

TroyCare™ BC02

Product Code 30201

Description

TroyCare™ BC02 is a broad-spectrum antimicrobial, that is effective against bacteria, yeast, and mold, and as such is well-suited for preserving a wide range of personal care products. TroyCare BC02 is recommended for water or polar solvent-based personal care products. TroyCare BC02 demonstrates enhanced activity over conventional isothiazolinone biocides due to the synergistic performance of both actives. In general, the product exhibits improved speed of initial efficacy combined with long-term effectiveness to mitigate repeat intrusions of microorganisms. The product acts quickly, and then maintains long-term stability for systems with a pH of 2-8.

Features and Benefits

TroyCare BC02 demonstrates the following features and benefits in personal care products:

- Broad-spectrum activity against bacteria, yeast, and mold
- Greater levels of protection compared with CMIT/MIT alone
- Quick kill combined with long-lasting efficacy
- Effective preservation at lower levels of CMIT/MIT

Applications

TroyCare BC02 is a clear liquid preservative system easily incorporated into water containing or water-miscible products requiring preservation. It provides a balanced spectrum of effectiveness against most bacteria, yeast, and fungal species. For best results, TroyCare BC02 should be incorporated as early in the production process as possible and after high temperature or high alkaline conditions have subsided. TroyCare BC02 is recommended for personal care products such as:

- Body washes
- Sunscreen
- Liquid soaps
- Shampoos & conditioners
- Wipes

Physical Properties

The following are typical physical properties, not specifications, of TroyCare BC02:

Appearance:..... Clear, colorless to yellow liquid
 Color (APHA).....150 Max
 Specific Gravity, 25°C..... 1.06
 pH (as manufactured)..... 2
 SolubilityMiscible with water in any proportion
 Heavy Metals (Hg, As, Sb, Cd, Ni, Cu, Cr, Pb, Fe)..... <10ppm

Chemical Identification

<u>CFTA/INCI Name</u>	<u>CAS Number</u>	<u>EINECS Number</u>
<u>Active Ingredients</u>		
Bronopol.....	52-51-7.....	200-143-0
Methylchloroisothiazolinone.....	26172-55-4.....	247-500-7
Methylisothiazolinone.....	2682-20-4.....	220-239-6



Ingredient Information

Active Ingredients

2-Bromo-2-nitro-1,3-propanediol	7.1%
5-Chloro-2-Methyl-4-isothiazolin-3-one / 2-Methyl-4-isothiazolin-3-one	1.1%
Total Active Ingredients	8.2%

Inert Ingredients

Magnesium Salts (chloride and nitrate)	1.9 %
Water	89.9 %
Total Inert Ingredients	91.8 %

TroyCare BC02 is a composition comprised of the active ingredients Bronopol, Methylchloroisothiazolinone, and Methylisothiazolinone along with Magnesium salt stabilizers. Each batch of TroyCare BC02 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

While the microbiological performance of TroyCare BC02 in most personal care products is excellent, the use of proper handling and application techniques as the product is incorporated into your formulation will enhance the overall performance of TroyCare BC02 and help to optimize your treatment costs. The following guidelines are presented for your consideration. As part of a best practice manufacturing strategy, it is advised to confirm compatibility in the development of new products.

Typical Use Levels - TroyCare BC02 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 -TroyCare BC02 is well-suited for systems with residual redox agents and systems that might experience temperature or pH excursions, all of which can cause conventional isothiazolinone biocides to suffer loss of activity. For those markets or applications that limit levels of isothiazolinones, TroyCare BC02 represents an excellent treatment alternative, providing full protection at a lower overall use level of isothiazolinone.

Effect of Temperature-For best results TroyCare BC02 should be incorporated as early in the production process as possible, but after any processing temperatures greater than 50°C have subsided. This will minimize any potential degradation of the isothiazolinone and maximize the preserving power of TroyCare BC02.

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 BC02 should be added after these conditions are controlled and the system pH is once again below 8. TroyCare BC02 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.



Antimicrobial Activity

TroyCare BC02 provides excellent broad spectrum antimicrobial performance against fungi, molds, yeast and Gram-negative and Gram-positive bacteria. This performance is illustrated in the following table which shows the minimum inhibitory concentration in ppm of TroyCare BC02 active ingredient (Bronopol/CMIT/MIT) that inhibited microbial growth in laboratory testing.

Minimum Inhibitory Concentration (MIC)

	Strain ATCC No.	Active Ingredient (ppm)
Bacteria: Gram-negative		
<i>Alcaligenes faecalis</i>	25094	28
<i>Burkholderia cepacia</i>	25416	31
<i>Enterobacter aerogenes</i>	13048	28
<i>Enterobacter cloacae</i>	15361	18
<i>Escherichia coli</i>	8739	28
<i>Escherichia coli</i>	11229	25
<i>Escherichia coli</i>	10536	16
<i>Myroides odoratus</i>	4651	14
<i>Proteus vulgaris</i>	13315	18
<i>Pseudomonas aeruginosa</i>	9027	20
<i>Pseudomonas aeruginosa</i>	10145	20
<i>Pseudomonas fluorescens</i>	13525	16
<i>Pseudomonas oleoverans</i>	8062	15
<i>Serratia marcescens</i>	14223	20
Bacteria: Gram-positive		
<i>Bacillus subtilis</i>	6051	16
<i>Enterococcus faecalis</i>	11420	23
<i>Staphylococcus aureus</i>	6538	<=9
<i>Staphylococcus aureus</i>	BAA-1720	20
<i>Staphylococcus epidermidis</i>	12228	18
Fungi		
<i>Aspergillus niger</i>	16404	11
<i>Aspergillus niger</i>	9642	<=5
<i>Aspergillus oryzae</i>	10196	9
<i>Aureobasidium pullulans</i>	9348	<=5
<i>Chaetomium globosum</i>	6205	13
<i>Eupenicillium levitum</i>	10464	9
<i>Penicillium species</i>	12667	<=5
<i>Trichoderma reesei</i>	13631	<=5
Yeast		
<i>Candida albicans</i>	10231	25
<i>Candida glabrata</i>	2001	23
<i>Saccharomyces cerevisiae</i>	7752	23

*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 BC02 is globally approved with the following regional limitations

Europe

Rinse-Off: Maximum concentration of 0.14% (as supplied) or 15ppm (active CMIT/MIT basis).

Leave-On: Maximum concentration of 0.068% (as supplied) or 7.5ppm (active CMIT/MIT basis).

Asia

Rinse-Off: Maximum concentration of 0.14% (as supplied) or 15ppm (active CMIT/MIT basis).

Leave-On: Maximum concentration of 0.068% (as supplied) or 7.5ppm (active CMIT/MIT basis).

Americas

Rinse-Off: Maximum concentration of 0.14% (as supplied) or 15ppm (active CMIT/MIT basis).

Leave-On: Maximum concentration of 0.068% (as supplied) or 7.5ppm (active CMIT/MIT 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 Microbiological Management Advantage Program). 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 BC02 is packaged in:

Shipping Container	Net Weight	Item Code
Pails	44 lbs / 20 kg	302011PC
Drums	441 lbs / 200 kg	302013PC

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

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