KORALONE™ N-105 Microbicide

Microbicide for Household, Industrial and Institutional Products

Description

KORALONE N-105 Microbicide is recommended as an in-container preservative for the control of fungi (mold and yeast) in industrial and household consumer products - including fabric softeners, laundry detergents, cleaners, dish detergents, polishes, pre-spotters and surfactants.

KORALONE N-105 is recommended as a co-biocide to be used in combination with a preservative providing bacterial control (e.g., NEOLONE M-10, KORALONE B-119 or KATHON CG/ICP Preservatives).

KORALONE N-105 is a salt free formulation based on the 2-n-Octylisothiazolinone (OIT) active ingredient.

Features and Benefits

Features	Benefits
Does not release or generate formaldehyde	Broad acceptability for end-use formulations
Salt-free formulation	Readily incorporated into a wide of range household products and I&I formulations
Fully water dilutable	
Stable over wide pH range	
Compatible with sensitive emulsions	
Effective against fungi at low dose levels	Cost-effective
Rapidly degrades in the environment, does not bio-accumulate and is non-persistent.	Environmental acceptability

KORALONE N-105
Formulation and Properties

These properties are typical but do not constitute specifications.

Chemical Composition

Active Ingredients	(%Wt)
2-n-Octyl-4-isothiazolin-3-one	5.0
Inert Ingredients	**(%Wt)**
Propylene Glycol	Balance

Physical Properties	
Appearance	Clear liquid
Color	Pale yellow
Specific Gravity	1.03 g/cc at 20 °C
Solubility	Highly miscible in water, propylene glycol, lower alcohols
Stability	Stable. (Shelf life >5 years when stored in unopened container at 22°C-25°C.)

KORALONE N-105 Microbicide Efficacy

KORALONE N-105 microbicide provides targeted control of fungi. For full-spectrum microbiological protection of consumer products and aqueous raw materials, KORALONE N-105 is recommended to be used in combination with a preservative providing bacterial control (e.g., NEOLONE M-10, KORALONE B-119 or KATHON CG/ICP Preservatives). The following table provides the minimum level of KORALONE N-105 microbicide, as active ingredient, which inhibits the growth of various microorganisms in a growth medium. The data demonstrate the excellent activity of KORALONE N-105 microbicide in controlling a variety of fungi, butmust not be taken as recommended use concentrations.

Antifungalactivity Of KORALONE N-105 (Minimum Inhibitory Concentrations-Mic)[1]

		OIT
Yeast	**Source[2]**	**ppm a.i.**
Candida albicans	ATCC 11651	2.0
Saccharomyces cerevisiae	ATCC 4921	0.6
Rhodotorula rubra	IMI 349023	4.0
Mold		
Aspergillus niger	ATCC 6275	2.0
Penicillium oxalicum	ATCC 24784	2.0
Chaetomium globosum	ATCC 6205	0.6

[1] MIC studies were conducted in either nutrient broth or minimal salts media with glucose

[2] ATCC –American Type Culture Collection;
IMI – International Mycological Institute

Microbiological Efficacy - Multiple ChallengeTests

The microbiological performance of KORALONE N-105 microbicide in most products is excellent. Longtermprotection against fungi is obtained employing use levels up to 75 ppm active ingredient (0.15% product, as supplied, by weight). Typical use levels for most household and industrial products will be lower than this maximum dosage. The efficacy of KORALONE N-105 microbicide in a variety of formulations is demonstrated below.

		CFU/g Sample at Week: [1]		
Product Type (pH)	**Koralone N-105 ppm ai**	**1**	**2**	**3**
All purpose Cleaner (7.7)	0 10 75	10^5 50 <10	$>10^5$ 10^2 <10	$>10^5$ 50 <10
Liquid Dish Detergent (7.3)	0 10 75	10^4 10^2 <10	10^4 10^2 <10	10^2 10^2 <10
Laundry Detergent (8.6)	0 10 75	10^5 10^2 <10	$>10^5$ 10^3 <10	$>10^5$ 10^4 <10
Fabric Softener (3.0)	0 10 75	50 <10 <10	50 <10 <10	50 <10 <10
Floor Polish (8.2)	0 10 75	$>10^5$ $>10^5$ <10	$>10^5$ $>10^5$ <10	$>10^5$ 10^3 <10

Sodium Laureth Sulfate Surfactant (7.8)	0	10^5	$>10^5$	$>10^5$
	10	10^5	$>10^5$	$>10^5$
	75	50	50	50

1- Challenged weekly for three weeks with a mixture of fungi: *Aspergillus niger, Penicillium ochrochloron Candida albicans and Rhodoturula rubra*

KORALONE N-105 Microbicide Chemical Stability In Consumer Products And Ingredients

The active ingredient in KORALONE N-105 is stable in a variety of household and industrial products. Provided below are data from stability evaluations conducted in a variety of formulations.

Chemical Stability Of KORALONE N-105 After 4 Weeks Storage at 40° C [1]

Product Type	pH	% OIT Remaining
All purpose Cleaner	7.7	100
Liquid Dish Detergent	7.3	94
Laundry Detergent	8.6	92
Fabric Softener	3.0	92
Floor Polish	8.2	93
Sodium Laureth Sulfate Surfactant	7.8	100

[1]KORALONE N-105 active ingredient determined by High Performance Liquid Chromatography.

Recommended Use Directions For KORALONE N-105 Microbicide

This product is a US EPA registered microbicide. It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

Add 0.2 - 1.5 pounds KORALONE N-105 Microbicide (91 - 680 gram) to each 1000 pounds (453.6 kilogram) of product. This treatment will provide 10-75 parts per million active ingredient (0.02% to 0.15% KORALONE N-105 as supplied).

KORALONE N-105 preservative should be added as the last ingredient and at the lowest temperature possible (< 45 °C). In addition, secondary amines, oxidizing agents/reducing agents, thiols and sulfides should be minimized or avoided.

Since the components of consumer and industrial formulations vary considerably and may have an impact on the microbicides, we urge each manufacturer to confirm the efficacy and stability of KORALONE N-105 in their products.

Safe Handling Of KORALONE N-105

Use appropriate personal protective equipment when handling KORALONE™ N-105 microbicide. In general; avoid eye and skin contact, wear safety goggles, and protective clothing. Refer to the material safety data sheet for additional safety and handling information. For more information on the utility of KORALONE™ N-105 in your formulations, please contact your Rohm and Haas account manager.

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

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