate Number	**GR/035/2018-9**
ISSUED ON	**29/5/2020**
IS VALID UNTIL	**28/5/2021**

IQCERT INTERNATIONAL QUALITY CERTIFICATION

Certificate Of Assessment

International Quality Certification

hereby grants to:

EUROCHEM S.A.

4 RAFAILIDI STR., TAVROS, GR-17778

whose management system is in conformance with the standard:

OHSAS 18001:2007 / ELOT 1801:2008

the right to be listed in the IQC Registry for the following scope(s):

DESIGN, DEVELOPMENT, PRODUCTION AND SALES OF:
A. CLEANING AND MAINTENANCE CHEMICALS FOR MARINE, AVIATION AND INDUSTRIAL USE
B. DETERGENTS

Signed **CEO**

on behalf of IQC

This Certificate Number	**GR/035/2018-6**
ISSUED ON	**23/11/2018**
IS VALID UNTIL	**22/11/2021**

IQCERT INTERNATIONAL QUALITY CERTIFICATION

Doiranis 191 Str., GR-17673 Kallithea, Hellas

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WATER TREATMENT CHEMICALS

EUROCHEM is a leading supplier of high quality water treatment chemicals. Through our continuous research and development of new products we are able to offer an extensive range of advanced technology water treatment chemicals for improvement of problems associated with the treatment of industrial and process waters.

Our major applications include but are not limited to Power Plant Applications, Oil Refineries, Petrochemicals, Paper Mills, Food Industries, etc.

Our product line continues to grow with the aid of our specialized staff and through our continuous research.

We have our own technology and more than 20 years of experience.

Attached find an indicative list of treatments and products we provide for these purposes, since we have a variety of products for specific uses depending on the application.

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BOILER WATER TREATMENT CHEMICALS

EUROCHEM has a wide range of technically advanced Treatment Chemicals specially designed for use in process and industrial boiler treatment applications.
Our company focuses on improving the efficiency of industrial boilers, steam boilers and process systems by presenting ready made solutions to problems such as scale formation, corrosion, boiler water carryover and sludge deposition.

OXYGEN SCAVENGERS

KEMOX – P	Powder catalyzed sodium sulphite, non-volatile for rapid and complete oxygen scavenging, designed for use in boiler systems operating at pressures of up to 60 bar.
KEMOX – L	Liquid catalyzed sodium sulphite, non-volatile for rapid and complete oxygen scavenging, designed for use in boiler systems operating at pressures of up to 60 bar.
KEMOX – LS	Liquid catalyzed sodium bisulphite, non-volatile for rapid and complete oxygen scavenging, designed for use in boiler systems operating at pressures of up to 60 bar.

HYDRAZINE SUBSTITUTES

As Hydrazine is no longer used since it is extremely toxic our company has developed the following products as hydrazine substitutes.

OXYTREAT – 15	A liquid oxygen scavenger based on DEHA that provides excellent feed-water and boiler system passivation. OXYTREAT-15 is the most efficient product, is volatile and alkaline, contributing no dissolved solids or ammonia to the boiler system and can be used in any boiler up to 125 bar.
OS – 418	A liquid oxygen scavenger based on carbohydrazide used for oxygen scavenging and passivating metal surfaces. Contributing no dissolved solids and can be used in all boilers of any pressure up to and including supercritical (220 bar).
KETOXIME	A liquid product based on methylethylketoxime. It is a volatile oxygen scavenger which displays metal passivating characteristics and can be used in all boilers up to 160 bar.

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HARDNESS CONTROL, ALKALINITY CONTROL, COAGULANT & CONDENSATE CONTROL

KEM HARD	Dry powder used for the reduction of hardness in boiler water systems.
ALKALINITY CONTROL	Concentrated alkaline liquid providing the adjustments of the water alkalinity.
LIQUID COAGULANT	Liquid blend of colloids for the conditioning of sludge.
CONDENSAMINE	Concentrated liquid neutralizing agent for corrosion control in condensate. Neutralizes the acids occurring in the condensate system.

MULTIFACTIONAL PRODUCTS

B.W.T. – L	Highly effective liquid product containing antiscalants, sequestrants, oxygen scavengers and metal passivators to provide scale and corrosion inhibition for low pressure boilers.
OXYAMINE	Oxygen scavenger and condensate control. Provides excellent feed-water and boiler system passivation. Neutralizes the acids occurring in the condensate system.

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COOLING WATER TREATMENT

EUROCHEM has an extensive range of advanced cooling water treatment chemicals which are specially developed to be used for a broad range of commercial, industrial and process applications that include water cooled systems, cooling towers, condenser and compressor systems, heat exchangers, etc.

CLOSED COOLING WATER SYSTEMS

ADICO – SP	Silicate phosphate based corrosion and scale inhibitor developed for corrosion and scale inhibition in closed and open water systems.
ADICO – NC – L	Nitrite borate based compound used for controlling corrosion in closed cooling systems and chilled water systems.
WSC – 8170	Molybdate corrosion inhibitor used in closed cooling water system.
WSC – 8170 – DP	Is a dual purpose, highly effective for treatment of molybdate corrosion inhibitor, is buffered with stabilized and unstabilized phosphate, and contains mercaptobenzo thiazole for protection of multi metal systems. The product also contains a specific dispersant for iron oxides and a polymer for dispersion of hardness salts.

COOLING TOWERS

DISPERSOL 2000	Effective phosphonate based scale and corrosion inhibitor.
DISPERSOL 2000 E	Zinc-phosphonate scale and corrosion inhibitor.
DISPERSOL 2030	Molybdate – phosphonate – polymaleic scale and corrosion inhibitor.
DISPERSOL 7000	Iron dispersant scale and corrosion inhibitor.
WS – 8738	Antifoulant – dispersant – surfactant.

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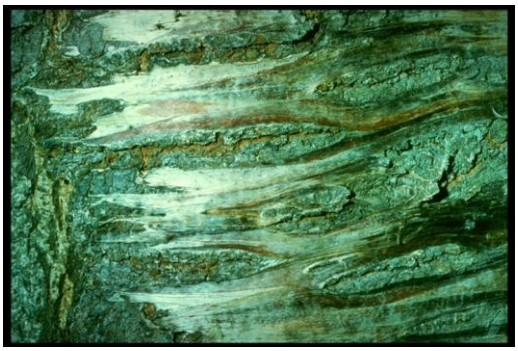
BIOCIDES



EUROCHEM produces all types of biocides, such as, oxidizing and non-oxidizing biocides, microbiocides, chloride releasers, bromine releasers, etc. Our products have been especially developed for use across a wide range of industrial and process water treatment for effective control of microbiological activity.

BELCAN	Based on quaternary ammonium chloride compounds used to control both aerobic and anaerobic bacteria as well as, algae and fungi.
BIO-3290	Biocide based on isothiazolines for controlling typical bacteria, fungi and yeast.
BIO-CLOR	Biocide and cleaner for badly fouled systems.
BDS – 6500	Glutaraldehyde based product for controlling slime forming bacteria, sulfate reducing bacteria and algae.
BIOBROM – Q	Is a stabilized bromine biocide used in combination with chlorination in order to give chlorine the power of chlorobromination.

EVAPORATOR TREATMENT

KEM – ET	Scale inhibitor for evaporators and multi stage flash evaporators.
AF – II	Antifoam for evaporators and multi stage flash evaporators.

ANTIFOULING TREATMENT FOR SEAWATER COOLING SYSTEMS

EUROSPERSE	Is a very effective biocide and biodispersant used for keeping seawater systems free from marine fouling.

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KEMOX – L

Product Description: KEMOX – L is a catalysed sodium sulphite in liquid form used mainly in low and medium pressure boilers up to 850 PSI.

Product Uses: KEMOX – L is used as an oxygen scavenger in boiler water treatment, reacting with oxygen to form inert sodium sulphate. The catalyst ensured rapid reaction times so that complete oxygen removal can be achieved. Rapid oxygen removal means minimal corrosion plus extended boiler life.
KEMOX – L may also be used for the removal of chlorine, 4 mls of KEMOX – L removes 1 gr. of free chlorine.

Features and Benefits :
- Concentrated liquid product.
- Protects the boiler from oxygen corrosion.
- Catalysed product for very rapid action.
- Reacts at low temperature.
- Will act as an aid to mechanical deaeration.
- Simple control test.

Dosing Method: Quantity of KEMOX – L required will depend on the boiler operating conditions. A reserve of 20 – 30ppm Sulphite is maintained in the boiler water, depending on operation pressure and boiler design. As a guide, 10ppm of sulphite is required to react with 1 ppm of oxygen. There are several points where the treatment can be dosed. The main point is into the boiler feed water line. Generally daily dosage of 100 – 150 ml per ton of feed water will keep the recommended value. Check Sulfite level and increase or decrease the dosage according to the dosage chart below.

Sample and Testing : A representative sample of boiler water must be obtained, at an interval to be set by experience in the operation of the boiler. For example, this could be daily or every three days (according to boiler type and pressure).
The test results indicate the level of treatment in the boiler. If the levels are incorrect, the treatment will have to be adjusted accordingly, with more frequent testing until a steady state is reached. It is important that regular testing is carried out to ensure levels of treatment are correct.

SULFITE : Dosage of KEMOX – L catalysed Sulfite

Boiler pressure		**Residual Range**	**Dosage**
PSI	**Kg/cm^2**	**(ppm as SO_3)**	**Requirements**
a) Up to 450	Up to 32	20 – 30	Satisfactory
b) 450 – 850	32 – 60	10 – 15	Satisfactory
(a) or (b)		Below satisfactory, Increase dosage by 25%	
(a) or (b)		Above satisfactory, Decrease dosage by 25%	

Caution: Irritating to eyes. Contact with acids liberates very toxic gases. Wear suitable protective clothing, gloves and eye/face protection.

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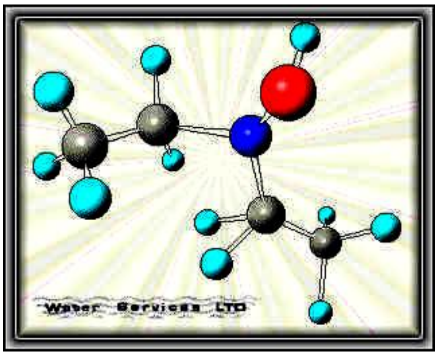
O X Y T R E A T – 1 5

(A new oxygen scavenger – based on DEHA)



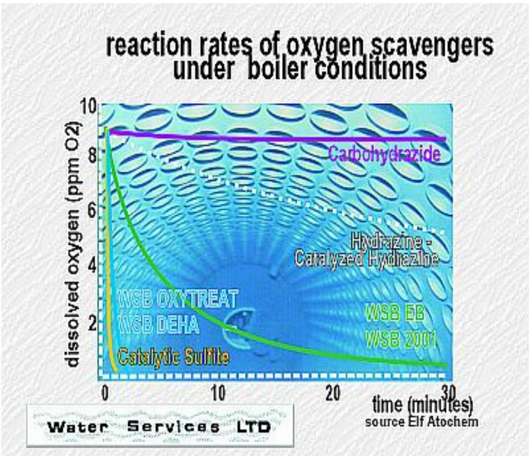
DESCRIPTION

OXYTREAT-15 is a new technology oxygen scavenger designed to substitute Hydrazine and Sulfite, which are traditionally, used for this purpose in all boilers high and low pressure.

Limitation of Sulfite and Hydrazine

Equations 1 and 2 show the reaction of Sulfite and Hydrazine with oxygen.

$$2\ Na_2SO_3 + O_2 = 2Na_2SO_4$$
$$N_2H_4 + O_2 = N_2 + 2H_2O$$

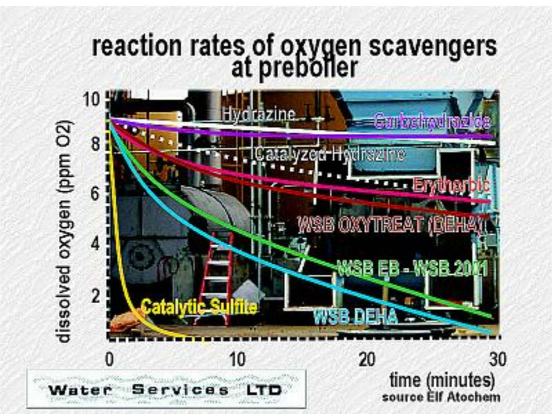


Each however has limitations.

Sulfite increases the total dissolved solids in the boiler water through the formation of Sodium Sulfate. Therefore boiler blow down must be increased resulting in greater chemical and fuel costs. Sulfite is only an oxygen scavenger and does not form a protective film of black magnetic iron oxide (F_3O_4, magnetite). This magnetite film passivates and protects the metal surfaces.

Hydrazine is not as effective as sulfite is as an oxygen scavenger and it is very toxic.

Hydrazine has been classified as a suspect carcinogen by OSHA and NIOSH. It has been regulated by the FDA to exclude any use that might come in direct contact with food.



Both Hydrazine and Sulfite are non – volatile. (Hydrazine has limited volatility). and they do not protect the steam – condensate return line system. It is obvious that the need for new oxygen scavengers is essential.

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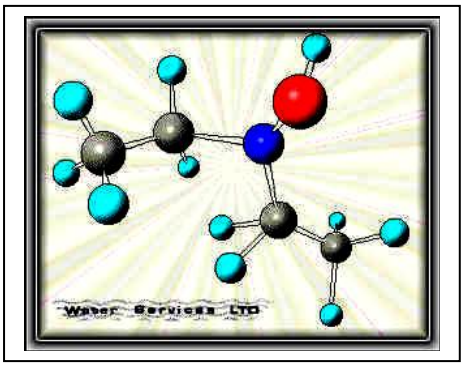

Our new product OXYTREAT-15 solves all these problems and has the following benefits.

- It is suitable for boilers up to 125 bar.
- It is a very efficient oxygen scavenger.
- Forms a passivating protective film (F_3O_4 – Magnetite).
- It does not increase the total dissolved solids.
- It is sufficiently volatile so that it can protect against oxygen corrosion in the entire boiler system including the steam – condensate return lines.
- Due to its unique property of being volatile it controls carbon dioxide corrosion in the condensate return line systems.
- The product is non – toxic.

DOSAGE

The recommended dosage is approximately 15 ppm of OXYTREAT-15 to 1 ppm oxygen.

CAUTION

Avoid contact with skin and eyes. In case of contact rinse with plenty of water. Wear suitable protective clothing.

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OS – 418

(A new oxygen scavenger – carbohydrazide based)

DESCRIPTION

0S - 418 is a new oxygen scavenger based on 0S - 418 s in order to substitute Hydrazine and Sulfite, which are traditionally, used for this purpose in all boilers high and low pressure.

Limitation of Sulfite and Hydrazine

Equations 1 and 2 show the reaction of Sulfite and Hydrazine with oxygen.

$$2\ Na_2SO_3 + O_2 = Na_2SO_4$$
$$N_2H_4 + O_2 = N_2 + H_2O$$

Each however has limitations.

Sulfite increases the total dissolved solids in the boiler water through the formation of Sodium Sulfate. Therefore boiler blow down must be increased resulting in greater chemical and fuel costs. Sulfite is only an oxygen scavenger and does not form a protective film of black magnetic iron oxide (F_3O_4, magnetite). This magnetite film passivates and protects the metal surfaces.

Hydrazine is not as effective as sulfite is as an oxygen scavenger and it is very toxic.

Hydrazine has been classified as a suspect carcinogen by OSHA and NIOSH. It has been regulated by the FDA to exclude any use that might come in direct contact with food.

Both Hydrazine and Sulfite are non – volatile. (Hydrazine has limited volatility). and they do not protect the steam – condensate return line system. It is obvious that the need for new oxygen scavengers is essential.

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Our new product **0S - 418** is a concentrated corrosion inhibitor used to remove oxygen chemically from feedwater, boiler water and condensate in steam generating systems. Additionally, it passivates iron and copper surfaces, rendering them more resistant to corrosion.

0S - 418 has the following benefits:

- It is suitable for boilers up to 220 bars.
- It is a very efficient oxygen scavenger.
- Forms a passivating protective film of magnetite and cuprous oxide films.
- It does not increase the total dissolved solids.
- It is sufficiently volatile so that it can protect against oxygen corrosion in the entire boiler system including the steam – condensate return lines.
- Due to its unique property of being volatile it controls carbon dioxide corrosion in the condensate return line systems.
- The product is non – toxic.
- Minimizes iron and copper deposits in the boiler by reducing these metals to their more soluble ferrous and cuprous forms.
- The ability to provide corrosion protection to the afterboiler sections of the system.

DOSAGE

The recommended dosage is 15 ppm of 0S - 418 to 1 ppm oxygen.

CAUTION

Avoid contact with skin and eyes. In case of contact, rinse with plenty of water. Wear suitable protective clothing. For further information refer to Material Safety Data Sheet.

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KETOXIME

(A new oxygen scavenger – hydrazine free)

DESCRIPTION

KETOXIME is a new oxygen scavenger based on Ketoximes in order to substitute Hydrazine and Sulfite, which are traditionally, used for this purpose in all boilers high and low pressure.

Limitation of Sulfite and Hydrazine

Equations 1 and 2 show the reaction of Sulfite and Hydrazine with oxygen.

$$2\ Na_2SO_3 + O_2 = Na_2SO_4$$
$$N_2H_4 + O_2 = N_2 + H_2O$$

Each however has limitations.

Sulfite increases the total dissolved solids in the boiler water through the formation of Sodium Sulfate. Therefore boiler blow down must be increased resulting in greater chemical and fuel costs. Sulfite is only an oxygen scavenger and does not form a protective film of black magnetic iron oxide (F_3O_4, magnetite). This magnetite film passivates and protects the metal surfaces.

Hydrazine is not as effective as sulfite is as an oxygen scavenger and it is very toxic.

Hydrazine has been classified as a suspect carcinogen by OSHA and NIOSH. It has been regulated by the FDA to exclude any use that might come in direct contact with food.

Both Hydrazine and Sulfite are non – volatile. (Hydrazine has limited volatility). and they do not protect the steam – condensate return line system. It is obvious that the need for new oxygen scavengers is essential.

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Our new product **KETOXIME** is a concentrated corrosion inhibitor used to remove oxygen chemically from feedwater, boiler water and condensate in steam generating systems. Additionally, it passivates iron and copper surfaces, rendering them more resistant to corrosion.

KETOXIME has the following benefits:

- It is suitable for boilers up to 160 bar.
- It is a very efficient oxygen scavenger.
- Forms a passivating protective film of magnetite and cuprous oxide films.
- It does not increase the total dissolved solids.
- It is sufficiently volatile so that it can protect against oxygen corrosion in the entire boiler system including the steam – condensate return lines.
- Due to its unique property of being volatile it controls carbon dioxide corrosion in the condensate return line systems.
- The product is non – toxic.
- Minimizes iron and copper deposits in the boiler by reducing these metals to their more soluble ferrous and cuprous forms.
- The ability to provide corrosion protection to the afterboiler sections of the system.

DOSAGE

The recommended dosage is 5,5 ppm of KETOXIME to 1 ppm oxygen.

CAUTION

Avoid contact with skin and eyes. In case of contact, rinse with plenty of water. Wear suitable protective clothing. For further information refer to Material Safety Data Sheet.

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KEM – HARD

PHOSPHATE TREATMENT FOR BOILER WATER

Description

KEM – HARD is a highly soluble, dry powder product used for the reduction of hardness in boilers. It will precipitate calcium hardness as a non – adherent sludge.

Advantages

- Economical for use highly active phosphate based compound.
- Dissolves easily in water for dosing.
- Eliminates scale problems due to calcium.
- Maintains sludge in a non – adherent state for ease of blow down.
- Simple test to determine level of treatment.
- Can be used for boilers of all pressures.
- The alkalinity in the system is not influenced by KEM-HARD.

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Usage

KEM – HARD is formulated to form a precipitate with calcium ions, which will not adhere to metal surfaces but are in a form suitable for blowdown.

Dosage

KEM – HARD is used in controlled amounts so that a free phosphate level is maintained in the boiler. This level is determined by the boiler pressure.

Initial dosage is 30-50 gr. per ton of water and depends on the quality of feed water.

Dosing Method

For best results dose **KEM – HARD** directly to the boiler via the bypass pot – feeder.

The dry powder should be dissolved in hot water (50^{o} C) at a ratio of 1 part powder to 20 parts condensate (e.g. 500 grams/ 10 liters). Ensure that treatment is fully dissolved before dosing.

Sample and testing

A representative sample of boiler water should be drawn for analysis daily. The sample should always be taken from the same point after blowdown, cooled and tested immediately.

Maintain phosphate level 20-50 PPM depending on the boiler pressure.

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USE THE TABLE:
Select the section corresponding to the pressure of the boiler to be treated and read across the table to obtain the level of treatment required.

KEM HARD – DOSAGE – GRAMS/tons

Pressure range	Phosphate test result in p.p.m PO_4					Standard	Initial Dosage	Dose Gram/ ton
	0-10	10-20	20-30	30-40	40-50	50 +		
0-40 Bar	25	15	Satisfactory	Satisfactory	Satisfactory	Blowdown	20-50	25
41-60 Bar	20	10	Satisfactory	Blowdown	Blowdown	Blowdown	15-30	20
> 60	15	Satisfactory	Satisfactory	Blowdown	Blowdown	Blowdown	10-25	15

These are recommended values based on experience and are in no way intended to replace the boiler manufacturer's specifications or company regulations.

KEM HARD is offered in two types:

KEM HARD – A based on Trisodium phosphate.

KEM HARD – B based on Sodiumhexametaphosphate.

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CONDENSAMINE

Description :

CONDENSAMINE is a concentrated liquid neutralizing agent for corrosion control in condensate and feed water systems.

Directions for use :

CONDENSAMINE is a liquid, volatile alkaline amine which neutralizes the acid contaminants of condensate and feed water systems thus preventing the acid corrosion of system components. The most common cause of acid corrosion in condensate and feed water systems is the dissolved carbon dioxide (CO_2) being present in the water evaporating. CONDENSAMINE neutralizes these acids and maintains the condensate and feed water in an alkaline condition.

Dosage :

The condensate is tested of pH to determine the dosage level. The minimum pH should be 8.3, the optimum would be between pH 8.3 and 9.0.
A typical dosage for an average 10 metric tone system would be 1-2 L/day.

Below is a chart with the recommended limits for levels of treatments. They are not intended to replace either shipping company instructions or boiler manufacturers policy.

Increase or decrease the recommended dosage according to the chart below :

	Condensate pH form testing		
	Less than 8.3	**8.3 – 9**	**9.0 +**
All Boiler Systems	Increase Dosage by 25% for 72 hours and retest.	Satisfactory maintain dosage	Decrease dosage by 25% for 72 hour and retest

Caution :

Avoid contact with eyes and skin. In case of contact rinse with plenty of water. Wear suitable protective clothing, gloves and eye/face protection.

Packaging :

Available in plastic pails of 30 liters.

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B.W.T. – L

BOILER WATER TREATMENT

Description:

B.W.T. - L is a highly effective liquid deposit and corrosion inhibitor for treating steam generating systems.

Features:

B.W.T. - L is a liquid combination of antiscalant, sequestrants, organics and oxygen scavengers and metal passivators.

The deposit control components in **B.W.T. - L** are organophosphorus compounds and anionic polymeric dispersants. These polymers will inhibit the formation of hardness-based scale crystals and disperse the resulting aborted scale fragments in the boiler water.

Iron in the boiler water and feedwater circuit is kept in the soluble ferrous form by an effective iron reducing agent. This action allows the specific iron sequestrants in **B.W.T. - L** to complex iron and remove it via blowdown. The combination of iron reducing agents and sequestrants prevent iron from forming insulating deposits.

B.W.T. - L does not contain any phosphate or poly-phosphate, so the sludge produced in the boiler is minimal.

Physical characteristics:

Appearance:	Hazy brown liquid.
Odor:	None
Solubility in water:	Complete
Flash point:	None
pH:	>10

Feeding:

The preferred feedpoint for **B.W.T. - L** is to the feedwater line, neat or as a diluted solution, downstream of the feedwater pump, through stainless steel piping and injection quill.

The dosage is dependent upon feedwater analysis as well as boiler operating conditions. In most cases a dosage of approximately 50-100 ppm of **B.W.T. - L** is adequate.

For desalinated, de-ionized, de-mineralized or softened water 50ppm are enough.

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For hard water or utilities water the chart below should be followed:

	Hardness ppm	**Dosage B.W.T. - L**
Less than	64	50
	68	63
	73	84
	77	110
	80	143
	85	182
	90	231
	93	288
	98	357
	100	437
More than	105	530

*Maintain the product at the above limits. Testing is done with a special test kit, which our company offers its customers.

Handling precautions:

Avoid contact with skin and eyes. Wear suitable protective equipment (refer to MSDS for further information).

Packaging:

B.W.T. - L is packaged 27, 32-liter pails and in 210-liter drums.

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ADICO - NC - L

(Non chromate product for cooling water treatment)

DESCRIPTION

ADICO-NC-L is a liquid, nitrite/borate based compound for scale and corrosion control in closed recirculating cooling systems.

APPLICATIONS

Corrosion inhibiting treatment for closed recirculating systems such as:
Diesel Engine cooling water systems
Compressor cooling water systems
Centralized cooling systems
Central heating systems etc.
Chilled water systems
Transformer cooling systems

FEATURES AND BENEFITS

Deposits on metal surfaces and electrolytic corrosion is prevented, cooling system component life is prolonged, maintenance and repair needs are reduced.

Effective against cavitational corrosion (corrosion induced by high frequency vibration).

As sludge is controlled and existing scale is gradually reduced cooling system cleanliness and efficiency are increased.

Constant pH levels are maintained even when over-dosed. Little risk to metals such as brass and copper from excessive pH levels exists.

Dose levels are independent from cooling water dissolved oxygen levels.

Harmless to non-metals, including hoses, gaskets, seals and compatible with permanent type anti-freeze.

Corrosion reduction: ADICO-NC-L is a nitrite-borate compound formulated to combat corrosion by controlling cooling water alkalinity and depositing a thin stable protective film over surfaces at risk. Laboratory tests have shown surface passivation by ADICO-NC-L to be able to reduce corrosion by more than 95% per year in comparison with untreated water.

The compound is alkaline and in solution, assures control of coolant water pH levels within close limits. Optimum alkalinity suppresses acid based corrosion which may lead to general damage and local pitting.

By ensuring that, even when grossly overdosed, the cooling water pH does not rise above critical levels. ADICO-NC-L provides protection for amphoteric metals, i.e. those which are liable to attack from extremes of acidity or alkalinity.

These metals, such as zinc, are frequently present in combination with brass, copper and iron and generally are present in cooling water systems and their components. Special inhibitors in ADICO-NC-L additionally protect these metals.

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Their protection is important and can't be assured by the addition of simple alkaline water treatment chemicals.

Scaling Control: ADICO-NC-L combines and reacts with sludge, scale and rust deposits found in incorrectly treated cooling systems and will ensure their gradual removal without the risk that may be associated with acid cleaning.

Its use will clean and maintain cleanliness in all badly fouled systems.

In cases where systems are contaminated with oil and / or scale they should be cleaned before starting to apply ADICO-NC-L.

In these cases, degreasing should be performed with OIL-REMOVER-S and descaling with SCALE OFF - S.

PRODUCT DOSE AND CONTROL

Initial dose for an untreated system to inhibit corrosion is 1 % of ADICO-NC-L, that gives approximately Nitrite concentration of about 2300 ppm.

Thereafter the dose rate of ADICO-NC-L is based on the nitrite concentration of the medium under treatment and is given in the table to return cooling water to the mid point value of the control limits. The mid point value is circled.

NITRITE ppm NO_2	0	250	500	750	1000	1250	1500	2000	3000	4000
ADICO-NC-L KG/1000lt.	10	9	7	5	3	1	0	0	0	0

In cases of poor quality water, increased dosages may be necessary.

Buffering agents in ADICO-NC-L maintain pH values within suitable limits when the product is dosed as recommended.

Cooling water pH can also be checked and should be kept between 8,5-10.

PRODUCT CHARACTERISTICS

Appearance	: Liquid.
Specific Gravity	: 1,32 $\pm$ 0,05
PH (neat)	: < 10
Corrosive action	: None
Nitrite Concentration (NO_2^-)	: >22 %
Borate Concentration ($BO_3^{\equiv}$)	: >2%

PACKAGING

Non returnable 25 liter plastic pails and drums of 250 kg.

The testing equipment to measure cooling water quality and control treatment with ADICO-NC-L is available from EUROCHEM S.A.

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WSC 8170 DP
Closed cooling water treatment
Heavy duty corrosion inhibitor

General Description:

WSC 8170 DP is highly effective for treatment of molybdate corrosion inhibitor WSC 8170 DP is buffered with stabilized and unstabilized phosphate, and contains mercaptobenzo thiazole for protection of multi metal systems. The product also contains a specific dispersant for iron oxides and a polymer for dispersion of hardness salts.

WSC 8170 DP can be used in cooling water systems containing a wide range of metals including mild steel, brass and cast iron.

WSC 8170 DP is also designed for use in both hot and chilled water systems.

Technology behind:

Molybdate

The use of molybdate for corrosion protection in cooling water, either open recirculating or closed loop, systems is well documented. While molybdate is not as strong an oxidizing agent as chromate, it can function in this role in the presence of oxygen.

In the presence of oxygen, molybdate will convert hematite (Fe_2O_3 or red rust) to magnetite (Fe_3O_4 or magnetic black rust). This process is quite visible as boilers (either hot water or steam) change from a reddish color to black when treated with molybdate. This mechanism predominates at higher concentrations (>50 mg/L as Mo).

By contrast, molybdate's efficacy as an anodic (or pitting) inhibitor is related to its ability to accumulate within the acidic part of a pit and block the corrosion process.

Use of molybdate alone at <20 mg/L will reduce the risk of pitting type attack but will not offer good general corrosion protection. Regardless of the mode of action at low concentrations, at elevated levels (>50 mg/L as Mo), Molybdate (in the presence of oxygen) is capable of passivating metal.

Phosphate

Among the filmers used, ortho-phosphate is the most common. Ortho-phosphate widely in use in the dual role of corrosion inhibitor and pH buffer in the formulations.

At normal use concentrations (1000 to 5000mg/L as PO_4), phosphate protects against corrosion on ferrous and non-ferrous alloys.

The primary mode of action is via precipitation at the anode to form insoluble metal phosphates. This low solubility of phosphate salts requires using good quality (i.e., soft or distilled/deionized) water.

The ability of phosphate to form a protective film by directly precipitating is both its strength and weakness. While it will film the metal surfaces, it will just as readily precipitate with metal ions or hardness salts in the bulk water. This competition between useful and non-productive reactions is the major liability associated with phosphate.

Since ortho phosphate is an anodic inhibitor, if the concentration falls below the critical level (200 to 300 mg/L), rapid corrosion attack will occur.

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Stabilized Phosphate

Partial stabilization of ortho-phosphate (in WSC 8170 DP with hexyl-ethyl alcohol) creates special class of film formers, which combines the advantages of dibasic acids to the advantages of phosphates.

Dibasic acids work because of their limited solubility with transition metals (iron copper) and alkaline earth cations (hardness). As the corrosion process takes place at the anode, iron ions go into solution.

The dibasic anion reacts with the iron ions and precipitates at the corrosion site, stopping corrosion.

The presence of stabilized phosphate in WSC 8170 DP:

Provides a second anodic inhibitor (dianodic system) and allows the circuit to operate in lower phosphate levels without the danger of accelerated corrosion, if the phosphate concentration, for any reason, drops below 500 ppm.

Due to the different inhibition mechanism, the presence of molybdate is not controlling this phosphate drawback, even under fully aerated conditions.

The dianodic system is the safety, if the conditions of the system became anaerobic, very common in new systems presenting negligible leaks.

Molybdate requires dissolved oxygen for its corrosion inhibition. In absence of dissolved oxygen, molybdate stops protecting the system, and under such conditions, phosphate alone provides pitting attack.

Yellow Metal Inhibitors

Control of copper corrosion is critical in any closed loop. While copper and its alloys are quite corrosion resistant, the impact of even low corrosion rates can be dramatic. When copper corrodes, soluble copper ions plate out onto mild steel components.

When this happens, the more inert copper metal becomes a "permanent" cathode on the metal surface. At this point, the corrosion process, which had been spread over the entire steel surface, now becomes localized and continues at an accelerated rate. As this proceeds, instead of having a low general corrosion rate, high *local* corrosion rates will be seen.

Azoles are used to prevent the initial corrosion of copper alloys, as well as to inhibit copper deposits on mild steel surfaces. MBT (mercaptobenzothiazole) used in WSC 8170 DP, is effective inhibitor, and has been used for many years with good results.

In contrast to precipitating agents, the nitrogen atoms in the azoles bond to the copper metal via copper oxide molecules on the surface. The protective layer that is formed enhances the natural corrosion resistance of copper and copper alloys.

Application

The application dosage will depend on the type of system, water quality and operational parameters.

Typical values:

Initial film formation:	4000 to 8000 ppm
Maintenance:	1500 to 3000 ppm

The recommended feeding method is as received to any convenient point from which good distribution is assured. If dilution is necessary, this should be achieved using softened water or condensate.

Handling

Wear suitable protective clothing (refer to M.S.D.S for further instructions).

Packaging

30 liter pails and 20 liter drums.

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DISPERSOL-2000

Description

DISPERSOL-2000 is an advanced, new generation, liquid product which contains dispersants, sequestrants, scale inhibitors, and anticorrosive agents.

This product is a combination of phosphonates, which are antiscaling agents and a mixture of different types of anticorrosive agents. It does not contain chromates, nitrites, and zinc.

Usage

DISPERSOL-2000 is used in order to prevent scale and corrosion in open re-circulating cooling systems and cooling towers.

The usage of this product if combined with the biocide action of our product BELCAN is a complete treatment of cooling water.

Application

DISPERSOL-2000 is used in a continuous dosage of 20-80 grams per 1000 kg of water. The above proportion depends on the operating conditions of the system as temperature, hardness of water, chlorides content, TDS etc.

It is suggested to achieve the best results DISPERSOL-2000 the pH of water should be maintained between 6.5 - 8.3.

Advantages

a.) It is economic in its use because it is low in concentration.

b.) Because of its nature (acidic product) the consumption of sulfuric acid is reduced.

c.) This a non-toxic product. It does not contain chromates, nitrites, and heavy metals.

Technical properties

Appearance	: Clear liquid.
pH	: < 2
Specific gravity	: 1.12 $\pm$ 0.05
Solubility	: It is soluble in water of all proportions.

Safety

Contains acidic ingredients. Avoid contact with skin and eyes. Refer to M.S.D.S for necessary precautions for proper handling of this material.

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DISPERSOL 2000 E

ZINC – PHOSPHONATE - ORGANIC CORROSION AND SCALE INHIBITOR FOR OPEN RECIRCULATING COOLING WATER

USAGES:

DISPERSOL 2000 E provides excellent corrosion and deposit control for a variety of open recirculating cooling water systems, where deposit and corrosion free surfaces are required for system life and efficiency.
DISPERSOL 2000 E is designed to provide minimum environmental impact while providing highly effective corrosion control.
DISPERSOL 2000 E is very effective in low hardness, low alkalinity corrosive waters. It contains special filming ingredients to establish protective barriers against corrosion on ferrous metal surfaces. It also contains a proprietary blend of organic and polymeric sequestrants and dispersants to promote access of the corrosion control actives to corrosion sites.

FEATURES:

DISPERSOL 2000 E is a combination of an organophosphorus compound, zinc and polymer deposit control agent. This unique blend assures excellent conventional cathodic and anodic corrosion control.
The organophosphorous act as corrosion inhibitors, absorbing on to metal surfaces to form a protective film. This film acts as a barrier, denying access of oxygen to the metal surface, thus stifling the corrosion process.
The incorporation of zinc into **DISPERSOL 2000 E,** gives additional cathodic metal protection. This results in a much more resistant and adherent barrier film on the metal surfaces than with other traditional blends.

Effective against primary water stress corrosion cracking (PWSCC)

DISPERSOL 2000 E is extremely effective against primary water stress corrosion cracking (PWSCC).
Ample measures have been taken to cope with this situation, including residual stress relief by heat treatment, modified scheduled inspections, and the use of tubing materials that have high resistance to PWSCC in modern power plants.

- **Effect of DISPERSOL 2000 E addition on PWSCC**

DISPERSOL 2000 E addition is employed to prevent PWSCC in alloy 600MA tubing
Under simulated primary accelerated corrosion test conditions at 360°C, the susceptibility of alloy 600MA to PWSCC decreased with the addition of **DISPERSOL 2000 E**.

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Investigation of the Mechanism of DISPERSOL 2000 E Inhibition of PWSCC

Since it is considered that the condition of the surface oxide film may have a close relationship to the initiation of PWSCC, it is investigated the effect of **DISPERSOL 2000 E** addition on the condition of the stainless steel's alloy 600MA surface oxide film in detail.

The addition of **DISPERSOL 2000 E** thinned the surface oxide film, and the corrosive products formed on the oxide film also decreased in quantity.

This result suggests that **DISPERSOL 2000 E** is effective in inhibiting the corrosion reaction.

- The surface oxide film was of double-layer structure when **DISPERSOL 2000 E** was not added. The outer layer was rich in iron composition and poor in corrosion resistance, and the inner layer was rich in chromium and highly corrosion resistant.
- When **DISPERSOL 2000 E** was added, the outer layer rich in iron content disappeared, leaving only the highly corrosion resistant chromium layer.

ADVANTAGES:

- STABLE even at elevated skin temperatures.
- EFFECTIVE corrosion control.
- ANTIFOULANT properties maximize heat transfer and minimize under-deposit corrosion.
- PROTECTS against galvanic corrosion in mixed-metal systems.
- EXCEPTIONALLY EFFECTIVE control of pitting of ferrous metals.
- CONVENIENT single-package treatment for corrosion and fouling.

FEEDING:

Recommended feeding of **DISPERSOL 2000 E** is 15-50 ppm in the circulating water.

The pretreatment dosage should be 30-100 ppm for a two-week period after which the concentration may be allowed to revert to the maintenance level.

The optimum system pH is 7.5 to 8.8.

DISPERSOL 2000 E should not be used when the stability index of the system water is below 6.0.

The recommended feeding method is continuously as received to an aqueous dilution to any convenient point, from which good distribution is ensured.

Feeding equipment should be constructed of a suitable plastic material such as polyethylene, polypropylene or PVC.

DISPERSOL 2000 E must be fed continuously to the system by a proportioning pump.

Handling:

Avoid contact with skin and eyes. Wear suitable protective equipment (refer to MSDS for further information).

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DISPERSOL – 2030

Molybdate – Phosphonate – Organic – Corrosion & Scale Inhibitor for open recirculating cooling water systems

USAGE:

DISPERSOL–2030 is an exceptionally effective, concentrated liquid scale and corrosion inhibitor. It is designed for use in a wide range of open recirculating cooling water systems where clean, scale and deposit-free surfaces are required for maximum system life and efficiency.

DISPERSOL–2030 accomplishes this with one easy to use product, without the need of the synergistic use of a scale inhibitor.

DISPERSOL–2030 contains a special blend of anodic and cathodic corrosion inhibitors, designed to inhibit corrosion of ferrous metals by creating a passivating barrier. A specific inhibitor is included also to protect copper alloys from corrosion.

DISPERSOL–2030 is used for corrosion and scale control in systems with corrosive or high scaling makeup water and system operating conditions.

DESCRIPTION:

DISPERSOL–2030 contains no chromate, phosphate, polyphosphate, zinc or heavy metals. It is a blend of molybdate and dispersants designed to provide minimum environmental impact while providing a highly effective corrosion control alternative.

DISPERSOL–2030 is very effective in high hardness, highly alkaline scaling waters. It contains a proprietary blend of organic and polymeric sequestrants, penetrants and dispersants to minimize system fouling from contaminants such as calcium, silica, iron, sludge and organics. It also contains a unique blend of organic and actives to corrosion sites.

DISPERSOL–2030 is very effective also in low hardness, low alkalinity corrosive waters. It contains special filming ingredients to establish protective barriers against corrosion on ferrous metal surfaces. It also contains special filming ingredients to establish a protective barrier against corrosion and pitting on both yellow metal and ferrous metal surfaces.

DISPERSOL–2030 is environmentally safe for discharge with the cooling system bleedoff. The formulation contains no heavy metals, chromates, or other pollutants requiring removal or treatment prior to discharge at normal usage rates.

Molybdate does not provide a nutrient source as do many other corrosion inhibitors. This eliminates a food source for algae and bacteria in the water system and makes control of microorganisms easier at lower microbiocide dosage rates.

DISPERSOL–2030 may be used alone as a single product for control of corrosion in systems where hardness and alkalinity does not pose a scaling problem, or in high hardness and/or high alkalinity waters where higher cycles of concentration and lower bleed rates are desired.

DISPERSOL–2030 offers superior corrosion protection for all metals typically found in cooling water systems. The blend of cathodic and anodic inhibitors provides a durable corrosion inhibitive film for maximum system protection and minimal corrosion rates.

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DVANTAGES:

- **DISPERSOL–2030** does not contain chromate, phosphate, polyphosphate, zinc or heavy metals.

- **DISPERSOL–2030** anti-fouling properties maximize heat transfer, minimize under-deposit corrosion.
  PROTECTS against galvanic corrosion in mixed-metal systems.
- EXCEPTIONALLY EFFECTIVE control of pitting of ferrous metals.
- Controls corrosion of both ferrous and non-ferrous metals. Protects most metals, including sweated copper lines from corrosive attack.
- Superior corrosion inhibition.
- Scale control agent
- Minimizes heat-absorbing sludge and mineral scale deposits in system.
- Remains effective at skin temperatures of 300^{o} C and above.
- Helps extend equipment life.
- Reduces maintenance time and costs.
- Does not affect non-metallic materials in cooling systems.
- Low toxicity, easy to handle and apply.
- EFFECTIVE corrosion control at stability indexes as high as 10.
- CONVENIENT single-package treatment for corrosion and fouling.

TECHNOLOGY BEHIND:

Open recirculating cooling systems can include mild steel, galvanized steel, stainless alloys, copper and copper alloys, and aluminum. These metals are subject to a range of corrosion problems such as generalized corrosion, galvanic attack, pitting, crevice attack and stress cracking.

DISPERSOL–2030 is designed for systems using makeup water of moderate hardness and alkalinity, and discharging to a city sewer or other treatment plant.

Corrosion protection is provided through the use of molybdate, phosphonate, and azole compounds which have been shown in tests to be superior to most corrosion inhibitors available, and throughout a broad pH range.

- **Corrosion Inhibition**

Sodium molybdate has been used for decades as a substitute for chromates for the inhibition of corrosion in mild steels over a wide range of pH. Molybdates have a very low toxicity and are less aggressive oxidants toward organic additives that are often used in corrosion inhibiting formulations. The protection of mild steel used in the construction of air-conditioning cooling water and heating systems is a prime application. Molybdate solutions protect against rusting of steel parts during machining, and are used in water based hydraulic systems. It is also used as an additive in automobile engine anti-freeze.

Molybdate, usually in the form of Sodium Molybdate, is used as an anodic corrosion inhibitor in a number of aqueous systems, such as cooling water treatments, and automobile anti-freeze/coolant products.

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Molybdate ($MoO_4^{=}$) is a good corrosion inhibitor for open systems because it neither reacts with oxygen nor evaporates. Molybdate bonds tightly to metal atoms, especially in the presence of dissolved oxygen. The tenacious molybdate-metal complex is continuous over the entire surface and impervious to oxygen, so oxidative corrosion (rusting) is inhibited.
In the presence of nitrogen was found to enhance the formation of molybdate oxyanions. These oxyanions deposited back onto the anode surfaces as insoluble salts formed with iron cations released from the anion electrode. The increased formation of oxyanions is postulated to be the result of deprotonation of electrolyte in contact with the anion electrode, and a subsequent shift in pH to higher values. In addition to acting as a kinetic barrier, the oxyanionic species act as an electrostatic barrier to the ingress of the Cl- anions which cause pitting. So **DISPERSOL–2030** is particularly effective against pitting corrosion.
Molybdate inhibits steel, cast iron, aluminum, copper, brass, cadmium and solder, and is usually used synergistically with other corrosion inhibitors.

- **Yellow Metal Inhibitors**

Control of copper corrosion is critical. While copper and its alloys are quite corrosion resistant, the impact of even low corrosion rates can be dramatic. When copper corrodes, soluble copper ions plate out onto mild steel components.
When this happens, the more inert copper metal becomes a “permanent” cathode on the metal surface. At this point, the corrosion process, which had been spread over the entire steel surface, now becomes localized and continues at an accelerated rate. As this proceeds, instead of having a low general corrosion rate, high local corrosion rates will be seen.
Azoles are used to prevent the initial corrosion of copper alloys, as well as to inhibit copper deposits on mild steel surfaces. MBT (mercaptobenzothiazole) used in **DISPERSOL–2030** is an effective inhibitor, and has been used for many years with good results.
In contrast to precipitating agents, the nitrogen atoms in the azoles bond to the copper metal via copper oxide molecules on the surface. The protective layer that is formed enhances the natural corrosion resistance of copper and copper alloys.
Polymers can distort the crystal growth of the scale by disrupting the crystalline lattice which causes the hard dense adherent nature of scales. With the inclusion of a relatively large, irregularly shaped polymer in the crystalline lattice, scale does not develop or adhere to surfaces where it could cause heat transfer problems.
The polymer prevents normal scale development and disperses the more amorphorus material which may form. The effectiveness of polymers in scale control has changed the nature of many cooling water treatment programs by allowing high cycles and/or high pH conditions to be used.

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DOSAGE:

DISPERSOL–2030 dosages may vary somewhat according to operating conditions, but generally 30-100 ppm of **DISPERSOL–2030** should be maintained in the system water.

This dosage should be tripled for a two-week period when initiating treatment, whenever the system is refilled with fresh water, and after any major system upsets, in order to establish effective corrosion control.

If the stability index of the recirculated water is higher than 10.5, an alkalinity booster such as soda ash should be fed to reduce the index to less than 10.5.

DISPERSOL–2030 should not be used when the stability index of the system water is below 3.0.

DISPERSOL–2030is controlled by a molybdate test, which provides easy and accurate control readings. Maintain 2 to 5 ppm $MoO_4^{=}$ at all times.

FEEDING:

DISPERSOL–2030 must be fed continuously to the system by a positive displacement chemical feeder. For maximum results, feed should be linked to makeup of bleedoff through the use of a flowmeter or conductivity controller.

Residuals are adjusted and maintained by chemical test of the system to provide a residual of 2-5 ppm $MoO_4^{=}$.

HANDLING:

Avoid contact with skin and eyes. Wear suitable protective equipment (refer to MSDS for further information).

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DISPERSOL – 7000

IRON DISPERSANT, CORROSION INHIBITOR
AND HARDNESS CONTROL
FOR COOLING WATER TREATMENT

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Description

DISPERSOL-7000 is an advanced, new generation, liquid product which contains iron dispersant, sequestrants, scale inhibitors, and anticorrosive agents.

This product is a combination of polyacrylic acid, phosphonates and a mixture of different types of anticorrosive agents.

It does not contain chromates, nitrites, and any other toxic ingredients.

Usage

DISPERSOL-7000 is used as iron dispersant corrosion and scale inhibitor in open re-circulating cooling systems and cooling towers.

Application

DISPERSOL-7000 is used in a dosage of 5 ppm in the water of the system. However, optimum dosage will depend on the nature and severity of fouling and the operational parameters of the system.

Advantages

d.) It is economic in its use because it is low in concentration.

e.) This a non-toxic product. It does not contain chromates, nitrites or any other toxic ingredients.

Technical properties

Appearance	: Liquid.
pH	: 8-9
Solubility	: It is soluble in water of all proportions.

Safety

Avoid contact with skin and eyes. Refer to M.S.D.S for necessary precautions for proper handling of this material.

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WS – 8738

Antifoulant – Dispersant – Surfactant

Use:

WS-8738 antifoulant is a liquid, hydrolytically stable, non-ionic dispersant designed for use in water systems.

WS-8738 is highly effective over a wide pH and temperature range in dispersing oil, silt, sludge, clay and dead bio-matter occurring in water systems. It will remove deposits, which reduce heat transfer and lead to underdeposit corrosion attack.

When used in conjunction with a microbiocide, **WS-8738** improves the penetration of the microbiocide and contributes to better, more economical bacterial control.

Feeding:

The exact dosage of **WS-8738** will depend on a number of factors such as the nature and concentration of suspended solids and the degree of surface fouling already present.

- Routine maintenance control may be achieved by adding 25-200 ppm either continuously or as a shock charge.
- Severely fouled systems may be cleaned using concentrations of 50-5,000 ppm.

Your Eurochem representative will provide detailed information.

WS-8738 may be fed directly from the drum or as an aqueous dilution to any suitable point in the system. For large systems local addition to the inlet pipework of specific heat exchangers might be appropriate.

Handling precautions:

Avoid contact with skin and eyes. For further information refer to Material Safety Data Sheet (MSDS).

Packaging:

WS-8738 is packed in 25 kg jerrycans and in 210 kg drums.

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BELCAN
MICROBIOCIDE

Description

BELCAN is an effective biocide for controlling algae and slime growths. It is a liquid, non volatile, water soluble compound with the added advantages of being non-toxic and non-irritating. It has a high degree of bactericidal and bacteriostatic activity, and is effective against a wide variety of bacteria, fungi, seaweed and algae. It is a mixture of quaternary ammonium chloride compounds and other biocidal agents in a stable buffered solution.

BELCAN may be used in any system without the need for costly, special feeding equipment.

ADVANTAGES OF BELCAN

Since BELCAN is non-volatile, its concentration in a cooling system is independent of the circulation rate. The concentration is decreased by bleed-off, by reaction with growths, and by absorption upon the interior surfaces of the system. Effective treatment requires attaining a relatively high concentration in the system for a short length of time, rather than maintaining a small residual continuously.

When initiating the use of BELCAN in any system, it is essential that a higher treatment rate be followed for a period of 4 to 6 weeks. This schedule will serve not only to remove heavy infestations of slime and algae growths, but will also make it possible to saturate the surfaces of the system with BELCAN.

BELCAN should be added in massive periodic dosages in concentrations of 20 to 40 parts per million. This would be equivalent to one pint of BELCAN per 3000 gallons of water entering the system based on the activity of the product.
Normal bleed-off from a cooling tower is calculated at one-half of one percent to one percent of the total water circulated. The circulation rate, if not known, is estimated at 3 gpm per ton of refrigeration. This information, together with evaporation losses, should be used to calculate the amount of BELCAN to be added.

DISADVANTAGES OF ORDINARY ALGICIDES

Many of the chemicals which are being used for algae control exhibit an initial period of apparent effectiveness, followed by renewed growth of the organisms. Due to mutation of the organism, such renewed growth indicates the development of resistant microbiological strains. These slime and algae deposits will promote corrosion since they liberate oxygen. Even some of the ordinary treating chemicals, such as chlorine, are themselves corrosive, frequently attacking the wooden surfaces of the cooling tower, causing delignification. Many are also toxic and irritating, such as organometallic compounds, requiring special handling precautions.

Compatible with most water treatment products, except anionic surfactants.

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BIO-3290

Description

BIO-3290 is a blend of selected isothiazolines and is the product of choice when fast deactivation is required, as to prevent mutagenecies.

BIO-3290 is a high performance industrial microbiocide for use in closed recirculating water systems, cooling towers, power station circuits, wood, mold and mildew control, pulp and paper mills, oil field injection waters air washer, air conditioning and food processing systems.

BIO-3290 has extreme broad-spectrum activity, controlling bacteria, fungi and yeast without affecting products physical properties. Very low use levels make **BIO-3290** one of the most cost effective solutions on the market.

BIO-3290 is very effective in controlling the typical bacteria and fungi, but also offers compatibility with papermaking chemicals and equipment, and convenient handling properties.

Advantages

- **Compatibility**

  BIO-3290 Isothiazolines are generally compatible with most components of industrial products.
- **Biocidal Performance**

  BIO-3290 is a highly cost effective biocide preservative due to the low use levels required.
- **Rapid inhibition of macromolecular synthesis (proteins, RNA, etc.)**
- **Synergistic with halogen, not pH sensitive**
- **Minimal environmental concerns**
- **Meets FDA requirements**

  BIO-3290 meets the requirements of the Food and Drug Administration (FDA) for use as a slimicide in the manufacture of paper and paperboard, intended to contact food (21 CFR 175.500 and 175.320).

Application

- **Recommended method of addition**

You can feed **BIO-3290** with a metering pump at any point where uniform mixing can be attained. Use corrosion resistant equipment.

BIO-3290 can be added continuously or periodically, with adjustments in the intervals between additions and dose levels dependent on visual inspections, microbiological analyses, and/or experienced observations of a water treatment representative.

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- **Treatment levels**

For closed systems a normal feeding of a 25 ppm shock once to twice a month is normally sufficient.
For cooling towers and air washers shock of 25 ppm twice a week is recommended.
For the control of bacterial, fungal, and yeast growth in pulp, paper, and paperboard mills, add **BIO-3290** at the rates of 50 to 150 gr / tn of dry paper.

- **To remove slime from fouled systems.**
- Add 500 ppm of BIO-3290 2-3 times a week until the system is clean.

Safety

Avoid contact with skin and eyes. For further information refer to Material Safety Data Sheet.

Packaging

BIO-3290 is packed in 32 kg plastic pails and 230 kg drums.

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BIO – CLOR

BIOCIDE AND CLEANER FOR BADLY FOULED SYSTEMS

Description:

BIO-CLOR is a powder, biocide and cleaner, feed, stabilized chlorine biocide, activated by small quantities of bromine in order to give chlorine more power.

With this procedure common chlorine becomes an extremely strong disinfectant, fungicide, algaecide and/or slimicide for wastewater, commercial and industrial waters, cooling towers and closed recirculating systems, without any harmful environmental side effects.

BIO-CLOR is also used to control biofilm deposits in pumps, pipes, heat exchangers and filters associated with industrial water treatment systems.

This powerful broad-spectrum biocide effectively and quickly controls bacteria, algae and fungi.

Usage:

- **To remove slime from fouled systems:**

Add BIO-CLOR to provide a level of residual chlorine of at least 2 ppm.

Circulate for 2 – 3 days keeping the residual chlorine at least 2 ppm.

- **For maintenance:**

Add BIO-CLOR to provide a level of residual chlorine of 0,4 – 0,7 ppm.

Handling precautions:

Avoid contact with skin and eyes. For further instructions refer to analytical Material Safety Data Sheet (MSDS).

Packaging:

BIO-CLOR is offered in 50 kg drums.

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BIOBROM – Q

Description – Application:

BIOBROM-Q is a liquid, single feed, stabilized bromine biocide, used in combination with chlorination in order to give chlorine the power of chlorobromination.

With this procedure common chlorine becomes an extremely strong disinfectant, fungicide, algaecide and/or slimicide for wastewater, commercial and industrial recirculating cooling water systems and industrial once-through cooling water systems, without any harmful environmental side effects.

BIOBROM-Q is also used to control biofilm deposits in pumps, pipes, heat exchangers and filters associated with industrial water treatment systems.

Features:

This powerful broad spectrum biocide effectively and quickly controls bacteria, algae and fungi through NaOBr action.

NaOBr is a powerful broad spectrum biocide recommended for disinfection of recirculating and once through cooling systems, food processing equipment (pasteurizers, sterilizers or retorts), air washers, and other industrial water systems.

BIOBROM-Q is recommended for alkaline ($7,5 < pH < 9,5$) and contaminated waters (NH_3 and nitrogen), where chlorine is not giving efficient microbial control.

NaOBr remains active in alkaline waters (pH=7,5-9,5) resulting in more efficient disinfections than when using chlorine based biocides.

BIOBROM-Q suffers less from flash-off losses (compared to chlorine based biocides).

BIOBROM-Q offers all of the advantages of bromine chemistry combined with the ease of dosing: there is no need for labor intensive and complex feed equipment, simple dosing pumps are sufficient.

Feeding:

The product dosage rate will depend on the system design, water characteristics and operational parameters. In most of the application a residual 0.2-0.5 ppm of residual free available halogen is sufficient to keep control of the system. As a chlorination supplement BIOBROM-Q should be dosed at 0,05 – 01 ppm.

Handling precautions:

Wear suitable protective gloves and safety goggles. In case of contact immediately flush with plenty of water. After eye contact seek medical advice.

In case of spillage, absorb with sand or other absorbent material and sweep up. Then flush area with plenty of water (refer to M.S.D.S. for further instructions).

Storage requirements:

Neat BIOBROM-Q can be stored in HDPE, LDPE & PP containers. Do not store BIOBROM-Q in iron, aluminum, brass, stainless steel, carbon steel or copper containers or in direct sunlight.

Packaging:

BIOBROM-Q is offered in 30-liter pails and 210-liter drums.

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KEM - ET
(Evaporator treatment)

DESCRIPTION

KEM-ET is a blend of polymers and defoaming agents designed for scale and foaming control in high and low pressure evaporators.

SPECIFICATION

Appearance	: pale yellow liquid
Specific Gravity	: 1,10 ± 0,05
Flash point	: none

ADVANTAGES

1. Increases the production of the water.
2. Improves the quality of the water.
3. The defoaming action of the product increases heat transfer rates by allowing more heating surface to come into contact with the water.

APPLICATION

KEM-ET is normally added to the evaporator at the rate of 1-2 ounces per ton of distillate produced.

Brine density should not exceed 1,5/32.

At higher brine densities solid formation creates soft deposits on the evaporative surfaces.

KEM-ET will clean up moderate amounts of deposits. In this case double the dosage rates.

HANDLING

No special precautions required.

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AF-II
(Antifoam for Evaporators)

Description

AF-II is a non ionic aqueous solution highly recommended for the prevention, of foam in evaporators and multi stage flash evaporators.

Its effectiveness is not affected by pH, and it is equally efficient in alkaline as in acidic systems.

AF-II provides excellent foam control at temperatures up to 130^{o}C with an improvement in performance as temperature increases.

AF-II consists of a special grade antifoam based on polyalkylene glycols and non-ionic surfactants.

This product is especially developed for evaporators and multi stage flash evaporators and is approved by the Greek State Laboratory (Benakio) as non-toxic and suitable for Food Industries.

Applications

Main Use :

- Evaporators and multi stage flash Evaporators. The recommended dosage for this application is 0.1 – 1 ppm.

Special properties

AF-II is easy to use. It can be used as delivered, or pre-diluted in water or in the aqueous system to be defoamed.

It is chemically inert with regards to the substance to be defoamed therefore it leaves its properties unchanged.

AF-II has good heat stability. It can be heated to 120^{o}C for 1 hour without modification to its properties or its performance.

Approvals

AF-II is extensively used in conjunction with our product KEM-ET (antiscaling liquid) in desalination units and are both approved by the :

a) **Greek Navy**

b) **Greek Power Corporation**

Moreover, AF-II is approved by the Greek Sugar Refineries.

Packaging

AF-II is available in plastic drums of 215 kg.

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EUROSPERSE
(Anti-fouling treatment for seawater systems)

Description:

EUROSPERSE is an amine based dispersant, very effective biocide and biodispersant used for keeping seawater systems free from marine fouling.

When the system is free of bacteria and fungi or barnacles and mussels the ability to transfer heat is at the maximum. By keeping the system clean EUROSPERSE reduces maintenance and operating costs.

EUROSPERSE has been specially developed to prevent fouling in seawater cooling systems from marine growths. The dispersant in EUROSPERSE prevents colonizing of bacteria on the metal surface, making it unsuitable for the settling of bacteria and therefore unlikely for larger fouling organisms. Anticorrosion properties are also provided by filming characteristics.

Advantages:

- Easy to use liquid form.
- Filming properties protect system from corrosion.
- Extremely effective in the control of seawater fouling organisms.
- One product for multiple applications.
- Maintains heat transfer and extends the periods between cleaning.
- Maintenance and down time is reduced.
- Cost effective.
- Biodegradable.
- Suitable for all types of systems using seawater both static and flowing.

Application:

PRE-CLEANING

If the cooling system is moderately fouled, EUROSPERSE will disperse marine growth.

If the cooling system is heavily fouled it is recommended that the cooling water system be cleaned prior to beginning an EUROSPERSE fouling prevention program.

Offline cleaning may be accomplished by circulating a 10% solution of our product SCALE-OFF-S.

Dosage:

EUROSPERSE is dosed at 6 ppm for 60 minutes every other day in coastal waters and at least once mid-voyage on deep sea crossings, but at least every seven (7) days.

Packaging:

EUROSPERSE is offered in 210-liter drums.

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