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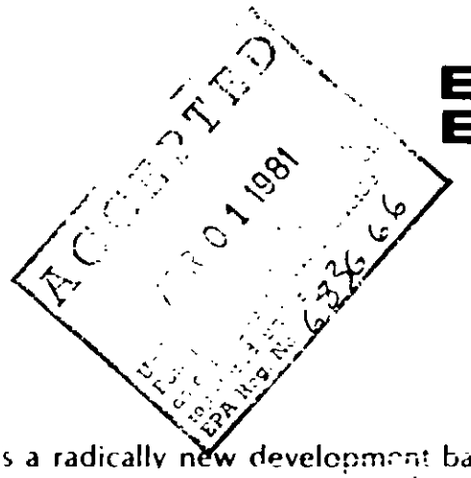
LONZA

PRODUCT INFORMATION



BARDAC® 205M
BARDAC® 208M

Bardac 205M/208M is a radically new development based upon Lonza Inc. patented "Twin Chain" quaternary ammonium compound technology. Bardac 205M/208M, when evaluated by accepted laboratory procedures, provides superior germicidal and fungicidal activity far beyond that achieved with currently available quaternary ammonium compounds. This provides the formulator with unequaled latitude in the design of biocidal systems.

Chemical Composition

Active Ingredients	Bardac 205M	Bardac 208M
Alkyl (C_{14}, 50%; C_{12}, 40%; C_{16}, 10%) dimethyl benzyl ammonium chloride	20.0%	32.0%
Octyl decyl dimethyl ammonium chloride	15.0%	24.0%
Dioctyl dimethyl ammonium chloride	7.5%	12.0%
Didecyl dimethyl ammonium chloride	7.5%	12.0%
Inert Ingredients	50.0%	20.0%

Physical Properties

Average molecular weight	342	
pH (10% solution)	7—8	
Physical state	Liquid	
Color	Clear to light amber	
Flash point (Seta Flash)	116°F	118°F
Specific gravity @ 25°C	0.946 (7.89 lbs./gal.)	0.912 (7.61 lbs./gal.)
EPA Registration No.	6836-66	6836-67
CAS No.	68424-95-5 & 130-08-2	

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Summary of the superior performance characteristics of Bardac 205M/208M:

- Better disinfectant performance at lower use concentrations.
- Broad spectrum biocidal activity against both gram positive and gram negative organisms.
- Greater hard water tolerance for sanitizing activity at lower use concentrations.
- Superior fungicidal performance.
- Substantial organic soil tolerance (in accordance with the latest EPA requirements).

GERMICIDAL ACTIVITY

Important Note: All microbiological evaluations were performed in the presence of an organic soil load represented by 5% blood serum; proposed EPA guidelines – Subpart G, Supplemental Recommendations #4, p 111-112, June 22, 1979. The serum was added to the inoculum prior to the carrier drying step (or other appropriate procedure).

Disinfectant Activity Determined by AOAC Use-Dilution Tests

The minimum concentration of Bardac 205M/208M required for effective disinfection is determined by the AOAC, 12th Edition, paragraph 4.007-4.011 (1975) procedure commonly known as the Use-Dilution Test.

Test Organism	ATCC #	Minimum Effective Concentration
Staphylococcus aureus	6538	250 ppm active quaternary
Salmonella choleraesuis	10708	250 ppm active quaternary
Pseudomonas aeruginosa	10524	450 ppm active quaternary

The broad spectrum germicidal activity of Bardac 205M/208M was confirmed by the AOAC Use-Dilution evaluations against the following organisms:

Test Organism	ATCC #	Minimum Effective Concentration
Escherichia coli	11229	250 ppm active quaternary
Serratia marcesens	8101	250 ppm active quaternary
Brevibacterium ammoniagenes	6871	250 ppm active quaternary
Salmonella typhi	6539	250 ppm active quaternary

Sanitizing Performance/Hard Water Tolerance

Sanitizing Activity determined by the AOAC Germicidal and Detergent Sanitizer Method (Food Contact Surface Application).

The hard water tolerance of Bardac 205M/208M is measured by the AOAC Germicidal and Detergent Sanitizer Method, 12th Edition paragraph 4.023-4.032 (1975), commonly called the hard water tolerance test. Exposure of 100 million organisms of Escherichia coli (#11229) to 150 ppm of Bardac 205M/208M for 30 seconds at 25°C in 800 ppm of water hardness results in the required reduction of 99.999% of the bacteria.

Calcium and magnesium salts are typical hard water components; however, other electrolytes may be present during actual field applications. The unusually high hard water tolerance of Bardac 205M/208M affords users a margin of safety over a range of quaternary concentrations.

Test Organism	Concentration of Bardac 205M/208M Required for 99.999% Reduction	Hard Water Ceiling
Escherichia coli, #11229	150 ppm	800 ppm hard water
	200 ppm	1100 ppm hard water
Staph. aureus, #6538	150 ppm	800 ppm hard water
	200 ppm	1100 ppm hard water

Non-Food Contact Application

The non-food contact surface sanitizing activity of Bardac 205M/208M was determined by the following test methodology: EPA Dis-10, February 6, 1979 and the Guidelines for Registering Pesticides in the United States, Subpart G - Product Performance, June 22, 1979 Dratt, Recommended Method #8 (Sanitizers-Non-Food Contact Surfaces), p 101-102.

Test Organism	Concentration of Bardac 205M/208M Required for 99.999% Reduction	Hard Water Ceiling	Contact Time
Staphylococcus aureus	150 ppm (active)	800 ppm	2 min.
(ATCC #6538)	200 ppm (active)	1100 ppm	1 min.
Klebsiella pneumoniae	150 ppm (active)	800 ppm	2 min.
(ATCC #4352)	200 ppm (active)	1100 ppm	1 min.

Fungicidal Performance as Determined by the AOAC Fungicidal Test

Possessing superior fungicidal activity, Bardac 205M/208M effectively passes the AOAC Fungicidal test at one-eighth the concentration required for conventional alkyl benzyl quaternaries.

Test Organism	Ten Minute Killing Dilution (100% active)
Trichophyton mentagrophytes	1:8000
	125 ppm

Summary of Applications and Recommended Use-Levels

Application	Recommended Use-Levels on 100% Active Basis
Hospital Disinfection	450 ppm active quaternary
General Disinfection	250 ppm active quaternary
Sanitizing	150 ppm active quaternary

Product Registration

The Lonza Technical Service Department will assist you with Bardac 205M/208M based formulations and EPA registration.

Prototype formulations based on Bardac 205M/208M, their EPA data base references and sample labels are available upon request. For formulations of your own development, you are responsible to provide data currently required by the EPA to support that registration.

Disinfectant and sanitizer products containing Quaternary Ammonium Compounds must be registered with the U.S. Environmental Protection Agency. Applications for registration must be accompanied by two copies of your proposed label and should be sent to Product Manager No. 31, Pesticide Registration Division (TS-767), U.S. Environmental Protection Agency, Washington D.C. 20460. Some state agencies also require registration of your product independent of your EPA registration.

Handling Precautions

Danger: Keep Out of Reach of Children. Corrosive. Causes severe eye and skin damage. Do not get in eyes, on skin, or on clothing. Wear goggles or face shield and rubber gloves when handling. Harmful or fatal if swallowed. Do not contaminate water, food or feed by storage or disposal.

Statement Of Practical Treatment: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. For eyes, call a physician. Remove and wash contaminated clothing before reuse.

If swallowed, drink promptly a large quantity of milk, egg whites, gelatin solution; or if these are not available, drink large quantities of water. Avoid alcohol. Call a physician immediately.

Note To Physician: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock as well as oxygen and measures to support breathing manually or mechanically may be needed. If persistent, convulsions may be controlled by the cautious intravenous injection of a short-acting barbiturate drug.

Disposal: Rinse empty container thoroughly with water and discard it in accordance with federal, state and local requirements.

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