



Tennessee Valley Authority
Post Office Box 2000
Soddy Daisy, Tennessee 37384-2000

Timothy P. Cleary
Site Vice President
Sequoyah Nuclear Plant

April 23, 2009

Vojin Janjic
Manager, Enforcement & Compliance
State of Tennessee
Department of Environment & Conservation
Division of Water Pollution Control
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Dear Mr. Janjic,

**SEQUOYAH NUCLEAR PLANT (SQN) - NATIONAL POLLUTANT DISCHARGE ELIMINATION
SYSTEM (NPDES) PERMIT NO. TN0026450 - REQUEST FOR BIOCIDES/CORROSION
TREATMENT PLAN (B/CTP) REVISION APPROVAL**

Sequoyah Nuclear Plant (SQN) requests approval to implement the following changes to the Biocide/Corrosion Treatment Plan (B/CTP). The changes are necessary for SQN to address mollusk and microbiologically induced corrosion issues in plant systems that are essential for the safe and reliable operation of the plant. These systems are designed in accordance with Nuclear Regulatory Commission requirements and must function as designed in the event plant shutdown is required. As indicated in the B/CTP, the plant's safety related systems must be routinely chlorinated for four to twelve hours per day and up to twenty-four hours per day. SQN will continue to use previously approved products such as Spectrus CT1300, Towerbrom 960, Sodium Hypochlorite (liquid bleach), Bentonite Clay, etc...

Attached please find a revised B/CTP with the following requested changes.

- 1) The supplier of the raw water treatment program chemical products will change from Nalco to General Electric (GE). The new supplier's products are of "like-for-like" chemical composition to those used by Nalco.
- 2) SQN is requesting approval of the following three products - Depositrol PY5200, Flogard MS6236, and Spectrus BD1500.
- 3) SQN plans to add Towerbrom 60m to our B/CTP, which is a minor change and does not require pre-approval. Towerbrom 60m is the exact same product as previously approved Towerbrom 960. It has a different trade name based on the container size. Towerbrom 60m comes in a 5 gallon bucket and Towerbrom 960 comes in a tote. All relevant information (frequency of discharge, active ingredients, discharge concentration, maximum daily usage, MSDS, product bulletin, etc.) is the same as previously approved Towerbrom 960.

COOL
NMR

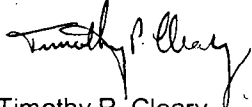
SQN plans to show compliance by use of mass balance calculations when possible. In the event detoxification with bentonite clay is required, SQN will obtain and analyze a daily confirmatory sample for the active ingredients in Spectrus CT1300 during application. This analytical result may be used in conjunction with calculations to demonstrate protection of the receiving stream. These records will be maintained on site in accordance with NPDES permit requirements. Please note that SQN has conducted and passed toxicity testing in conjunction with non-oxidizing biocide treatments during the current permit term.

SQN requests written approval of this B/CTP no later than June 1, 2009 in order to facilitate effective treatment during the summer months. SQN will request changes to the B/CTP whenever changes in active ingredients, discharge concentrations, or maximum daily usage are necessary. Changes in the trade name of the products and minor changes in equipment or methods of application will not require additional reviews or authorization for the B/CTP.

If you have any questions or need additional information, please contact Ann Hurt at (423) 843-6714 or Stephanie Howard at (423) 843-6700 of Sequoyah's Environmental staff.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sincerely,



Timothy P. Cleary
Site Vice President
Sequoyah Nuclear Plant

Enclosures
cc (Enclosures):

Robert Alexander
State of Tennessee
Department of Environment & Conservation
Division of Water Pollution Control
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Richard Urban, Ph.D.
Environmental Field Office Manager
State of Tennessee
Department of Environment and Conservation
Chattanooga Environmental Field Office
Division of Water Pollution Control
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540 McCallie Avenue
Chattanooga, Tennessee 37402-2013

Raw Water Chemical Additives at Sequoyah Nuclear Plant

CURRENT APPROVED NALCO PRODUCT	GE PRODUCT FOR APPROVAL	PURPOSE	ACTIVE INGREDIENTS	% ACTIVE INGREDIENT	FREQUENCY OF DISCHARGE	REPRESENTATIVE AQUATIC TOXICITY /DESCRIPTOR	DISCHARGE CONCENTRATION ¹ (ppm active ingredients)
PCL - 401	Depositrol PY5200	Dispersant to facilitate iron corrosion inhibition	Anionic Copolymer	30	Continuous (contingency for enhancing iron corrosion control)	7-d IC ₂₅ = 161 (C. dubia) 7-d IC ₂₅ = 600 (P. promelas)	≤ 0.2
MSW - 101	Flogard MS6236	Iron corrosion inhibitor	Orthophosphate, Sodium tripolyphosphate	30	Continuous	7-d IC ₂₅ = 152 (C. dubia) 7-d IC ₂₅ = 494 (P. promelas)	≤ 0.2
Biodetergent 73551	Spectrus BD1500	Surfactant to facilitate oxidizing biocides	Non-ionic surfactant	15	Periodic	7-d IC ₂₅ = 98 (C. dubia) 7-d IC ₂₅ = 450 (P. promelas)	≤ 2.0

1. Concentrations are achieved through dilution and/or detoxification with bentonite clay (previously approved).

Raw Water Chemical Application Guide¹

Current Approved Nalco Product	GE Product for approval	Injection Points	Max Feed (ppm)	In Plant Target (ppm)	Frequency of Application	Average Duration of Application.	Estimated Max Days per Year	Maximum Daily Usage (lbs/day) ²
PCL - 401	Depositrol PY5200	ERCW Train A & B and RCW	2.6	2.6	Daily	24 hours per day	365	2465
MSW - 101	Flogard MS6236³	ERCW Train A & B and RCW	2.4	2.4	Daily	24 hours per day	365	2275
Biodetergent 73551	Spectrus BD1500	ERCW Train A & B and RCW	2.5	2.5	208 days per year	0.5 hours per day	208	50

1. Concentrations and usage are expressed for the active ingredient(s) shown on the first page of this plan.
2. Maximum Daily Usage provides an indication of loading in the receiving stream. It is the maximum amount of active ingredients for the worst case scenario of flow and feed concentration being proposed plus a 10% margin of error. SQN will request a change to this plan should an increase in maximum daily usage becomes necessary for the continued safe operation of the plant.
3. Flogard MS6236 is a blend of orthophosphate and tripolyphosphate. Flogard MS6236 is injected into the RCW system continuously, except during periods of other chemical injection due to common injection lines. Flogard MS6236 is injected into the ERCW Train A & B system intermittently.

Calculations Showing Worst Case Scenario (final values rounded to the nearest 5 lbs)

Depositrol PY5200	2.6 mg	1 lb	71,800 gal	3.785 L	60 min	24 hr	1.10	= 2465 lbs/day Depositrol PY5200
2.6 ppm active	L	454,000 mg	min	gal	1 hr	day		
Flogard MS6236	2.4 mg	1 lb	71,800 gal	3.785 L	60 min	24 hr	1.10	= 2275 lbs/day Flogard MS6236
2.4 ppm active	L	454,000 mg	min	gal	1 hr	day		
Spectrus BD1500	2.5 mg	1 lb	71,800 gal	3.785 L	60 min	0.5 hr	1.10	= 50 lbs/day Spectrus BD1500
2.5 ppm active	L	454,000 mg	min	gal	1 hr	day		



Raw Water Treatment Programs

The fundamental approach and active ingredients for the various treatment programs at SQN have not changed significantly in more than ten years. Products with slightly different formulations of the same active ingredients or constituents of concern and the processes or frequencies of applying those products have changed periodically. SQN will continue to use previously approved products such as Spectrus CT1300, Towerbrom 960, Sodium Hypochlorite (liquid bleach), Bentonite Clay, etc...

The changes in this proposal are:

- 1) The supplier of the raw water treatment program chemical products will change from Nalco to General Electric (GE). The new supplier's products are of "like-for-like" chemical composition to those used by Nalco.
- 2) SQN is requesting approval of the following three products - Depositrol PY5200, Flogard MS6236, and Spectrus BD1500.
- 3) SQN plans to add Towerbrom 60m to our Biocide/Corrosion Treatment Plan, which is a minor change and does not require pre-approval. Towerbrom 60m is the exact same product as previously approved Towerbrom 960. It has a different trade name based on the container size. Towerbrom 60m comes in a 5 gallon bucket and Towerbrom 960 comes in a tote. All relevant information (frequency of discharge, active ingredients, discharge concentration, maximum daily usage, MSDS, product bulletin, etc.) is the same as previously approved Towerbrom 960.

Treatment Plan Overview and Toxicity Summaries

Document	Summary
 Plan Overview	An overview of the proposed raw water treatment programs at SQN.
 SQN Toxicity Assessment Summary	Several bench top toxicity studies on individual products and the synergistic effects of the various treatment programs have been conducted for TVA nuclear facilities. Results from these studies are incorporated into the attached summary of toxicity endpoints compared with projected instream product concentrations. Reports are available upon request. Ongoing documentation for protection against synergistic and/or chronic impacts by SQN's treatment programs is provided by routine 7-day toxicity testing at Outfall 101 (Diffuser discharge).

AN OVERVIEW OF RAW WATER CHEMICAL ADDITIVES

Inspection and chemical treatment programs have been implemented at Sequoyah Nuclear Plant (SQN) to control fouling, plugging, and pipe wall thinning of the raw water systems. Most of the chemicals used in these treatment programs are added at three locations Essential Raw Cooling Water (ERCW) intake for ERCW A train and ERCW B train and Raw Cooling Water (RCW) pump suction header for RCW to ensure these raw water systems are protected. These systems, the ERCW and RCW, are essential for the safe and reliable operation of the plant. SQN plans to show compliance with the treatment plans below using mass balance calculations where possible.

CARBON STEEL CORROSION INHIBITION

SQN plans to use a combination of two chemicals to provide corrosion protection for carbon steel piping in the plant: a biodispersant, Spectrus BD1500 (nonionic surfactant) and a phosphate additive, Flogard MS6236. The products are injected into ERCW and RCW. Spectrus BD1500 is injected 2-3 times per week for 30 minutes, year round. Flogard MS6236 is injected into the RCW system continuously, except during periods of other chemical injection due to common injection lines. Flogard MS6236 is injected into the ERCW Train A & B system intermittently. The concentration of nonionic surfactant (Spectrus BD1500) in the plant effluents will not exceed 2.0 ppm, and phosphorous (Flogard MS6236) in the plant effluents will not exceed 0.2 ppm. It will continue to be necessary to apply these chemicals year round.

RAW COOLING WATER BIOCIDES TREATMENTS

Protection of the raw cooling water systems from macro-invertebrates (mollusks) requires oxidizing and non-oxidizing biocide treatments. Oxidizing biocide treatments are aimed at both macro-invertebrate and microbiologically induced corrosion (MIC) control. Non-oxidizing biocides are aimed at macro-invertebrate control. SQN plans to treat plant systems for mollusk control with a non-oxidizing biocide, Spectrus CT1300 (previously approved). SQN plans to detoxify non-oxidizing effluents when required with Bentonite Clay (previously approved).

ROUTINE RAW WATER TREATMENT WITH OXIDIZING BIOCIDES (CHLORINATION)

To control macro invertebrates and microbiologically induced corrosion, routine raw water treatments with oxidizing biocide (chlorination) are necessary for:

1. SQN plans to treat two to five days per week during cool weather periods and five to seven days per week during warm weather periods for four to twelve hours per day and up to twenty-four hours per day (continuous).
2. Periods of continuous oxidizing biocide treatment will also be required following treatments with the non-oxidizing biocide.

Towerbrom 960 (previously approved), Towerbrom 60m (exact same chemical as previously approved Towerbrom 960, but in a different container size), or sodium hypochlorite (liquid bleach) (previously approved) will be used for oxidizing biocide treatments. Application of any of these products will be in compliance with the NPDES permit limits for Outfall 101, ≤ 0.10 mg/L as Total Residual Chlorine (TRC). This discharge limit will be determined by mass balance calculation.

NON OXIDIZING BIOCIDES TREATMENT (MOLLUSK CONTROL)



SQN will use Spectrus CT1300 (previously approved) for 24-120 hours, 4-8 times per raw water system (RCW, ERCW-A, and ERCW-B) per year. SQN will show by mass balance calculation that the required concentrations are being met for each application. SQN plans to detoxify the effluent by treatment with bentonite clay (previously approved) when required and confirm the effectiveness of detoxification with daily sampling for the active ingredient in the effluent during the treatment period.



Product Toxicity Data Summary and Comparison with Maximum Instream Wastewater Concentrations (IWC)



Chemical	Organism ¹	Acute Endpoints (ppm as active)		Chronic Endpoints (ppm as active)		Maximum Discharge Conc. (< Acute endpoints)	Conc. @ 101 Instream Waste Conc. 1Q10 ~3491 MGD 101 ~1532 MGD (< Chronic endpoints)
		48-h LC ₅₀	96-h LC ₅₀	NOEC	IC ₂₅	(ppm as active)	(ppm as active)
Depositrol PY5200	C. dubia				161	0.2	0.088
	P. promelas				600		
Flogard MS6236	C. dubia				152	0.2	0.088
	P. promelas				494		
Spectrus BD1500	C. dubia				98	2.0	0.88
	P. promelas				450		

Notes:

1. Data Source: Manufacturer unless otherwise noted.

Depositrol PY5200 (Anionic Polymer)	
A dispersant commonly used in water treatment programs. Depositrol PY5200 is a copolymer-dispersant used to minimize fouling and under-deposit corrosion in the ERCW and RCW system. This product makes carbon piping corrosion inhibitors more effective. Depositrol PY5200 is not considered hazardous per OSHA regulations and is of very low toxicity according to the MSDS and aquatic toxicological test results.	
Document	Summary
 "Depositrol PY5200 MSDS.pdf"	Material Safety Data Sheet.
 "Depositrol PY5200 Fact Sheet.pdf"	Product Bulletin

Flogard MS6236 (Phosphate)	
A corrosion inhibitor commonly used in water treatment programs. Flogard MS6236 is a blend of ortho and polyphosphate. It is used to minimize corrosion of iron in the ERCW and RCW systems. Flogard MS6236 is not considered hazardous per OSHA regulations and is of very low toxicity according to the MSDS and aquatic toxicological test results.	
Document	Summary
 FLOGARD MS6236 - MSDS.pdf	Material Safety Data Sheet.
 FloGard MS6236 Fact Sheet.pdf	Product Bulletin

Spectrus BD1500 (Nonionic Surfactant)	
Spectrus BD1500 is a surfactant commonly used in water treatment programs to remove and disperse "soft foulant" (biofilm-enmeshed mud, silt and clay) from piping systems. When Towerbrom 960, Towerbrom 60m, or Sodium Hypochlorite (liquid bleach) is used for routine chlorination treatments, this product is added into the ERCW and RCW systems for approximately 30 minutes prior to initiating treatment to enhance the effectiveness of chlorination. This product has a very low toxicity according to the MSDS and aquatic toxicological test results.	
Document	Summary
 "Spectrus BD1500 MSDS.pdf"	Material Safety Data Sheet.
 "Spectrus BD1500 Fact Sheet.pdf"	Product Bulletin



Material Safety Data Sheet

Issue Date: 05-FEB-2009
Supersedes: 02-OCT-2008

DEPOSITROL PY5200

1 Identification

Identification of substance or preparation
DEPOSITROL PY5200

Product Application Area
Water-based deposit control agent.

Company/Undertaking Identification
GE Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
T 215 355-3300, F 215 953 5524

Emergency Telephone
(800) 877-1940

Prepared by Product Stewardship Group: T 215-355-3300 Prepared on: 05-FEB-2009

2 Hazard(s) identification

EMERGENCY OVERVIEW

CAUTION

May cause slight irritation to the skin. May cause slight irritation to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.

DOT hazard is not applicable
Odor: Slight; Appearance: Yellow, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide, foam or water

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:

Primary route of exposure; May cause slight irritation to the skin.

ACUTE EYE EFFECTS:

May cause slight irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:

Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:

May cause slight gastrointestinal irritation.

TARGET ORGANS:

No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:

Not known.

SYMPTOMS OF EXPOSURE:

May cause redness or itching of skin.

3 Composition / information on ingredients

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

This product is not hazardous as defined by OSHA regulations.

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

4 First-aid measures

SKIN CONTACT:

Wash thoroughly with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

EYE CONTACT:

Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get medical attention if irritation persists after flushing.

INHALATION:

If nasal, throat or lung irritation develops - remove to fresh air and get medical attention.

INGESTION:

Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 2-8 fluid ounces (60-240 mL) of milk or water.

NOTES TO PHYSICIANS:

No special instructions

5 Fire-fighting measures

FIRE FIGHTING INSTRUCTIONS:

Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

EXTINGUISHING MEDIA:

dry chemical, carbon dioxide, foam or water

HAZARDOUS DECOMPOSITION PRODUCTS:

oxides of carbon and sulfur

FLASH POINT:

> 210F > 99C P-M(CC)

6 Accidental release measures

PROTECTION AND SPILL CONTAINMENT:

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container.

Flush area with water. Wet area may be slippery. Spread sand/grit.

DISPOSAL INSTRUCTIONS:

Water contaminated with this product may be sent to a sanitary sewer treatment facility, in accordance with any local agreement, a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7 Handling and storage

HANDLING:

Normal chemical handling.

STORAGE:

Keep containers closed when not in use. Protect from freezing. If frozen, thaw and mix completely prior to use. Shelf life 360 days.

8 Exposure controls / personal protection

EXPOSURE LIMITS

This product is not hazardous as defined by OSHA regulations.

ENGINEERING CONTROLS:

adequate ventilation

PERSONAL PROTECTIVE EQUIPMENT:

Use protective equipment in accordance with 29CFR 1910 Subpart I

RESPIRATORY PROTECTION:

A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.

USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.

If air-purifying respirator use is appropriate, use any of the following particulate respirators: N95, N99, N100, R95, R99, R100, P95, P99 or P100.

SKIN PROTECTION:

rubber, butyl, viton or neoprene gloves -- Wash off after each use. Replace as necessary.

EYE PROTECTION:

splash proof chemical goggles

9 Physical and chemical properties

Specific Grav. (70F, 21C)	1.169	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	25	Vapor Density (air=1)	< 1.00
Freeze Point (C)	-4		
Viscosity (cps 70F, 21C)	42	% Solubility (water)	100.0

Odor	Slight
Appearance	Yellow
Physical State	Liquid
Flash Point	P-M(CC) > 210F > 98C
pH As Is (approx.)	5.2
Evaporation Rate (Ether=1)	< 1.00
Percent VOC:	0.0

NA = not applicable ND = not determined

10 Stability and reactivity

CHEMICAL STABILITY:

Stable under normal storage conditions.

POSSIBILITY OF HAZARDOUS REACTIONS:

INCOMPATIBILITIES:

May react with strong oxidizers.

DECOMPOSITION PRODUCTS:

oxides of carbon and sulfur

11 Toxicological information

Oral LD50 RAT:	>5,000 mg/kg
Dermal LD50 RABBIT:	>2,000 mg/kg
Inhalation LC50 RAT:	>5 mg/L/4hr
Skin Irritation Score RABBIT:	1
Eye Irritation Score RABBIT:	1.67

12 Ecological information

AQUATIC TOXICOLOGY

Ceriodaphnia 48 Hour Static Renewal Bioassay

LC50= 1265 mg/L

Ceriodaphnia 7 Day Static Renewal Bioassay

IC25 = 538 mg/L

Daphnia magna 48 Hour Static Renewal Bioassay (pH adjusted)

LC50= 1767; No Effect Level= 1250 mg/L

Fathead Minnow 7 Day Static Renewal Bioassay

LC50 Greater Than= 2000; IC25 = 2000 mg/L

Fathead Minnow 96 Hour Static Renewal Bioassay (pH adjusted)

LC50= 1960; No Effect Level= 313 mg/L

Mysid Shrimp 48 Hour Static Renewal Bioassay (pH adjusted)

10% Mortality= 16000; 0% Mortality= 8000 mg/L

Sheepshead Minnow 96 Hour Static Renewal Bioassay (pH adjusted)

0% Mortality= 16000 mg/L

BIODEGRADATION

BOD-28 (mg/g): 32
BOD-5 (mg/g): 10
COD (mg/g): 368
TOC (mg/g): 144

13 Disposal considerations

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
Not applicable.

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14 Transport information

DOT HAZARD: Not Applicable
PROPER SHIPPING NAME:

DOT EMERGENCY RESPONSE GUIDE #: Not applicable
Note: Some containers may be DOT exempt, please check BOL for exact container classification

15 Regulatory information

TSCA:

All components of this product are included on or are in compliance with the U.S. TSCA regulations.

CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):

No regulated constituent present at OSHA thresholds

FOOD AND DRUG ADMINISTRATION:

FDA APPROVED FOR MILL SUPPLY WATER

NSF Registered and/or meets USDA (according to 1998 Guidelines):

Registration number: Not Registered

This product contains ingredients that have been determined as safe for use in boilers, steamlines and cooling systems where there is no food contact. (G7)

SARA SECTION 312 HAZARD CLASS:

Product is non-hazardous under Section 311/312

SARA SECTION 302 CHEMICALS:

No regulated constituent present at OSHA thresholds

SARA SECTION 313 CHEMICALS:

No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):

No regulated constituents present

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 Other information

HMIS VII

CODE TRANSLATION

Health	1	Slight Hazard
Fire	1	Slight Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	B	Goggles, Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
	-----	-----	-----
MSDS status:	29-JAN-1997		** NEW **
	10-SEP-1997	3,8,10,11,16;EDIT:4	29-JAN-1997
	06-FEB-1998	12	10-SEP-1997
	18-JAN-2001	15	06-FEB-1998
	31-AUG-2001	15	18-JAN-2001
	30-OCT-2001	4	31-AUG-2001
	17-APR-2006	7,8	30-OCT-2001
	02-OCT-2008	4,5,8,10	17-APR-2006
	05-FEB-2009	12	02-OCT-2008

DeposiTrol™ PY5200

Cooling Water Polymeric Dispersant

- Patented calcium phosphate scale inhibitor
- Advanced polymer technology
- Permits proper phosphate concentration for corrosion inhibition of mild steel
- Provides excellent dispersion of suspended solids

Description and Use

DeposiTrol™ PY5200 is a unique deposit control agent for use in cooling water systems. It incorporates a polymeric agent, GE Infrastructure Water & Process Technologies HPS I, a third generation cooling water polymer.

Typical Applications

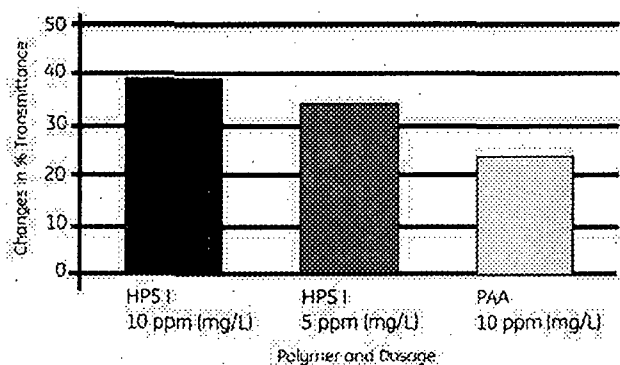


Figure 1: Clay Dispersion

DeposiTrol PY5200 controls calcium phosphate formation and general deposition such as silt (see Figure 1), iron, and suspended solids. It is particularly effective in the presence of certain contaminants, such as results from cationic carryover from clarifiers, or in the case where boiler blowdown is added to the cooling system for discharge or water conservation purposes.

DeposiTrol PY5200 is designed to be applied as one component of a Dianodic Plus™ program. With DeposiTrol PY5200, phosphate concentrations in a

Dianodic Plus treatment can be maintained at a high enough level to promote the formation of a passivating film on mild steel, thereby attaining the desired corrosion protection.

Treatment and Feeding Requirement

Dosage - The proper treatment levels of DeposiTrol PY5200 depend on the specific needs of your system. The product should be fed in accordance with control procedures that GE establishes for a particular application. For consistent protection, continuous feed is recommended.

Feed point - DeposiTrol PY5200 should be fed to a point in the system where it will be rapidly mixed with the bulk cooling water.

Dilution - DeposiTrol PY5200 can be diluted with good quality water to convenient feeding strengths.

Feed Equipment - Tanks, pumps, piping, and valves should be made of stainless steel, polyethylene, polypropylene, PVC, Hypalon, or Teflon. Mild steel should not be used.

Physical Properties

Physical properties of DeposiTrol PY5200 are shown on the Material Safety Data Sheet, a copy of which is available on request.

Packaging Information

DeposiTrol PY5200 is a liquid blend available in a wide variety of customized containers and delivery methods. Contact your GE representative for details.

Safety Precautions

A Material Safety Data Sheet containing detailed information about this product is available upon request.



Visit us online at www.gewater.com
©2004, General Electric Company.
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Global Headquarters
Trevose, PA
215-355-3300

North America
Minnetonka, MN
952-933-2277

Europe/Middle East/Africa
Heverlee, Belgium
32-16-40-20-00

Asia/Pacific
Shanghai, China
86-21-5298-4573

Products mentioned are trademarks of the General Electric Company and may be registered in one or more countries.

PFC756EN0410



Material Safety Data Sheet

Issue Date: 09-MAR-2009
Supercedes:

FLOGARD MS6236

1 Identification

Identification of substance or preparation
FLOGARD MS6236

Product Application Area
Once-through system treatment

Company/Undertaking Identification
GE Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
T 215 355-3300, F 215 953 5524

Emergency Telephone
(800) 877-1940

Prepared by Product Stewardship Group: T 215-355-3300 Prepared on: 09-MAR-2009

2 Hazard(s) identification

EMERGENCY OVERVIEW

CAUTION

May cause slight irritation to the skin. May cause moderate irritation to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.

DOT hazard: Corrosive to aluminum, RQ
Odor: None; Appearance: Colorless, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media:
dry chemical, carbon dioxide, foam or water

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:

Primary route of exposure; May cause slight irritation to the skin.

ACUTE EYE EFFECTS:

May cause moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:

Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:

May cause gastrointestinal irritation.

TARGET ORGANS:

No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:

Not known.

SYMPTOMS OF EXPOSURE:

May cause redness or itching of skin.

3 Composition / information on ingredients

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

Cas#	Chemical Name	Range (w/w%)
7758-29-4	SODIUM TRIPOLYPHOSPHATE Potential irritant	15-40
7664-38-2	PHOSPHORIC ACID Corrosive	1-5

4 First-aid measures

SKIN CONTACT:

Wash thoroughly with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

EYE CONTACT:

Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.

INHALATION:

If nasal, throat or lung irritation develops - remove to fresh air and get medical attention.

INGESTION:

Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 2-8 fluid ounces (60-240 mL) of milk or water.

NOTES TO PHYSICIANS:

No special instructions

5 Fire-fighting measures

FIRE FIGHTING INSTRUCTIONS:

Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

EXTINGUISHING MEDIA:

dry chemical, carbon dioxide, foam or water

HAZARDOUS DECOMPOSITION PRODUCTS:

oxides of phosphorus

FLASH POINT:

> 213F > 101C P-M(CC)

6 Accidental release measures

PROTECTION AND SPILL CONTAINMENT:

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container.

Flush area with water. Wet area may be slippery. Spread sand/grit.

DISPOSAL INSTRUCTIONS:

Water contaminated with this product may be sent to a sanitary sewer treatment facility, in accordance with any local agreement, a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7 Handling and storage

HANDLING:

Normal chemical handling.

STORAGE:

Keep containers closed when not in use. Protect from freezing. If frozen, thaw and mix completely prior to use. Store below 100F (38C). Shelf life 360 days.

8 Exposure controls / personal protection

EXPOSURE LIMITS**CHEMICAL NAME****SODIUM TRIPOLYPHOSPHATE**

PEL (OSHA): NOT DETERMINED

TLV (ACGIH): NOT DETERMINED

PHOSPHORIC ACID

PEL (OSHA): 1 MG/M3

TLV (ACGIH): 1 MG/M3

ENGINEERING CONTROLS:

Adequate ventilation to maintain air contaminants below exposure limits.

PERSONAL PROTECTIVE EQUIPMENT:

Use protective equipment in accordance with 29CFR 1910 Subpart I

RESPIRATORY PROTECTION:

A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.

USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.

If air-purifying respirator use is appropriate, use any of the following particulate respirators: N95, N99, N100, R95,

R99, R100, P95, P99 or P100.

SKIN PROTECTION:

rubber, butyl, viton or neoprene gloves -- Wash off after each use. Replace as necessary.

EYE PROTECTION:

splash proof chemical goggles

9 Physical and chemical properties

Specific Grav. (70F, 21C)	1.388	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	~ 35	Vapor Density (air=1)	< 1.00
Freeze Point (C)	~ 2		
Viscosity(cps 70F, 21C)	27	% Solubility (water)	100.0
Odor	None		
Appearance	Colorless		
Physical State	Liquid		
Flash Point	P-M(CC) > 213F > 100C		
pH As Is (approx.)	5.4		
Evaporation Rate (Ether=1)	< 1.00		
Percent VOC:	0.0		

NA = not applicable ND = not determined

10 Stability and reactivity

CHEMICAL STABILITY:

Stable under normal storage conditions.

POSSIBILITY OF HAZARDOUS REACTIONS:

No known hazardous reactions.

INCOMPATIBILITIES:

May react with strong oxidizers.

DECOMPOSITION PRODUCTS:

oxides of phosphorus

11 Toxicological information

No Data Available.

12 Ecological information

AQUATIC TOXICOLOGY

Ceriodaphnia 48 Hour Static Renewal Bioassay

LC50= 2191; No Effect Level= 360 mg/L

Ceriodaphnia 7 Day Chronic Bioassay

IC25 = 505; LC50= 1200 mg/L

Fathead Minnow 7 Day Chronic Bioassay

IC25 = 1647; LC50= 2146 mg/L

Fathead Minnow 96 Hour Static Renewal Bioassay

LC50= 2146 mg/L

BIODEGRADATION

No Data Available.

13 Disposal considerations

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :

Not applicable.

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14 Transport information

DOT HAZARD:

Corrosive to aluminum, RQ

PROPER SHIPPING NAME:

CORROSIVE LIQUID, ACIDIC, INORGANIC,
N.O.S. (SODIUM TRIPOLYPHOSPHATE,
PHOSPHORIC ACID)

8, UN 3264, PG III, RQ

DOT EMERGENCY RESPONSE GUIDE #: 154

Note: Some containers may be DOT exempt, please check BOL for exact container classification

15 Regulatory information

TSCA:

All components of this product are included on or are in compliance with the U.S. TSCA regulations.

CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):

2,276 gallons due to SODIUM TRIPOLYPHOSPHATE;

NSF Registered and/or meets USDA (according to 1998 Guidelines):

Registration number: Not Registered

SARA SECTION 312 HAZARD CLASS:

Immediate(acute)

SARA SECTION 302 CHEMICALS:

No regulated constituent present at OSHA thresholds

SARA SECTION 313 CHEMICALS:

No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION

CALIFORNIA SAFE DRINKING WATER AND TOXIC

ENFORCEMENT ACT (PROPOSITION 65):

No regulated constituents present

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 Other information

HMIS VII

CODE TRANSLATION

Health	1	Slight Hazard
Fire	0	Minimal Hazard
Reactivity	0	Minimal Hazard
Special	NONE	No special Hazard
(1) Protective Equipment	B	Goggles, Gloves

(1) refer to section 8 of MSDS for additional protective equipment

recommendations.

CHANGE LOG

EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
-----	-----	-----
MSDS status: 09-MAR-2009		** NEW **

FloGard™ MS6236

Corrosion Inhibitor

- Corrosion inhibitor for mild steel

Description and Use

FloGard MS6236 is a liquid polyphosphate product designed to inhibit corrosion of mild steel in once-through cooling water systems.

At typical use levels, the polyphosphates in FloGard MS6236 combine with calcium and/or zinc to form a barrier film as a cathodic inhibitor.

Treatment and Feeding Requirements

Proper treatment levels for FloGard MS6236 depend on many factors, such as the calcium concentration and pH of the water, and other conditions particular to a given installation. This product should be used in accordance with control procedures GE Water & Process Technologies establishes for a specific application. FloGard MS6236 may be fed directly from the shipping container or diluted to a convenient strength. For best results, this product should be fed continuously.

General Properties

Physical properties of FloGard MS6236 are shown on the Material Safety Data Sheet, a copy of which is available upon

Packaging Information

FloGard MS6236 is a liquid blend, available in a variety of containers and delivery methods. Contact your GE representative for details.

Storage

Protect from freezing. If this product is frozen during shipment or storage, slight mixing may be required to ensure homogeneity.

Safety Precautions

A Material Safety Data Sheet containing detailed information about this product is available on request.



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FS0000EN 0606



Material Safety Data Sheet

Issue Date: 05-FEB-2009
Supercedes: 31-OCT-2008

SPECTRUS BD1500

1 Identification

Identification of substance or preparation
SPECTRUS BD1500

Product Application Area
Water-based deposit control agent.

Company/Undertaking Identification
GE Betz, Inc.
4636 Somerton Road
Trevose, PA 19053
T 215 355-3300, F 215 953 5524

Emergency Telephone
(800) 877-1940

Prepared by Product Stewardship Group: T 215-355-3300 Prepared on: 05-FEB-2009

2 Hazard(s) identification

EMERGENCY OVERVIEW

CAUTION

May cause slight irritation to the skin. May cause moderate irritation to the eyes. Mists/aerosols may cause irritation to upper respiratory tract.

DOT hazard is not applicable
Odor: Slight; Appearance: Colorless, Liquid

Fire fighters should wear positive pressure self-contained breathing apparatus(full face-piece type). Proper fire-extinguishing media: dry chemical, carbon dioxide, foam or water

POTENTIAL HEALTH EFFECTS

ACUTE SKIN EFFECTS:

Primary route of exposure; May cause slight irritation to the skin.

ACUTE EYE EFFECTS:

May cause moderate irritation to the eyes.

ACUTE RESPIRATORY EFFECTS:

Mists/aerosols may cause irritation to upper respiratory tract.

INGESTION EFFECTS:

May cause slight gastrointestinal irritation.

TARGET ORGANS:

No evidence of potential chronic effects.

MEDICAL CONDITIONS AGGRAVATED:

Not known.

SYMPTOMS OF EXPOSURE:

May cause redness or itching of skin.

3 Composition / information on ingredients

Information for specific product ingredients as required by the U.S. OSHA HAZARD COMMUNICATION STANDARD is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

HAZARDOUS INGREDIENTS:

This product is not hazardous as defined by OSHA regulations.

No component is considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration at OSHA thresholds for carcinogens.

4 First-aid measures

SKIN CONTACT:

Wash thoroughly with soap and water. Remove contaminated clothing. Get medical attention if irritation develops or persists.

EYE CONTACT:

Remove contact lenses. Hold eyelids apart. Immediately flush eyes with plenty of low-pressure water for at least 15 minutes. Get immediate medical attention.

INHALATION:

If nasal, throat or lung irritation develops - remove to fresh air and get medical attention.

INGESTION:

Do not feed anything by mouth to an unconscious or convulsive victim. Do not induce vomiting. Immediately contact physician. Dilute contents of stomach using 2-8 fluid ounces (60-240 mL) of milk or water.

NOTES TO PHYSICIANS:

No special instructions

5 Fire-fighting measures

FIRE FIGHTING INSTRUCTIONS:

Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

EXTINGUISHING MEDIA:

dry chemical, carbon dioxide, foam or water

HAZARDOUS DECOMPOSITION PRODUCTS:

oxides of carbon

FLASH POINT:

> 200F > 93C SETA(CC)

6 Accidental release measures

PROTECTION AND SPILL CONTAINMENT:

Ventilate area. Use specified protective equipment. Contain and absorb on absorbent material. Place in waste disposal container.

Flush area with water. Wet area may be slippery. Spread sand/grit.

DISPOSAL INSTRUCTIONS:

Water contaminated with this product may be sent to a sanitary sewer treatment facility, in accordance with any local agreement, a permitted waste treatment facility or discharged under a permit. Product as is - Incinerate or land dispose in an approved landfill.

7 Handling and storage

HANDLING:

Alkaline. Do not mix with acidic material.

STORAGE:

Keep containers closed when not in use. Reasonable and safe chemical storage.

8 Exposure controls / personal protection

EXPOSURE LIMITS

This product is not hazardous as defined by OSHA regulations.

ENGINEERING CONTROLS:

adequate ventilation

PERSONAL PROTECTIVE EQUIPMENT:

Use protective equipment in accordance with 29CFR 1910 Subpart I

RESPIRATORY PROTECTION:

A RESPIRATORY PROTECTION PROGRAM THAT MEETS OSHA'S 29 CFR 1910.134 AND ANSI Z88.2 REQUIREMENTS MUST BE FOLLOWED WHENEVER WORKPLACE CONDITIONS WARRANT A RESPIRATOR'S USE.

USE AIR PURIFYING RESPIRATORS WITHIN USE LIMITATIONS ASSOCIATED WITH THE EQUIPMENT OR ELSE USE SUPPLIED AIR-RESPIRATORS.

If air-purifying respirator use is appropriate, use any of the following particulate respirators: N95, N99, N100, R95, R99, R100, P95, P99 or P100.

SKIN PROTECTION:

rubber, butyl or viton gloves -- Wash off after each use. Replace as necessary.

EYE PROTECTION:

splash proof chemical goggles

9 Physical and chemical properties

Specific Grav. (70F, 21C)	1.020	Vapor Pressure (mmHG)	~ 18.0
Freeze Point (F)	31	Vapor Density (air=1)	< 1.00
Freeze Point (C)	-1		
Viscosity (cps 70F, 21C)	30	% Solubility (water)	100.0
Odor		Slight	
Appearance		Colorless	
Physical State		Liquid	
Flash Point	SETA(CC)	> 200F > 93C	
pH As Is (approx.)		12.5	
Evaporation Rate (Ether=1)		< 1.00	
Percent VOC:		0.0	

NA = not applicable ND = not determined

10 Stability and reactivity

CHEMICAL STABILITY:

Stable under normal storage conditions.

POSSIBILITY OF HAZARDOUS REACTIONS:

INCOMPATIBILITIES:

May react with strong oxidizers.

DECOMPOSITION PRODUCTS:

oxides of carbon

11 Toxicological information

Oral LD50 RAT:	>4,600 mg/kg
NOTE - Estimated value	
Dermal LD50 RABBIT:	>2,000 mg/kg
NOTE - Estimated value	

12 Ecological information

AQUATIC TOXICOLOGY

Ceriodaphnia 48 Hour Static Renewal Bioassay
LC50 Greater Than= 3000 mg/L

Ceriodaphnia 7 Day Static Renewal Bioassay
IC25 = 652 mg/L

Daphnia magna 48 Hour Static Acute Bioassay
0% Mortality= 2000 mg/L

Fathead Minnow 7 Day Static Renewal Bioassay
IC25 = 3000; LC50 Greater Than= 3000 mg/L

Fathead Minnow 96 Hour Static Bioassay with 48-Hour Renewal
0% Mortality= 2000 mg/L

Menidia beryllina (Silversides) 96 Hour Static Acute Bioassay
0% Mortality= 5000 mg/L

Mysid Shrimp 96 Hour Static Acute Bioassay
25% Mortality= 5000; No Effect Level= 2500 mg/L

Rainbow Trout 96 Hour Static Renewal Bioassay
No Effect Level= 3000 mg/L

No Data Available.

BIODEGRADATION

BOD-28 (mg/g): 5
BOD-5 (mg/g): 4
COD (mg/g): 341
TOC (mg/g): 80

13 Disposal considerations

If this undiluted product is discarded as a waste, the US RCRA hazardous waste identification number is :
D002=Corrosive(pH).

Please be advised; however, that state and local requirements for waste disposal may be more restrictive or otherwise different from federal regulations. Consult state and local regulations regarding the proper disposal of this material.

14 Transport information

DOT HAZARD: Not Applicable
PROPER SHIPPING NAME:

DOT EMERGENCY RESPONSE GUIDE #: Not applicable
Note: Some containers may be DOT exempt, please check BOL for exact container classification

15 Regulatory information

TSCA:

All components of this product are included on or are in compliance with the U.S. TSCA regulations.

CERCLA AND/OR SARA REPORTABLE QUANTITY (RQ):

No regulated constituent present at OSHA thresholds

FOOD AND DRUG ADMINISTRATION:

21 CFR 176.170 (components of paper and paperboard in contact with aqueous and fatty foods).

NSF Registered and/or meets USDA (according to 1998 Guidelines):

Registration number: 141059

Category Code(s):

SARA SECTION 312 HAZARD CLASS:

Product is non-hazardous under Section 311/312

SARA SECTION 302 CHEMICALS:

No regulated constituent present at OSHA thresholds

SARA SECTION 313 CHEMICALS:

No regulated constituent present at OSHA thresholds

CALIFORNIA REGULATORY INFORMATION**CALIFORNIA SAFE DRINKING WATER AND TOXIC
ENFORCEMENT ACT (PROPOSITION 65):**

This product contains one or more ingredients at trace levels known to the state of California to cause cancer and reproductive toxicity.

MICHIGAN REGULATORY INFORMATION

No regulated constituent present at OSHA thresholds

16 Other information

HMIS VII

CODE TRANSLATION

Health	1	Slight Hazard
Fire	0	Minimal Hazard
Reactivity	0	Minimal Hazard
Special	ALK	pH above 12.0
(1) Protective Equipment	B	Goggles, Gloves

(1) refer to section 8 of MSDS for additional protective equipment recommendations.

CHANGE LOG

	EFFECTIVE DATE	REVISIONS TO SECTION:	SUPERCEDES
	-----	-----	-----
MSDS status:	14-JUL-1997		** NEW **
	09-SEP-1998	15	14-JUL-1997
	15-SEP-1998	15	09-SEP-1998
	25-JUN-1999	11	15-SEP-1998
	02-APR-2001	12	25-JUN-1999
	25-JUN-2001	15	02-APR-2001
	05-OCT-2001	4, 16	25-JUN-2001
	10-JAN-2002	15	05-OCT-2001
	18-JAN-2002	15	10-JAN-2002
	07-FEB-2006	12	18-JAN-2002
	10-JUL-2008	4, 8, 11, 15	07-FEB-2006
	31-OCT-2008	11	10-JUL-2008
	05-FEB-2009	12	31-OCT-2008

Spectrus™ BD1500

Biocide Enhancer

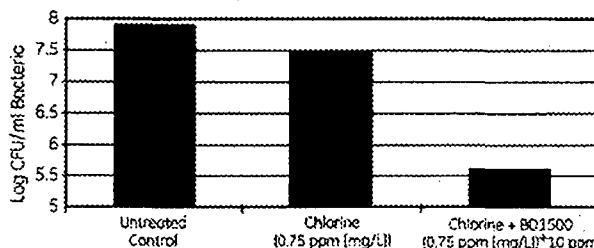
- Improves the ability of biocides to control microbiological fouling
- Can be used with both oxidizing and non-oxidizing biocides
- Compatible with all GE water treatment programs

Description and Use

Spectrus™ BD1500 is a blend of non-ionic ingredients specifically formulated to assist in the control of microbiological fouling in industrial water systems. Control of microbiological populations in industrial water systems is essential to prevent biofouling. In cooling systems, biofouling of heat exchange equipment and tower fill reduces heat transfer efficiency and can force unscheduled shutdowns and extended turnarounds leading to lost production. Equipment can also be damaged as a result of microbiologically influenced corrosion (MIC) associated with biofouling. Consequently, biofouling must be prevented in order for operating units to avoid such events and achieve profit goals.

Although Spectrus BD1500 has no biocidal activity of its own, it can significantly enhance the effectiveness of biocides applied to industrial water systems (see chart). Spectrus BD1500 can be used with oxidizing biocides (such as chlorine, bromine, or chlorine dioxide) as well as nonoxidizing biocides.

Spectrus BD1500 is especially useful when acceptable control of biological activity cannot be achieved with biocides alone. For example the use of this product may be indicated where biocide usage or biocide discharge is limited by environmental regulations.



Spectrus BD1500 Improves Performance of Halogen

Treatment and Feeding Requirements

The typical feed range for Spectrus BD1500 ranges from 10 to 50 ppm (mg/L) in the cooling water. Actual dosage and frequency of Spectrus BD1500 addition will depend on many factors. These include, but are not limited to, system cleanliness, types of microbes, nutrient concentrations, temperature, pH, retention time, and other system operating characteristics. Microbiological monitoring is recommended to evaluate product requirements. Consult your GE representative for technical advice on your specific application.

Spectrus BD1500 should be fed in conjunction with biocides that are EPA approved for use in industrial water systems. If the biocide is fed continuously (e.g., continuous chlorination), feed Spectrus BD1500 continuously as well. In such systems, feed Spectrus BD1500 at a rate sufficient to generate the desired treatment residual (typically 5 to 15 ppm (mg/L)) in the blowdown of recirculating cooling systems or in the total water flow of once-through cooling systems. In once-through cooling systems and other systems that are halogenated intermittently, begin feeding 5 to 15 ppm (mg/L) of Spectrus BD1500 30 minutes to 1 hour prior to the start of halogenation and continue for the duration of the halogen feed period. If the biocide is slug-fed, apply Spectrus BD1500 in a similar fashion. Base the quantity fed on the total system volume.



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PFC721EN 0410

Spectrus BD1500 has the potential to cause foaming, especially at higher dosages. If foam is a concern, have an antifoam available when using this product.

Feed point - Apply Spectrus BD1500 to a point in the system where turbulence and flow patterns assure good mixing with the water being treated.

Dilution - This blended product is best fed neat (undiluted) from the storage container. If necessary (e.g., for feeding from a day tank), the product can be diluted with water.

Compatible Materials - Spectrus BD1500 is compatible with the following materials of construction: Low Carbon Steel, Stainless Steel, Copper, Brass, PVC, High-Density Cross-linked Polyethylene, Polypropylene, Kynar, Teflon, Nylon, Viton A, Buna N, Urethane, Neoprene, Natural Rubber, Viton Litharge. (Kynar is a registered trademark of Autofina Chemicals, Teflon and Viton are registered trademarks of DuPont.)

Avoid - Aluminum, High and Low Density Uncrosslinked Polyethylene, Polysulfide, Hypalon, Buna S, Tygon. (Tygon is a registered trademark of Norton Co.)

General Properties

Physical properties of Spectrus BD1500 are shown on the Material Safety Data Sheet, a copy of which is available on request.

Packaging Information

Spectrus BD1500 is a liquid and is available in a wide variety of containers and delivery methods, including GE's ChemSure™ Drumless Delivery Services

Storage

Store Spectrus BD1500 at moderate temperatures. Protect from freezing. If frozen, thaw completely and mix thoroughly prior to use.

Safety Precautions

A Material Safety Data Sheet containing detailed information about this product is available upon request.