

Product Fact Sheet

PHENONIP[®] P4



Preservative for the cosmetic industry

Chemical Name	Preservative blend consisting of Methyl p-hydroxybenzoate, Ethyl p-hydroxybenzoate, Propyl p-hydroxybenzoate, Butyl p-Hydroxybenzoat and Phenoxyethanol.
INCI designation	Phenoxyethanol and Methylparaben and Ethylparaben and Propylparaben and Butylparaben.

CLARIANT INTERNATIONAL LTD

Rothausstrasse 61
4132 MuttENZ
Switzerland

BUSINESS UNIT INDUSTRIAL &
CONSUMER SPECIALTIES

www.ics.clariant.com
www.clariant.com

PRODUCT PROPERTIES¹

Appearance (20°C) Colourless to light straw viscous liquid

Chemical and physical data

Methyl Paraben	14.5 – 16.5 % w/w
Ethyl Paraben	3.7 – 4.3 % w/w
Propyl Paraben	1.7 – 2.3 % w/w
n-Butyl Paraben	5.7 – 6.3 %
Phenoxyethanol	70 – 75 % w/w
Specific gravity (25°C)	1.124 g/cm ³

Uses

Phenonip[®] P4 is a broad spectrum antimicrobial agent comprising a synergistic blend of esters of para-hydroxybenzoic acid (parabens) in phenoxyethanol designed for preservation of a wide range of cosmetics and toiletries.

pH stability

Phenonip[®] P4 remains fully stable over a wide pH range from 3- 8.

Applications

Phenonip[®] P4 provides activity against gram positive and gram negative bacteria, yeasts and molds.

It retains activity in the presence of most cosmetic ingredients.

Phenonip[®] P4 protects most types of personal care products from microbial contamination. As with other preservatives, the correct use concentration depends upon several factors, including the chemical and physical nature of the product, its ability to support microbial growth and the likelihood of recontamination during use.

¹ These characteristics are for guidance only and not to be taken as product specifications. The tolerances are given in the product specification sheet. For further product properties, specifications, safety and ecological data, please refer to the MSDS.

Experience has shown that Phenonip® P4 will preserve cosmetics and toiletries when incorporated at concentrations from 0.25 % to 1 %. The higher concentrations are generally required only for formulations which, by nature, are particularly difficult to preserve.

Shampoos and foam baths may be preserved with Phenonip® P4 at concentrations between 0.25 % to 0.65 %. Products with high protein content may require levels from 0.5 % - 1 %. Other surfactant- based products, for example liquid dishwashing detergents, are generally preserved with Phenonip® P4 over the range 0.2 %- 0.6 %. Emulsified systems, both O/W and W/O types, may be effectively preserved by the addition of Phenonip® P4 at 0.4 %- 0.7 %. Phenonip® P4 can also be used to preserve emulsions based on nonionic surfactants, but slightly increased concentrations may be required, e.g. 0.5 -1 %.

CLARIANT INTERNATIONAL LTD

Rothausstrasse 61
4132 MuttENZ
Switzerland

BUSINESS UNIT INDUSTRIAL &
CONSUMER SPECIALTIES

www.ics.clariant.com
www.clariant.com

Solubility

Solvent	Solubility / % (w/w)
<i>Ethanol</i>	approx. 0.2 %
<i>Ethanol/ Water (50/50)</i>	soluble
<i>Isopropanol</i>	> 95 %
<i>Acetone</i>	miscible
<i>Propylene Glycol</i>	miscible
<i>Hazelnut Oil</i>	Miscible
<i>Liquid Paraffin</i>	approx.60 %
<i>Glycerol</i>	< 0.1 %
<i>Sodium Laureth Sulphate (28 %)</i>	approx. 8 %

Incorporation

Phenonip® P4 can be added to the aqueous phase readily up to its limit of solubility. The relatively low aqueous solubility of Phenonip® P4 means that if the water content of the formulation is low, it may not be convenient to add the preservative directly to water during manufacture. Heating the water to 60 – 70 °C prior to Phenonip® P4 addition will, in most instances, allow the appropriate quantity to be dissolved. For aqueous systems which cannot be heated, Phenonip® P4 can be incorporated by preparing a concentrate in a suitable solvent, e.g. Propylene Glycol, and stirring this concentrate into the water to give a final Phenonip® P4 concentration below its maximum water solubility.

In emulsified systems, Phenonip® P4 is readily dissolved in the lipid phase prior to emulsification although it is often good practice to divide the Phenonip® P4 content between the aqueous and the lipid phases during their preparation. To add Phenonip® P4 into the final emulsion during the cooling stage is also possible for a lot of emulsions.

In surfactant and detergent based products Phenonip® P4 can be dissolved in the surfactant prior to the addition of water and other ingredients.

Microbial Activity

Phenonip® P4 exhibits microbiostatic activity against a wide range of bacteria, yeast and moulds. This is illustrated by the following table which shows the minimum inhibitory concentration (MIC) of Phenonip® P4 against examples of different groups of microorganisms.

Microorganisms	MIC level (%)
<i>Pseudomonas aeruginosa</i>	0.3
<i>Escherichia coli</i>	0.2
<i>Proteus vulgaris</i>	0.2
<i>Klebsiella pneumoniae</i>	0.3
<i>Enterobacter aerogenes</i>	0.3
<i>Citobacter freundii</i>	0.3
<i>Ps. oleovorans</i>	0.2
<i>Staphylococcus aureus</i>	0.2
<i>Candida albicans</i>	0.1
<i>Aspergillus brasiliensis</i>	0.2
<i>Penicillium miniluteum</i>	0.075
<i>Fusarium solani</i>	0.05
<i>Penicillium funiculosum</i>	<0.025

CLARIANT INTERNATIONAL LTD

Rothausstrasse 61
4132 Muttenz
Switzerland

BUSINESS UNIT INDUSTRIAL &
CONSUMER SPECIALTIES

www.ics.clariant.com
www.clariant.com

Regulatory Status

Phenonip® P4 can be used up to a maximum concentration of 1.35 % in cosmetic product, no further restrictions, according to Annex V EU 1223/2009.

Phenonip® P4 is permitted for Japan up to 1.33 %, no further restrictions.

Phenonip® P4 is permitted for USA.

Storage instructions

The product must be protected from excessively high and low temperatures during storage.

Further information on handling, storage and dispatch is given in the EC safety data sheet.

This information corresponds to the present state of our knowledge and is intended as a general description of our products and their possible applications. Clariant makes no warranties, express or implied, as to the information's accuracy, adequacy, sufficiency or freedom from defect and assumes no liability in connection with any use of this information. Any user of this product is responsible for determining the suitability of Clariant's products for its particular application. * Nothing included in this information waives any of Clariant's General Terms and Conditions of Sale, which control unless it agrees otherwise in writing. Any existing intellectual/industrial property rights must be observed. Due to possible changes in our products and applicable national and international regulations and laws, the status of our products could change. Material Safety Data Sheets providing safety precautions, that should be observed when handling or storing Clariant products, are available upon request and are provided in compliance with applicable law. You should obtain and review the applicable Material Safety Data Sheet information before handling any of these products. For additional information, please contact Clariant.

For sales to customers located within the United States and Canada the following applies in addition:

NO EXPRESS OR IMPLIED WARRANTY IS MADE OF THE MERCHANTABILITY, SUITABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE OF ANY PRODUCT OR SERVICE.

® Trademark of Clariant registered in many countries
© 2012 Clariant International Ltd



CLARIANT INTERNATIONAL LTD