TroyCare™ BC04

Product Code 20270

Description

TroyCare™ BC04 is an extremely cost-effective, fast-acting, broad-spectrum antimicrobial that prevents deterioration and degradation of aqueous formulations caused by bacteria, fungi, and yeast. TroyCare™ BC04 inhibits microbial growth at low dosage levels. TroyCare BC04 is a formaldehyde- and VOC-free, globally approved preservative that can be used in a wide array of Personal Care formulations.

Features and Benefits

TroyCare BC04 demonstrates the following features and benefits in Personal Care products:

- Very low cost-in-use
- Globally approved
- Easy-to-use, water-soluble liquid
- Fast-acting, broad spectrum of activity
- Good compatibility with surfactants and emulsifiers, regardless of ionic nature
- No color or odor imparted to cosmetic products
- VOC-Free

Applications

TroyCare BC04 is effective for the preservation of a wide variety of personal care formulations, both Leave-On and Rinse-Off. This product is highly recommended for Rinse-Off applications, such as:

- Body washes
- Bubble baths
- Hair conditioners
- Hair and body gels
- Liquid hand soaps
- Shampoos
- Wipes

Physical Properties

The following are typical physical properties, not specifications, of TroyCare BC04:

Appearance:…… .....Clear pale yellow liquid
Color (APHA)…….....70 Max
Specific Gravity, 22°C…….…..... 1.2
pH (as is) …….. 3
Solubility ……..... Completely miscible in water, lower alcohols, and glycols
……..…….... Low solubility in hydrocarbon compounds

Chemical Identification

CFTA/INCI Name	CAS Number	EINECS Number
Active Ingredients		
Methylchloroisothiazolinone……	26172-55-4	247-500-7
Methylisothiazolinone…….	2682-20-4……	220-239-6
Additional Ingredients		
Magnesium Chloride……	7786-30-3……	232-094-6
Magnesium Nitrate……...	10377-60-3…….....	233-826-7

Ingredient Information

Active Ingredients

5-Chloro-2-Methyl-4-isothiazolin-3-one …..……	1.15 %
2-Methyl-4-isothiazolin-3-one ……..	0.35 %
Total Active Ingredients ……..	1.50 %

Inert Ingredients

Magnesium Salts (chloride and nitrate)……..	23.9 %
Water ……..	74.6 %
Total Inert Ingredients ….……	74.5 %

TroyCare™ BC04 is a composition comprised of the active ingredients Methylchloroisothiazolinone and Methylisothiazolinone along with Magnesium salt stabilizers. Each batch of TroyCare BC04 is produced to exact specifications, and a certificate of analysis can be provided with each order. The above is presented as typical composition and does not constitute specifications.

Formulating Considerations

The microbiological performance of TroyCare BC04 in most personal care products is excellent. The use of proper handling and application techniques as TroyCare BC04 is incorporated into formulations will enhance the overall performance of TroyCare BC04 and help to optimize treatment costs. The following guidelines are presented for your consideration. As part of a best practice manufacturing strategy, confirm compatibility in the development of new products.

Typical Use Levels - TroyCare BC04 is typically used at levels ranging from 0.05-0.10% by weight in the finished formulation. The optimum use level will always be a function of several factors, including the composition of the formulation, anticipated microbial challenge, processing and storage conditions, and even local regulatory considerations (see Regulatory Status). Troy offers free preservative challenge testing and our TMMA program to help you determine the best preservative system and optimum use levels for your specific situation (see Technical Support below).

Addition to the Formulation - The product should be added at a point where there is good agitation or mixing to achieve homogeneous distribution throughout the formulation. TroyCare BC04 is easily incorporated into water-based systems and can be added at any stage of the production process.

Effect of Temperature - It is highly recommended that temperatures in excess of 50^0C be avoided during manufacture once TroyCare BC04 has been added to the formulation. Stability of the preservative at ambient temperatures is dependent upon the specific formulation to which the preservative has been added.

Effect of pH – It is highly recommended that the formulation remain at a pH of 8 or lower. If highly alkaline conditions are expected during the production process, even for short periods of time, TroyCare BC04 should be added after these conditions are controlled and the system pH is once again below 8. TroyCare BC04 is stable up to a pH of 8 for short periods of time; however it is recommended that the long-term pH of the final formulation remains at or below 7 for best results.

Reducing Agents - Some reducing agents such as sulfites, bisulfites, sulfides, and mercaptans are detrimental to the stability of isothiazolinones. Unwanted residual sulfite and bisulfite can also be introduced into the personal care formulation through the use of sulfated and/or sulfonated surfactants to react with TroyCare BC04**.** For best performance, residual SO_2 should be eliminated from the process through the use of a suitable oxidizing agent.

Antimicrobial Activity

TroyCare™ BC04 provides excellent antimicrobial performance against Gram-negative and Gram-positive bacteria, molds, and yeast. This performance is illustrated in the following table which shows the minimum inhibitory concentration* in ppm of TroyCare BC04 active ingredient (CMIT/MIT) that inhibited microbial growth in laboratory testing.

Minimum Inhibitory Concentration (MIC)

	Strain ATCC No.	Active Ingredient (ppm)
Bacteria: Gram-negative		
Alcaligenes faecalis	25094	7
Burkholderia cepacia	25416	9
Enterobacter aerogenes	13048	6
Enterobacter cloacae	15361	7
Escherichia coli	10536	10
Escherichia coli	8739	5
Escherichia coli	*11229*	*5*
Myroides odoratus	4651	3
Proteus vulgaris	*13315*	6
Pseudomonas aeruginosa	9027	9
Pseudomonas aeruginosa	15442	6
Pseudomonas fluorescens	13525	5
Pseudomonas oleoverans	8062	5
Serratia marcescens	14223	3
Bacteria: Gram-positive		
Bacillus subtilis	6051	3
Enterococcus faecalis	11420	9
Staphylococcus aureus	BAA-1720	5
Staphylococcus aureus	6538	5
Staphylococcus epidermidis	12228	5
Fungi		
Aspergillus niger	9642	3
Aspergillus niger	16404	1
Aspergillus oryzae	10196	3
Aureobasidium pullulans	9348	3
Chaetomium globosum	6205	4
Eupenicillium levitum	10464	4
Penicillium species	12667	2
Trichoderma reesei	13631	6
Yeast		
Candida albicans	10231	3
Candida glabrata	2001	2
Saccharomyces cerevisiae	7752	3

*Minimum inhibitory concentration (MIC) is an indication of which microorganisms can be controlled by a preservative and the concentration at which growth of the test organism is inhibited under laboratory conditions. Lower MIC values correlate with greater product effectiveness against the specific pathogen tested. MIC values should only be used for general comparisons. Actual in-use concentrations should only be established through rigorous microbiological challenge testing, a service that Troy provides free of charge to all Troy customers.

Regulatory Status

TroyCare™ BC04 is globally approved with the following regional limitations:

Europe

Rinse-Off: Maximum concentration of 0.1% (as supplied) or 15ppm (active basis)
Leave-On: Maximum concentration of 0.05% (as supplied) or 7.5ppm (active basis)

Asia

Rinse-Off: Maximum concentration of 0.1% (as supplied) or 15ppm (active basis)
Leave-On: Maximum concentration of 0.05% (as supplied) or 7.5ppm (active basis)

Americas

Rinse-Off: Maximum concentration of 0.1% (as supplied) or 15ppm (active basis)
Leave-On: Maximum concentration of 0.05% (as supplied) or 7.5ppm (active basis)

Chemical Inventories

This product is approved for sale under the following chemical inventories:

Country	Agency
United States	TSCA
Canada	DSL
Europe	EINECS
Australia	AICS
Korea	ECL
Japan	ENCS/MITI
Philippines	PICCS
China	IECSC
New Zealand	NZIoC
Taiwan	NECI

Regulatory Considerations

Please refer to the Safety Data Sheet (SDS) for Toxicity, Ecotoxicity, Shipping, and Labeling information.

Handling, Storage, and Disposal

Please refer to the Safety Data Sheet (SDS).

Health and Safety

Please refer to the Safety Data Sheet (SDS).

Technical Support

Troy offers a broad array of technical support services to our customers free of charge. Our world class microbiology, formulation, and analytical laboratories are ready to help you identify and implement the optimum preservative solution for your specific personal care formulation needs.

Microbiology – Troy offers preservative challenge testing for all types of personal care formulations, including liquids, creams, wipes, solids, and more. We can isolate and identify specific micro-organisms that are challenging your system. In addition, Troy routinely performs minimum inhibitory concentration (MIC) testing, preservation (longevity) testing, sterility checks, and more.

TMMA -– Troy offers a technical consultative service called TMMA (Troy Microbial Management Advantage). TMMA is a comprehensive system approach designed specifically for plant, process, and materials protection requirements, including the principles of good plant hygiene and preventative measures. TMMA services can also include an in-depth plant hygiene survey combined with a custom-developed preservation regimen. The program thereby enables personal care formulators to achieve contamination-free systems and plant operations, from raw materials to finished products. The intention of TMMA is to provide solutions that lead to reduced costs, improved product quality, and risk minimization.

Custom Solutions – Troy can work with key customers to develop truly unique preservative blends that deliver convenience and value, optimized to the customer's specific preservation needs.

Please contact Troy Technical Service or your local Troy Sales Representative for further information regarding any of the support services described above.

Shipping and Packaging

TroyCare™ BC04 is packaged in:

Shipping Container	Net Weight	Item Code
Pails	40 lbs / 18 kg	20270N1PC
Drums	475 lbs / 215 kg	20270N3PC

For further information visit our website:
www.troycorp.com