



NEOLONE™ 950

A Safe, Broad Spectrum Bactericide for the Preservation of Leave-on Products

Features, Benefits and Applications of NEOLONE 950 Preservative

In the early 1980's, Rohm and Haas Company, the world's leading supplier of antimicrobial technology, introduced Kathon CG preservative. Today, Kathon CG has an established history of successful use as a broad spectrum microbicide in rinse-off applications. Now, our unique knowledge of isothiazolinone chemistry has resulted in NEOLONE bactericides. These broad spectrum bactericides are particularly suitable as replacements for formaldehyde donors in leave-on applications such as skin care formulations and sun care formulations, Zinc pyrithione-based antidandruff shampoos, high pH surfactant systems and high pH liquid cleaners.

Our choice for personal care formulations is NEOLONE 950, a safe, effective, soon-to-be globally approved preservative. Based on our popular isothiazolinone technology, NEOLONE 950 preservative provides formulators of personal care products with a non formaldehyde-releasing bactericidal solution. NEOLONE 950 preservative is effective at very low use levels, is compatible with existing fungicides like parabens and is more stable in difficult to preserve high pH formulations. And NEOLONE 950 is supported by extensive toxicology studies and global regulatory dossiers.

We Supply More Than a Preservative

In the current regulatory climate, where more and more data are required by regulatory authorities, it is important not only to choose a high purity and consistent quality preservative, but also the right supplier who is able to give you the technical, regulatory and commercial support that you need. Rohm and Haas has more than 30 years of experience with isothiazolinone chemistry and over 100 patents. To support the use of our products, we maintain the following information on NEOLONE 950:

- Complete regulatory dossiers
- Extensive toxicological databases
- Environmental fate database that is continually updated
- Safe handling expertise that can help you in your manufacturing facilities
- Technical expertise with isothiazolinone chemistry
- Public relations/media expertise and support

Features and Benefits

- Broad spectrum bactericide
- Effective alternative to formaldehyde donors
- Easy to dose and highly water soluble
- Effective at low use levels
- Excellent stability in a variety of matrices over a wide range of pH (2 to 12) and temperatures
- Compatible with a variety of fungicides and bactericides
- Compatible with a wide range of personal care raw materials, including surfactants and emulsifiers, zinc pyrithione and avobenzone
- Safe to use at recommended use levels
- Excellent environmental profile: rapidly degrades, does not bioaccumulate and is non-persistent in the environment

Applications

- Hair gels
- Hand and body lotions
- Sun care products (including those with avobenzone)
- Wipes
- Zinc pyrithione-based antidandruff shampoos

Physical and Chemical Characteristics

Chemical Identification

The active ingredient of NEOLONE preservative is an isothiazolinone identified by the Chemical Abstract and IUPAC system of nomenclatures as 2-Methyl-4-isothiazolin-3-one and 2-Methyl-3(2H)isothiazolinone.

CTFA/INCI Name	CAS Number	Empirical Formula
Methylisothiazolinone	2682-20-4	C ₄ H ₅ NOS

Typical Properties

NEOLONE 950 preservative is a precise formulation of 9.5% active ingredient in water. Every batch of NEOLONE 950 is manufactured to exact specifications, and a certificate of analysis can be provided with each order.

Physical and Chemical Properties

These properties are typical but do not constitute specifications.

Appearance	Clear liquid
Color	APHA <100
pH (10% solution)	3 to 6
Specific Gravity	1.02
Solubility	Totally miscible in water, lower alcohols and glycols, low solubility in hydrocarbons
Stability	One year at ambient temperatures and at least six months at 50°C

Current Regulatory Status

NEOLONE 950 for Global Formulations

Extensive databases and global expertise provide Rohm and Haas with a solid foundation for obtaining registration and global approval for NEOLONE 950.

Recommended Use Directions

The recommended use level for NEOLONE 950 is 0.05% - 0.1% (48 - 95 ppm of active ingredient) of NEOLONE 950 as supplied.

Conversion of % Active Ingredient to % Product

Active Ingredient PPM	Active Ingredient %	% Product NEOLONE 950
50	0.0050	0.053
75	0.0075	0.079
100	0.0100	0.105

NEOLONE 950 preservative should be added as the last ingredient and at the lowest temperature ($\leq 45^{\circ}\text{C}$ if possible). Since the components of personal care formulations vary considerably and may impact on the effect of preservatives, we urge each manufacturer to confirm the efficacy and stability of NEOLONE 950 in use.

Microbiological Properties

NEOLONE 950 preservative exhibits outstanding antimicrobial activity, inhibiting a wide variety of Gram-positive

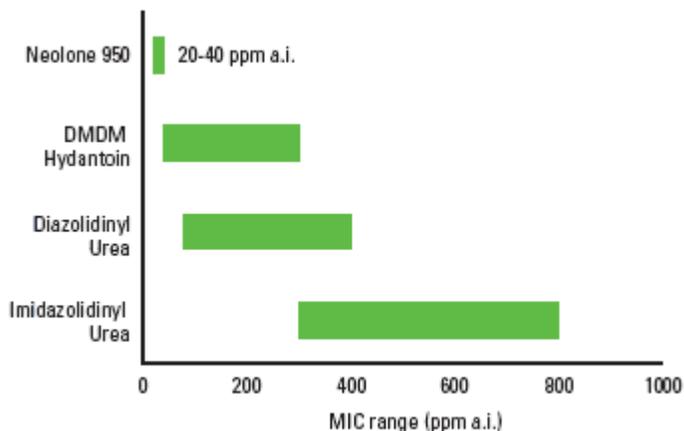
and Gram-negative bacteria. The following table gives the minimum inhibitory concentration (MIC) in ppm active ingredient methylisothiazolinone, which inhibited the growth of various microorganisms in broth tests. The figure below shows comparative MIC ranges against bacteria for methylisothiazolinone and other personal care preservatives.

MIC Values

Organism	ATCC No.	MIC (ppm A.I.)
Bacteria		
<i>Enterobacter aerogenes</i>	15038	30
<i>Pseudomonas aeruginosa</i>	15442	40
<i>Burkholderia cepacia</i>	17765	20
<i>Pseudomonas oleovorans</i>	8062	30
<i>Pseudomonas putida</i>	795	20
<i>Staphylococcus aureus</i>	6538	40
<i>Serratia marcescens</i>	Lab Isolate	30

Minimal Inhibitory Concentrations Test Parameters: Nutrient Broth, 30°C/pH 7, 24 Hour Contact Time

Comparison of Bacterial Activity of Personal Care Preservatives



Conclusions:

- NEOLONE 950 preservative inhibits a wide variety of bacteria at low active ingredient levels.
- Overall, MIC values for NEOLONE 950 preservative are lower compared to other bacterial preservatives.

Proven Performance in Leave-on Applications

The microbiological performance of NEOLONE 950 preservative in most products is excellent. Long-term microbiological protection is obtained employing use levels up to 100 ppm of active ingredient. Typical use levels for most personal care products are in the range of 50 ppm to 100 ppm of active ingredient. For each formulation, it is important to ensure stability of the active ingredient and assess the efficacy through a microbiological challenge test. The tables on the following pages illustrate the results obtained when evaluating the preservative efficacy of NEOLONE 950 in a variety of personal care products.

Rohm and Haas typically uses a 4-week challenge test with separate inoculation of a mixed pool of common spoilage bacteria and a mixed pool of common spoilage fungi, coupled with an analysis of the active ingredient by

High-Performance Liquid Chromatography (HPLC).

The bacterial and fungal efficacy of NEOLONE 950 preservative was determined in an anionic body lotion by dosing samples with the manufacturer’s recommended use level of preservative. The samples were inoculated at time zero with a mixed pool of bacteria and fungi to obtain 10^5 - 10^6 CFU/g (Colony Forming Unit) and stored at 25° C for the duration of the test. The samples were monitored for the survival of viable microorganisms at 3, 7, 14, and 28 days after inoculation using a standard streak plate method. The number of colony forming units per gram of sample (CFU/g) was estimated based on a visual rating of the amount of growth on the plate. The preservative was deemed effective if no microorganisms survived in the sample.

Efficacy of NEOLONE 950 in an Anionic Body Lotion

Preservative Systems	Concentration (% a.i.)	Estimated CFU/g after day:			
		3	7	14	28
Bacteria					
Unpreserved Control	0	10^5	10^5	10^5	10^5
NEOLONE 950/MP ¹ /PP ²	0.0050/0.2/0.1	<10	<10	<10	<10
Imidazolidinyl urea/MP/PP	0.25/0.2/0.1	10^5	<10	<10	<10
DMDMH ³ /IPBC ⁴	0.095/0.005	10^5	<10	<10	<10
Fungi					
Unpreserved Control	0	> 10^5	> 10^5	> 10^5	> 10^5
NEOLONE 950/MP/PP	0.0050/0.2/0.1	<10	<10	10^2	<10
Imidazolidinyl urea/MP/PP	0.25/0.2/0.1	> 10^5	10^4	10^4	10^3
DMDMH/IPBC	0.095/0.005	> 10^5	<10	<10	<10

¹ MP - Methylparaben

² PP - Propylparaben

³ DMDMH - Dimethyldimethyl Hydantoin

⁴ IPBC - Iodopropynyl Butylcarbamate

Efficacy of NEOLONE 950 in Sunscreen Formulations

The bacterial and fungal efficacy of NEOLONE 950 in three sunscreen formulations was determined by dosing samples with the manufacturers’ recommended use level of preservative. One set of samples was inoculated at time zero with a mixed pool of bacteria to obtain 10^7 - 10^8 CFU/g of sample; a duplicate set was inoculated with a mixed pool of fungi to obtain 10^5 - 10^6 CFU/g of sample. Bacterial samples were stored at 30°C and fungal samples were stored at 25°C for the duration of the test. The samples were monitored for viable microorganisms at 7, 14 and 28 days after inoculation using a standard pour plate method. The preservative was deemed effective if no microorganisms survived in the samples.

Efficacy of NEOLONE 950 in a European Sunscreen Containing Avobenzone*

Preservative Systems	Concentration (% a.i.)	CFU/g after day:		
		7	14	28
Bacteria				
Unpreserved Control	0	10^8	10^8	10^7
NEOLONE 950/MP ¹ /PP ²	0.0100/0.20/0.10	<10	<10	<10
DMDM Hydantoin/IPBC ³	0.052/0.005	<10	<10	<10
Imidazolidinyl urea/MP/PP	0.24/0.20/0.10	10^3	<10	<10
MP/PP	0.20/0.10	10^7	10^5	10^7

Fungi

Preservative Systems	Concentration (% a.i.)	CFU/g after day: 7	CFU/g after day: 14	CFU/g after day: 28
Unpreserved Control	0	10 ⁵	10 ⁵	10 ⁵
NEOLONE 950/MP/PP	0.0100/0.20/0.10	<10	<10	<10
DMDM Hydantoin/IPBC	0.052/0.005	10 ⁵	10 ³	10 ⁵
Imidazolidinyl urea/MP/PP	0.24/0.20/0.10	10 ⁴	10 ⁴	10 ⁶
MP/PP	0.20/0.10	10 ⁴	10 ⁵	10 ⁵

¹ MP - Methylparaben

² PP - Propylparaben

³ IPBC - Iodopropynyl Butylcarbamate

* contains 2% avobenzene

Efficacy of NEOLONE 950 in a US High SPF Sunscreen Containing Avobenzene*

Preservative Systems	Concentration (% a.i.)	CFU/g after day:		
		7	14	28
Bacteria				
Unpreserved Control	0	<10	<10	10 ²
NEOLONE 950/MP ¹ /PP ²	0.0050/0.20/0.10	<10	<10	<10
NEOLONE 950/BENZYL ALCOHOL	0.0075/0.4	<10	<10	<10
Diazolidinyl urea/MP/PP	0.3/0.11/0.03	<10	<10	<10
Phenoxyethanol/MP/EP ³ /PP/BP ⁴	0.5/0.12/0.014/0.014/0.049	<10	<10	<10
Benzyl alcohol/MP/PP	0.44/0.11/0.055	<10	<10	<10
Fungi				
Unpreserved Control	0	10 ⁶	10 ⁵	10 ⁴
NEOLONE 950/MP/PP	0.0050/0.20/0.10	<10	<10	<10
NEOLONE 950/BENZYL ALCOHOL	0.0075/0.4	<10	<10	<10
Diazolidinyl urea/MP/PP	0.3/0.11/0.03	<10	<10	<10
Phenoxyethanol/MP/EP/PP/BP	0.5/0.12/0.014/0.014/0.049	10 ⁴	10 ²	<10
Benzyl alcohol/MP/PP	0.44/0.11/0.055	10 ⁴	10 ²	<10

¹ MP - Methylparaben

² PP - Propylparaben

³ EP - Ethylparaben

⁴ BP - Butylparaben

* contains 2% avobenzene

Efficacy of NEOLONE 950 in a ZnO/TiO₂ Sunscreen

Preservative Systems	Concentration (% a.i.)	CFU/g after day:		
		7	14	28
Bacteria				
Unpreserved Control	0	10 ⁸	10 ⁷	10 ⁸
NEOLONE 950/MP ¹ /PP ²	0.0050/0.20/0.10	<10	<10	<10
NEOLONE 950/BENZYL ALCOHOL	0.0075/0.4	<10	<10	<10

Diazolidinyl urea/MP/PP	0.3/0.11/0.03	<10	<10	<10
Phenoxyethanol/MP/EP ³ /PP/BP ⁴	0.5/0.12/0.014/0.014/0.049	<10	<10	<10
Benzyl alcohol/MP/PP	0.44/0.11/0.055	<10	<10	<10
Fungi				
Unpreserved Control	0	10 ⁵	10 ⁵	10 ⁵
NEOLONE 950/MP ¹ /PP ²	0.0100/0.20/0.10	<10	<10	<10
NEOLONE 950/BENZYL ALCOHOL	0.0075/0.4	<10	<10	<10
Diazolidinyl urea/MP/PP	0.3/0.11/0.03	10 ⁵	10 ⁵	10 ⁵
Phenoxyethanol/MP/EP ³ /PP/BP ⁴	0.5/0.12/0.014/0.014/0.049	10 ⁴	10 ¹	<10
Benzyl alcohol/MP/PP	0.44/0.11/0.055	10 ⁵	10 ³	10 ¹

¹ MP - Methylparaben

² PP - Propylparaben

³ EP - Ethylparaben

⁴ BP - Butylparaben

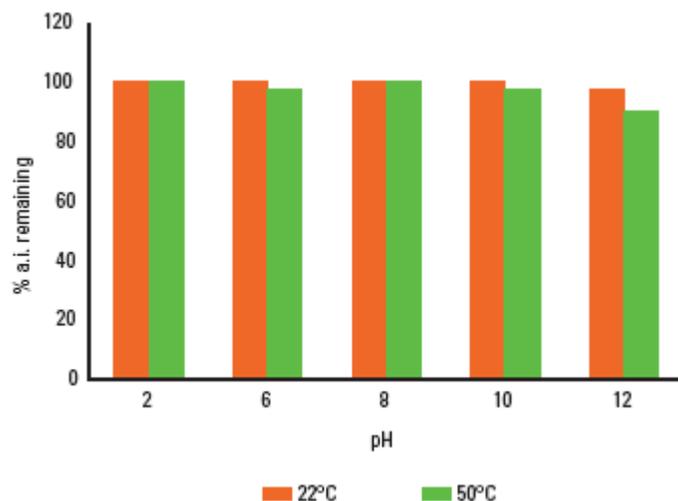
Conclusions:

- NEOLONE 950 is effective at 50 to 100 ppm active ingredient in combination with a fungicide in easier to contaminate skin care products.
- NEOLONE 950 is effective at 50 to 75 ppm active ingredient in more difficult to contaminate skin care products.
- NEOLONE 950 significantly improves the efficacy of fungicides such as parabens in sunscreens, which are highly susceptible to fungal contamination.

Chemical Stability

NEOLONE 950 preservative shows excellent stability in personal care formulations and with cosmetic raw materials. NEOLONE 950 preservative is stable over a wide range of pH and temperature conditions and is compatible with a variety of surfactants and proteins. The active ingredient is stable in lotions, sunscreens and in zinc pyrithione-based antidandruff shampoos. NEOLONE 950 preservative is stable in the presence of avobenzone, and NEOLONE 950 preservative does not adversely affect the stability of avobenzone. The data below demonstrate these formulation advantages.

Effect of pH and Temperature in Buffered Water Methylisothiazolinone Stability After 3 Weeks



NEOLONE 950 Stability in Surfactants

Matrix	% Active Ingredient Remaining at 4 Weeks:		
	25°C	42°C	50°C
Sodium Lauryl Ether Sulfate	100	100	100
Sodium Lauryl Sulfate	100	100	100
Cocamidopropyl Betaine	100	85	66
Sodium C ₁₄₋₁₆ Olefin Sulfonate	100	93	79
Ammonium Lauryl Sulfate	100	98	100
Sodium Dodecylbenzene Sulfonate	100	100	N/A
Sodium Lauroyl Sarcosinate	84	(52 weeks at 25°C)	

NEOLONE 950 Stability in Proteins

Matrix	% Active Ingredient Remaining at 12 Weeks:	
	35°C	
2% Keratin	86	
1% Collagen	91	
8% Elastin	94	
2% Hydrolyzed Animal Protein	93	

NEOLONE 950 Stability in Personal Care Products

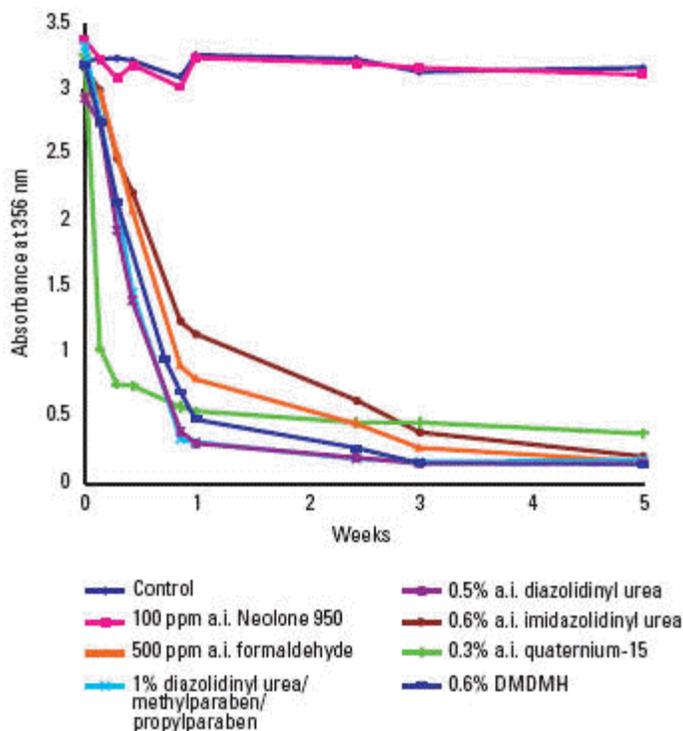
Matrix	Temperature	Time	% Active Ingredient
	°C	Weeks	Remaining
Anionic Body Lotion	45	4	93
US High SPF Sunscreen*	42	8	85
ZnO/TiO ₂ Sunscreen	42	8	100
Zinc pyrithione antidandruff Shampoo	45	4	100

*contains 2% avobenzone

Conclusions:

- NEOLONE 950 preservative is stable over a wide range of pH and temperature conditions.
- NEOLONE 950 preservative is stable in a variety of raw materials and personal care products, including surfactants and proteins, lotions, sunscreens containing avobenzone and zinc pyrithione-based antidandruff shampoos.

Compatibility with Avobenzone



NEOLONE 950 preservative is compatible with avobenzone, a UVA filter present in many sunscreen formulations. There was no degradation of NEOLONE 950 active ingredient in sunscreen formulations containing 2% avobenzone. In addition, unlike formaldehyde and formaldehyde-releasing preservatives, NEOLONE 950 preservative does not adversely affect avobenzone stability.

The compatibility of NEOLONE 950 preservative with avobenzone was determined by combining avobenzone with preservatives in a 10% acetonitrile: 90% ethanol mixture. The samples were stored at 50°C, and avobenzone stability was tracked by measuring the absorbance at 356 nm.

Conclusions:

- NEOLONE 950 preservative is stable in the presence of PARSOL 1789* UVA filter (avobenzone).
- NEOLONE 950 preservative does not adversely affect the stability of avobenzone.

*Parsol 1789 is a registered trademark of Givaudan Roure

Analytical Procedures

High Performance Liquid Chromatography (HPLC)

HPLC analysis is the preferred method for determining low levels of NEOLONE 950. This method can be used to determine NEOLONE 950 levels in many personal care products. If you require detailed information on HPLC methods, please contact your local Rohm and Haas sales office.

Toxicological Summary

The toxicology of the active ingredient of NEOLONE 950 preservative, methylisothiazolinone, has been assessed in an extensive battery of non-clinical and clinical testing. Results of these studies have demonstrated that NEOLONE 950 does not present a mutagenic, teratogenic, reproductive or carcinogenic risk to humans.

Acute Toxicity of NEOLONE 950:

Test Method	Findings
Acute Oral Toxicity, rat	LD ₅₀ = 2834 mg/kg (m), 1091 mg/kg (f)
Acute Dermal Toxicity, rat	LD ₅₀ >5000 mg/kg (m & f combined)
Skin Irritation, rabbit	Non-irritating when tested at maximum use concentration of 100 ppm a.i.
Eye Irritation, rabbit	Non-irritating when tested at maximum use concentration of 100 ppm a.i.
21-Day Cumulative Irritation and Sensitization Study, human	Threshold for irritation and sensitization is at or above 1000 ppm a.i.
Skin Sensitization, Human Repeat Insult Patch Tests (HRIPT)	No evidence of sensitization in subjects when tested up to and including 600 ppm a.i.
Phototoxicity Test, human	No evidence of phototoxicity when tested at 200 ppm a.i.
Photoallergy Test, human	No evidence of photoallergy when tested at 200 ppm a.i.

Note: a.i. = active ingredient

Mutagenicity Tests with Methylisothiazolinone:

Test Method	Findings
Ames Bacterial Mutation Assay, 4 strains of <i>Salmonella typhimurium</i>	Negative (not mutagenic)
Gene Mutation at the HGPRT Locus in Cultured Chinese Hamster Ovary Cells	Negative (not mutagenic)
<i>In Vitro</i> Cytogenetic Assay (Chromosome Aberrations in Chinese Hamster Ovary Cells)	Negative (not mutagenic)*
<i>In Vivo</i> Cytogenetic Assay (Micronucleus Assay in Mice)	Negative (not mutagenic)

*An increase in chromosomal aberrations was observed, but only in presence of marked cytotoxicity.

The use of NEOLONE 950 at recommended use levels is safe. This is supported by our extensive toxicological and clinical databases, our work with dermatologists worldwide and many years experience with safe use of isothiazolinone chemistry in a large number of personal care products worldwide. For further details on the complete toxicological profile of NEOLONE 950, please contact your local Rohm and Haas Account Manager.

Good Manufacturing Practices

A preservative is formulated into personal care products principally to protect them from chance microbial contamination during production, storage and final customer use. It should not be expected to cope with severe contamination problems brought about by poor manufacturing practices. In the manufacturing plant, it is important that all potential sources of microbial contamination are identified and controlled.

Some of the important sources of microbial contamination include:

- Raw materials
- Water supplies
- Poor housekeeping and plant design
- Poor hygiene
- Inadequate cleaning and sanitization protocols
- Product reworking

Once identified, steps can be taken to control the level of contamination. Good manufacturing practices, backed-up by regular and effective monitoring programs, are key factors. See Rohm and Haas publication "Preventing Microbial Contamination In Manufacturing."

Environmental Information

Rohm and Haas is continually expanding its already extensive knowledge on the environmental fate and toxicity of isothiazolinone preservatives. NEOLONE 950 preservative has the following environmental properties:

- Low use levels
- Rapidly biodegrades to non-toxic substances
- Not persistent in the environment
- Halogen free
- Does not affect the performance of wastewater treatment plants
- Does not bioaccumulate
- Predicted environmental concentration (PEC) will be significantly less than the toxic threshold and thus will have minimal environmental impact

A summary of the current environmental chemistry and toxicology data for NEOLONE 950 preservative is presented below.

Environmental Fate

Parameter	Value
Water Solubility	>50%
Log P (octanol/water)	- 0.5
Bioconcentration Factor (BCF)	3
Biodegradation	Inherently Biodegradable (56% mineralization to CO ₂)
Hydrolytic half-life	>30 days (stable)
Photolytic half-life	11 days
Half-life in biological microcosm (metabolites are about 5 orders of magnitude less toxic than parent)	9 hours

Ecotoxicology

Organism	Acute Toxicity Value*
Rainbow Trout	6 ppm (96 hr LC ₅₀)
Bluegill Sunfish	10 ppm (96 hr LC ₅₀)
<i>Daphnia Magna</i>	1.9 ppm (48 hr LC ₅₀)
Green Algae	0.1 ppm (72 hr LC ₅₀)
Activated Sludge Respiration Inhibition	41 ppm (3 hr LC ₅₀)

**Results expressed in active ingredient*

These results demonstrate that NEOLONE 950 preservative does not bioaccumulate in organisms (Log P <3 and BCF significantly below 100) and biodegrades very rapidly in the environment to metabolites that have minimal toxicity. An environmental risk assessment based on this information, coupled with the extensive environmental database for Kathon CG preservative, demonstrates that recommended use levels of NEOLONE 950 preservative in personal care products will have minimal environmental impact.

Safe Handling Guidelines

You can count on Rohm and Haas personnel to provide you with advice and assistance on the safe handling of NEOLONE 950 preservative in your plant. The following handling precautions should be observed with the product as supplied:

Personal Protective Equipment

Material is CORROSIVE.

Do not get in eyes, on skin, or on clothing.

Causes eye damage and skin burns. May cause allergic skin reaction. May be harmful if swallowed or absorbed through the skin. Keep away from children.

Wear appropriate safety gear when handling.

Wear goggles or safety glasses, face shield and gloves (butyl rubber or nitrile) when handling. Avoid breathing vapor or mist. Avoid contamination of food. Do not take internally. Wash thoroughly after handling.

First Aid Measures

After contact with eyes: FLUSH IMMEDIATELY with copious amounts of water for at least 15 minutes, with the eyes held open. Get prompt medical attention but FLUSH FIRST.

After contact with skin: FLUSH IMMEDIATELY with plenty of water for at least 15 minutes. Remove and launder contaminated clothing. Wash affected skin thoroughly with soap and water. Wash thoroughly even if no skin burns are present since they may become apparent only after long contact time following inadequate washing.

If inhaled: Remove casualty immediately to fresh air. If not breathing, apply artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.

If ingested: Dilute the ingested product by giving water to drink. Call a physician at once. Never give anything by mouth to an unconscious person.

NOTE TO PHYSICIAN: Corrosive material. Probable mucosal damage may contraindicate the use of gastric lavage. It is inadvisable to induce vomiting. Measures against circulatory shock, respiratory depression, and convulsions may be needed.

Disposal of Spilled and Waste Material

Spills and cleaning run-offs should not be discharged where they can drain into sewage treatment plants, lakes, streams, ponds, or other public water. Follow the disposal methods given on the package label and observe all federal, state, and local regulations.

NEOLONE 950 preservative-containing wastes must not be discharged into public waters or sewage treatment systems. Such wastes must be deactivated and adequately diluted before discharge into any public water or sewage treatment facility. When considering disposal of any waste, observe all federal, state, and local regulations.

Deactivation - Preparation of Equipment for Manufacturing

Absorb spills with spill pillows or inert solids (vermiculite) and transfer contaminated materials to containers for disposal.

Deactivate spill area or equipment with a freshly prepared solution of 5% sodium hypochlorite (household bleach as is) and 3 to 5% solid sodium bicarbonate. DO NOT add deactivation solution to the waste pail to deactivate the adsorbed material.

Apply 10 times of deactivating solution per estimated volume of residual NEOLONE 950 to deactivate any remaining active ingredient. Let stand for 30 minutes.

Rinse the spill or equipment with copious amounts of water and drain to chemical sewer (if in accordance with federal, state, and local regulations).

Personnel making up or handling deactivation solutions should wear goggles or face shield, rubber apron and full length butyl rubber or nitrile gloves.

Deactivation - Preparation of Equipment for Maintenance

Mixing vessels, lines and pumps and other equipment containing residues of NEOLONE 950 preservative must be deactivated before carrying out maintenance or repair work or using for other service. Drips, spills and exposed

wet areas and valves should be cleaned up promptly with deactivation solution.

To deactivate the surfaces of equipment, swab with deactivation solution, wait 30 minutes and rinse thoroughly with clean water. Soak tools, pails, funnels and lines with deactivation solution for 30 minutes and then rinse with water. To determine the amount of deactivation solution needed for clean up, estimate the volume of NEOLONE 950 preservative solution remaining in a well drained system of vessels, lines and pumps, and make-up and charge 10 volumes of deactivation solution per volume of preservative solution, wait for 30 minutes and then add more water to provide thorough mixing and contact throughout the equipment. Circulate the mixture through the system for about 30 minutes, then drain and rinse with clean water or detergent solution. Drain to a municipal or chemical sewer if in accordance with federal, state, and local regulations.

Deactivation - Clothing

Contaminated clothing must be deactivated prior to laundering. Soak the clothing with deactivation solution for 30 minutes and then rinse with water. To determine the amount of deactivation solution needed for clean up, estimate the volume of NEOLONE 950 preservative that may have been spilled on the clothing and make-up and charge 10 volumes of deactivation solution per volume of preservative solution, wait for 30 minutes and then add more water to provide thorough mixing and contact throughout the clothing. Soak for about 30 minutes, then drain and rinse with clean water or detergent solution. Drain to a municipal or chemical sewer if in accordance with federal, state, and local regulations. The deactivated clothing should then be laundered, preferably by a commercial laundry, before being worn.

Contaminated leather articles, such as work boots and gloves, should be deactivated and then disposed. Under no circumstances should leather articles be worn after contamination.

Deactivation - Cleanup of Spills

Personnel cleaning up spills should wear appropriate protective clothing. This should include a rubber apron or impervious jacket, impervious full length butyl rubber or nitrile gloves, footwear, chemical splash goggles and optionally a half face piece respirator with organic vapor/acid gas cartridge and dust/mist prefilter. Spilled material should be diked and absorbed on a spill control pillow or onto an inert solid such as clay or vermiculite. Shovel the absorbent and the soil beneath it to a depth sufficient to remove all preservative into a pail or drum. This material should then be disposed of in accordance with federal, state and local regulations; our recommended method of disposal is incineration. Any residual NEOLONE 950 preservative remaining on the spill site should then be treated with deactivation solution. A weight ratio of ten parts deactivation solution to one part NEOLONE 950 should be used for this treatment. After allowing 30 minutes contact time, rinse the area with copious amounts of water and flush to the sewer if in accordance with federal, state, and local regulations.

Note: Do not add deactivation solution to the waste pail.

Material Safety Data Sheets

Material Safety Data Sheets (MSDS) are available for all Rohm and Haas products. These sheets contain pertinent information that you may need to protect your employees and customers against any known health or safety hazards associated with our products. We recommend that you obtain copies of our MSDS from your local Rohm and Haas technical representative before using our products in your facilities. We also suggest that you contact your suppliers of other materials recommended for use with our products for appropriate health and safety precautions before using them.

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We recommend that the prospective users determine for themselves the suitability of Rohm and Haas materials and suggestions for any use prior to their adoption.

Suggestions for uses of our products or the inclusion of descriptive material from patents and the citation of specific patents in this publication should not be understood as recommending the use of our products in violation of any patent or as permission or license to use any patent of the Rohm and Haas Company.

Material Safety Data Sheets outlining known health and safety hazards and handling methods for our products are available on request.



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