

KORALONE™ M-212 Preservative

Safe Preservative for Household and Industrial & Institutional Products

Description

KORALONE M-212 preservative is a versatile liquid combination of active substances recommended for use in preservation of household products.

The optimized ratio between methylisothiazolone and octylisothiazolone chemistry allows KORALONE M-212 to be used at unusually low concentrations.

KORALONE M-212 contains no added formaldehyde, nitrites, nitrosamines or cationic, phenolic or corrosive substances.

Composition and Technical Data

Composition: solution of 2-methyl-4-isothiazolin-3-one (MIT) and 2-n-octyl-4-isothiazolin-3-one (OIT).

TEST	MIN.	MAX.	METHOD
Appearance	Colorless to yellowish, clear liquid		
Odor	Mild		
Color (Gardner)	-	3	ISO 4630-1
Density d_{20}^4	1.1170 g/ml	1.1370	ISO 2811-3
Refractive index n_{20}^D	1.4410	1.4510	ASTM D 1218-02
Viscosity η 20°C	40 ± 25 mPa.s		ISO 3219
pH (10% aqueous solution)	4.5	6.5	IN7463 ACM
Flash point	> 100°C o.c. Cleveland		ISO 2592

Benefits of KORALONE M-212

The special ratio of these active substances results in both a rapid activity and a long term protection of the finished product against a broad spectrum of microorganisms, including bacteria, yeast and mold fungi.

KORALONE M-212 contains neither formaldehyde, nitrites, nitrosamines nor cationic or phenolic substances. Therefore, it is particularly suited for use in products not readily compatible with these substances. It does not contribute to VOC or AOX of the finished product.

KORALONE M-212 displays a broad range of activity against all types of gram-positive and gram-negative, bacteria as well as molds and yeasts which are commonly encountered in the wet stage protection of technical materials.

- Applicable and efficacious for a wide range of pH 4 to 11.
- Stable up to 60°C (short period at 80°C).
- Readily incorporated in household product due to its liquid form.
- Forms clear solution in all proportions with water, low alcohols and glycols.
- Compatible and effective with anionic, cationic, ester quaternary surfactants, non ionic surfactants and commonly used household product ingredients.

Suggested Applications

- **Laundry products**, such as:
 - liquid laundry detergents
 - fabric softeners
 - pre-spotters
- **Liquid detergents**, such as:
 - hand dishwashing detergents
 - hand cleaners
 - hand soaps
- **Cleaners and polishes**, such as:
 - all purpose cleaners
 - floor and furniture polishes/waxes
 - automotive washes, polishes and waxes
- **Raw materials and surfactants** used in the Household and Industrial & Institutional industry.

Chemical Stability in Various Formulations

Formulations	pH	Storage Temperature (°C)	Storage Time (weeks)	Remaining % of KORALONE M 212
Fabric Softener	3.4	25°C	8	100
		40°C		100
Wool Shampoo	7.0	25°C	8	100
		40°C		100
Liquid Laundry Detergent	8.8	25°C	8	100
		40°C		97
Floor Polish Wax Emulsion	8.2	25°C	6	93
		40°C		88

Dose used: 0.1%. 8 weeks at 40°C correspond to approximately 10-12 months at ambient temperature

Microbial Efficacy Performance Data

Rohm and Haas laboratories uses several types of stringent multiple challenge tests with 3, 4 or 6 inoculations. Results reported in table below referred to the 6 weeks artificial pre-ageing challenge test in liquid detergents formulations. In order to increase the severity of test, all the samples were kept 4 weeks at 40°C prior to be inoculating six times at one week interval. KORALONE M-212 (0.1%) preserved adequately the tested formulations after 6 successive inoculations. More details of this procedure can be obtained from your nearest Rohm and Haas Representative.

Multiple Challenge Test Results	Formulations	Week 1	Week 2	Week 3
% of preservative added		Results are quoted in cfu/ml		
		Inoculation 1	Inoculation 2	Inoculation 3
Unpreserved	Laundry Liquid Detergent pH 8.8	B:10 ⁶ M/Y:10 ³	B:10 ⁶ M/Y:10 ⁴	B:10 ⁶ M/Y:10 ⁵
KORALONE M-212 (0.1%)		B:<10 M/Y:10	B:<10 M/Y:<10	B:<10 M/Y:<10
Unpreserved	Washing up liquid (30% A.I) pH 8.1	B:10 ⁵ M/Y:10 ³	B:10 ³ M/Y:10 ³	B:10 ³ M/Y:10 ³
KORALONE M-212 (0.1%)		B:<10 M/Y:10	B:<10 M/Y:<10	B:<10 M/Y:<10

Multiple Challenge Test Results	Formulations	Week 4	Week 5	Week 6
% of preservative added		Results are quoted in cfu/ml		
		Inoculation 4	Inoculation 5	Inoculation 6
Unpreserved	Laundry Liquid Detergent pH 8.8	B:10 ⁶ M/Y:10 ³	B:10 ⁶ M/Y:10 ⁴	B:10 ⁶ M/Y:10 ⁵
KORALONE M-212 (0.1%)		B:<10 M/Y:<10	B:<10 M/Y:<10	B:<10 M/Y:<10
Unpreserved	Washing up liquid (30% A.I) pH 8.1	B:10 ⁴ M/Y:10 ³	B:10 ³ M/Y:10 ³	B:10 ³ M/Y:10 ³
KORALONE M-212 (0.1%)		B:<10 M/Y:<10	B:<10 M/Y:<10	B:<10 M/Y:<10

B: Aerobic bacteria. Y: Yeast. M: Mold.

Results are quoted in cfu/ml: Colony forming units per millilitre of sample.

<10: Detection limit.

Recommended Use Levels

For effective preservation of domestic products it is recommended that KORALONE M-212 preservative should be dosed in the range of 0.1% to 0.15% as supplied.

The typical use concentration of KORALONE M-212 is around 0.12% and allows the long term protection of the finished product without any additional labeling requirements. Since the components of household formulations can vary considerably and may have an impact on the effect of preservatives, we advise each manufacturer to confirm the efficacy and stability of KORALONE M-212 in use.

Preservatives are not designed to overcome lack in plant or manufacturing hygiene but to avoid contamination in microbiologically clean products.

Any microbial contamination of the product, raw materials, process water, storage installations or packaging will reduce preservative efficacy and should be avoided. However, occasionally, the degree of unavoidable contamination as well as conditions for microbiological growth exhibit seasonal fluctuation, so that a periodical determination of germs counts can assist in choosing the optimum dosage rate.

In the case of special applications, please talk to your Rohm and Haas Representative.

Handling

Please refer to the safety data sheet of this product for precise handling instructions.

The processing and use of industrial chemicals require adequate technical and professional knowledge. In general, avoid eye and skin contact, wear safety goggles, gloves and protective clothing. In case of eye or skin contact, despite precautionary measures, wash immediately and thoroughly with plenty of warm water and obtain medical attention.

The legal requirements prevailing in your country, especially on working hygiene and in the avoidance of accidents, must be observed.

Storage

KORALONE M-212 should be stored in closed original containers at ambient temperature protected from direct heat.

If the product does freeze, allow it to return to room temperature and it will turn liquid again and can be used, after homogeneous stirring, without any loss of effectiveness. Bioactivity is unaffected by freezing and melting.

Shelf Life

KORALONE M-212 in original containers under appropriate storage conditions will have a shelf life of 60 months.

Biocidal Products Directive Compliance

KORALONE M-212 is a biocidal product intended for use in accordance with product type 6 (In-can Preservation) of the Biocidal Product Directive 98/8/EC (BPD).

Caution

Use biocides safely. Always read the label and product information before use.

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