



NATICIDE®



Fragrance for self-preserving
formulations

Available exclusively from Bay House Ingredients at

www.bayhousearomatics.com



NATICIDE®

The ultimate FRAGRANCE
for cosmetic
NATURAL PRESERVATION



NATURAL ORIGIN

Blend of natural extracts
accordingly to the IFRA recommendations
partly water soluble

INCI NAME

Fragrance

PHYSIO CHEMICAL DATA

ASPECT	Clear liquid
COLOUR	Colourless to yellow
ODOUR	Pleasant Almond/Vanilla
SOLUBILITY IN WATER	Max. 0.6% Complete in glycols and alcohols
REFRACTION INDEX	1.491 – 1.506

FEATURES

- ❑ Vegetable based fragrance
- ❑ Good stability
- ❑ Total compatibility
- ❑ Fragrance fixative properties
- ❑ Light sweet smell
- ❑ Excellent skin tolerability
- ❑ Full spectrum activity
- ❑ PRESERVATIVE FREE COSMETICS



NEW CONCEPT

The trend of the market is now turning to preservative free formulations, that may though grant a good stability, good organoleptic characteristic and, over all, a good resistance to microbial contamination.

Up to know, this concept has always been extremely delicate for formulators, being cosmetic formulations most likely to be contaminated by bacteria.

Naticide is a new concept of multifunctional ingredient, allowing to formulate a safe and **preservative free cosmetic**.

ANTIMICROBIAL ACTIVITY

The antimicrobial activity of NATICIDE® has been tested by a simulated microbial attack, better known as CHALLENGE TEST.

The method used for the Viable count is the one according to Farmacopea Ufficiale Italiana IX ed. and the UE Policy 76/768 dated 27.07.1976.

The method used for the challenge test is the one according to the European Pharmacopoeia III ed.modified.

ANTIMICROBIAL ACTIVITY

The CHALLENGE TEST allows the evaluation of the real capacity of not only preventing microbial contamination, but reducing it up to when it becomes safe for the human health, once contamination has occurred.

ANTIMICROBIAL ACTIVITY

	ATCC (American Type Culture Collection)	MIC (ppm)
BACTERIA GRAM + +		
<i>Staphylococcus aureus</i>	6538	5000
<i>Staphylococcus epidermidis</i>	12228	5000
BACTERIA GRAM –		
<i>Pseudomonas aeruginosa</i>	9027	5000
<i>Pseudomonas putida</i>	49128	2500-5000
<i>Escherichia coli</i>	8739	5000
<i>Enterobacter aerogenes</i>	13048	5000
<i>Proteus vulgaris</i>	13315	5000
<i>Serratia marcescens</i>	8100	2500
YEASTS		
<i>Saccharomices cerevisiae</i>	2366	2500
<i>Candida albicans</i>	10231	2500
MOULDS		
<i>Aspergillus niger</i>	16404	2500
<i>Aspergillus flavus</i>	9643	2500
<i>Pennicillium notatum</i>	9178	2500

ANTIMICROBIAL ACTIVITY

	ATCC (American Type Culture Collection)	INOCULUM 1% v/v (1ml/100ml)
BACTERIA GRAM ++		
<i>Staphylococcus aureus</i>	6538	10 ⁸ -10 ⁹ u.f.c./ml
<i>Staphylococcus epidermidis</i>	12228	
BACTERIA GRAM –		
<i>Pseudomonas aeruginosa</i>	9027	10 ⁷ -10 ⁸ u.f.c./ml
<i>Pseudomonas putida</i>	49128	
<i>Escherichia coli</i>	8739	
<i>Enterobacter aerogenes</i>	13048	
<i>Proteus vulgaris</i>	13315	
<i>Serratia marcescens</i>	8100	
YEASTS		
<i>Saccharomices cerevisiae</i>	2366	
<i>Candida albicans</i>	10231	
MOULDS		
<i>Aspergillus niger</i>	16404	10 ⁶ -10 ⁷ u.f.c./ml
<i>Aspergillus flavus</i>	9643	
<i>Pennicillium notatum</i>	9178	

ANTIMICROBIAL ACTIVITY

To determinate the microbial survival a total viable count has been performed after 7, 14, 28 days

LEGENDA

Microbial survival < 0.2 %	ADEGUATE
Microbial survival < 1.0 %	DEBATABLE
Microbial survival < 10 %	INSUFFICIENT
Microbial survival > 10 %	INADEGUATE

NATICIDE®

PRODUCTS	BACTERIA G+/- u.f.c./g/ml	MOULDS u.f.c./g/ml	YEASTS u.f.c./g/ml
NON IONIC GEL (naticide 0.5%)	<10	<10	<10
NON IONIC GEL (naticide 1%)	<10	<10	<10
ANIONIC GEL (naticide 0.5%)	<10	<10	<10
ANIONIC GEL (naticide 1%)	<10	<10	<10
SOLUTION (naticide 0.5%)	<10	<10	<10
SOLUTION (naticide 1%)	<10	<10	<10
HYDROALCOHOLIC SOLUTION (naticide 0.5%)	<10	<10	<10
HYDROALCOHOLIC SOLUTION (naticide 1%)	<10	<10	<10
SHAMPOO (naticide 0.5%) day 7	<10	<10	5.000 (0.5%)
Day 14, day 28	<10	<10	<10
SHAMPOO (naticide 1%)	<10	<10	<10
O/W EMULSION (naticide 0.5%) ¹	<10	<10	<10
O/W EMULSION (naticide 1%) ²	<10	<10	<10
O/W EMULSION (naticide 0.5%) ³ Day 7	300 (0.0015%)	<10	1.000 (0.1%)
Day 14,28	<10	<10	<10
O/W EMULSION (naticide 1%) ³	<10	<10	<10

(1) Naticide® in hydrophilic phase at 0.5% with solubilizer

(2) Naticide® into hydrophilic phase at 0.5% with solubilizer + 0.5% at the end of manufacturing with solubilizer

(3) Naticide® at the end of manufacturing with solubilizer

CONCLUSIONS

All the formulations, as shown, have been adequately preserved with Naticide. Only in one case, and due to a different method of manufacturing, microbial count resulted debatable at the first count at 7 days. From this evidence, it is therefore recommandable to use 0.6% of Naticide in the hydrophilic phase, as indicated in the formulating section

FORMULATING WITH NATICIDE®

- NATICIDE® performs its antimicrobial activity in a pH range 4 – 9.
- It may be employed between 0.3% and 1% depending on the formulation.
- Since NATICIDE® is water dispersible only up to 0.6%, in order to obtain a proper dispersion, it is suggested to split its amount in the formulation.
- If the percentage of NATICIDE® in the formulation is higher than 0.6%, the remaining amount should be added to the formulation at the end of manufacturing process.

FORMULATING WITH NATICIDE®

- ❑ To obtain the best solubilisation of NATICIDE®, it is recommended the usage with proper solubilising agent into the relevant phase.
- ❑ In order to achieve maximum result in term of preservation, the best suggested method to formulate an emulsion containing 1% of NATICIDE is:
 - 0.6% should be added, under constant stirring, with proper solubilising agent to the hydrophilic phase and
 - the remaining (0.4%), with proper solubilising agent too, added to the obtained emulsion at the end of manufacturing process under constant stirring.

FORMULATING WITH NATICIDE®

NON IONIC GEL	
Demineralized Water	to 100
Guar Gum	2%
Citric Acid	0.2%
PPG-26-Buteth-26 PEG-40 Hydrogenated Castor Oil	0.5% 1%
NATICIDE	0.5% 1%

GEL EMULSION	
Demineralized Water	to 100
Carpopol Ultrez	0.3%
Carbopol ETD 2020	0.25%
Octyl Octanoate	10%
Caprylic/Capric Triglyceride	2.5%
AMP 100	0.6%
Naticide	0.5% 1%
PPG-26-Buteth-26 PEG-40 Hydrogenated Castor Oil	0.5% 1%

FORMULATING WITH NATICIDE®

HYDROALCOHOLIC SOLUTION			ANIONIC GEL		
Demineralized Water	to 100		Demineralized Water	to 100	
Ethanol	25%		Carbopol Ultrez	0.7%	
Hamamelis Distilled Water	2%		AMP 100	0.6%	
PPG-26-Buteth-26 PEG-40 Hydrogenated Castor Oil	0.5%	1%	PPG-26-Buteth-26 PEG-40 Hydrogenated Castor Oil	0.5%	1%
Naticide	0.5%	1%	Naticide	0.5%	1%

FORMULATING WITH NATICIDE®

SHAMPOO	
Demineralized Water	to 100
Les-2	25%
Trideceth-2 Carboxamide MEA	2.5%
Cocoyl Soy Polypeptide	10%
Trition CG	2.5%
Lauramidopropyl Betaine	10%
NATICIDE	0.5% 1%
PPG-26-Buteth-26 PEG-40 Hydrogenated Castor Oil	0.5% 1%

SOLUTION	
Demineralized Water	to 100
Hamamelis Distilled Water	2%
PPG-26-Buteth-26 PEG-40 Hydrogenated Castor Oil	0.5% 1%
NATICIDE	0.5% 1%

TOXICOLOGY

Oral acute toxicity	≥ 2000 mg/kg
Primary skin irritation	not irritant
Eye irritation in vitro	not irritant
Dermal irritation in vitro	not irritant
Skin sensitisation	not irritant
Phototoxicity in vitro	complies
Photoirritation in vitro	complies

SAFE FOR COSMETIC USE

NATICIDE® / ESSENTIAL OILS

	NATICIDE®	ESSENTAIL OILS
USAGE %	LOW	HIGH
ANTIMICROBIAL SPECTRUM	FULL	VERY LIMITED
ODOUR	PLEASANT	UNPLEASANT
COMPATIBILITY	TOTAL	LIMITED
WATER SOLUBILITY	PARTLY , UP TO 6%	UNSOLUBLE IN WATER
IN ASSOCIATION	WITHOUT	ALWAYS

NATICIDE®

Effective in preserving personal care formulations by inhibiting bacterial growth, allowing its use as the ONLY preservative



PRESERVATIVE— FREE FORMULATIONS