

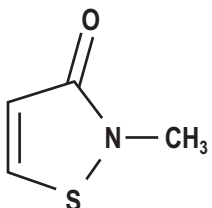


NEOLONE™ CapG Preservative

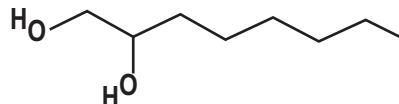
General

NEOLONE™ CapG Preservative is a broad spectrum preservative to protect against microbial contamination with enhanced control of fungi to help product performance in rinse-off hair care and rinse-off skin care products. NEOLONE CapG is a blend of methylisothiazolinone preservative and caprylyl glycol.

Structure



Methylisothiazolinone
 C_4H_5NOS
 CAS No.: 2682-20-4



Caprylyl glycol
 $C_8H_{18}O_2$
 CAS No.: 1117-86-8

Formulation/ Stability

NEOLONE™ CapG Preservative blend is formulated using propylene glycol and has a shelf life of 2 years.

Physical Properties

The following are typical properties of NEOLONE™ CapG Preservative; **they are not to be considered product specifications.**

Appearance: Clear, colorless
 pH: 3-6 (10% aqueous solution)
 Solubility: Miscible in water

Applications

- Conditioners, including zinc pyrithione-containing shampoos
- Shampoos
- Body wash/Shower gels
- Liquid hand soaps
- Cosmetic raw material ingredients such as surfactants, rheology modifiers, silicone emulsions, opacifiers, etc.

Recommended Use Rates

NEOLONE™ CapG Preservative is recommended for use at up to 1.0% of NEOLONE CapG as supplied. Experience has shown that NEOLONE CapG will preserve most cosmetic products at concentrations between 0.80% and 1.0%.

NEOLONE CapG Preservative should be added as the last ingredient and at the lowest temperature ($\leq 45^\circ\text{C}$) possible. NEOLONE CapG may tolerate exposure to higher temperatures (70°C), however the stability of the ingredients should be confirmed. Since the process conditions and components of personal care formulations vary considerably and may have impact on the efficacy of preservatives, we urge each manufacturer to verify the efficacy and stability of NEOLONE CapG in use.

Features and Benefits

- Global approvals for use as a preservative in rinse-off personal care formulations*
- Broad spectrum antibacterial activity with enhanced control of fungi
- Compatible with a wide range of personal care products and ingredients
- Excellent stability in use over a wide pH (2 to 10) and temperature range
- Pre-blended combination into a single formulation for ease of use and simplifying manufacturing operations
- Does not release formaldehyde

*Customers should verify the appropriate legislation by jurisdiction.

NEOLONE™ CapG Preservative Performance in Rinse-Off Personal Care Products

NEOLONE™ CapG Preservative microbiological performance was assessed with a 3-cycle challenge test which uses separate pools of bacteria and fungi. Dow's method is a modification of the Personal Care Product Council (PCPC) preservative efficacy test.

Bacteria

Product	NEOLONE™ CapG Preservative (% Product)	Bacteria - Estimated CFU/g after day:				
		2	7	14	21	28
Hair Conditioner, pH 4.0	0 (Unpreserved)	>10 ³	>10 ³	>10 ³	>10 ³	>10 ³
	0.83	nd	<10	<10	<10	<10
	1.00	nd	<10	<10	<10	<10
Body Wash, pH 6.0	0 (Unpreserved)	10 ²	10	>10 ³	>10 ³	>10 ³
	0.51	<10	<10	<10	<10	<10
	1.00	<10	<10	<10	<10	<10
Rheology Modifier, pH 7.0	0 (Unpreserved)	nd	>10 ³	>10 ³	>10 ³	>10 ³
	0.80	nd	<10	<10	<10	<10

B. cepacia (ATCC 25416), *E. coli* 8739, *K. pneumoniae* (ATCC 10031), *P. aeruginosa* (ATCC 15442), *P. aeruginosa* (ATCC 9027), *P. putida* (ATCC49128), *S. aureus* (ATCC 6538), *S. epidermidis* (ATCC 12228) inoculated at 0, 7 and 14 days

Fungi

Product	NEOLONE™ CapG Preservative (% Product)	Fungi - Estimated CFU/g after day:				
		2	7	14	21	28
Hair Conditioner, pH 4.0	0 (Unpreserved)	>10 ³	>10 ³	>10 ³	>10 ³	>10 ³
	0.83	nd	<10	<10	<10	<10
	1.00	nd	<10	<10	<10	<10
Body Wash, pH 6.0	0 (Unpreserved)	10 ³	10 ²	10 ³	10 ³	10
	0.51	<10	<10	<10	<10	<10
	1.00	<10	<10	<10	<10	<10
Rheology Modifier, pH 7.0	0 (Unpreserved)	nd	>10 ³	>10 ³	>10 ³	>10 ³
	0.80	nd	<10	<10	<10	<10

A. brasiliensis (ATCC 16404), *C. albicans* (ATCC 10231) inoculated at 0, 7 and 14 days

Analytical Procedures

High Performance Liquid Chromatography (HPLC) analysis is the preferred method for determining use levels of Methylisothiazolinone and Caprylyl glycol. This method can be

used to determine Methylisothiazolinone and Caprylyl glycol levels in many personal care products. If you require detailed information on HPLC methods, please contact your local Dow representative.

Handling Precautions

Storage

Store products in tightly closed original containers at temperatures recommended on the product label.

Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow representative for more information.

Product Stewardship

When considering the use of any Dow product in a particular application, review the latest Safety Data Sheet (SDS) and country-specific product label to ensure the intended use is within the scope of approved uses. Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products – from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including Safety Data Sheets (SDS), should be consulted prior to use of Dow products. Current Safety Data Sheets are available from Dow.

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