

Product Specification

Preservative 221

INCI: Benzyl alcohol, dehydroacetic acid, aqua

Description: Mixture

CAS number: 100-51-6 & 520-45-6

Test parameter	Unit	Specification
Appearance		Clear amber liquid
Colour	HAZEN	< 50
Dehydroacetic acid content	%	7.75 – 8.25
Benzyl alcohol content	%	85.0 – 89.0
pH value		5.0 – 6.0
Specific gravity at 20°C	gcm ³	1.05 – 1.08

Preservative 221 is a blend of an organic acid in benzyl alcohol. It is suitable for formulations with acidic pH, and offers protection against bacteria, yeasts and moulds. Preservative 221 is permitted for use with most Eco Label certified products and can be used for both leave-on and rinse-off products. The use of benzyl alcohol based preservatives offers excellent headspace protection for cosmetics supplied in susceptible packaging.

Applications

- Shampoo, shower gel (Rinse-off)
- Creams, Lotions (Leave-on)
- O/W emulsions
- W/O emulsions
- Wet wipes
- Eye care
- Lip care
- Oral care
- Children under 3

Use scenarios derived from evaluation of Cosmetic Regulation guidelines and preservative performance for typical formulations.

Formulation Guidance

pH (effective range)	3.0 – 6.0
Solubility (water)	1.0% approx.
Solubility (glycols)	Soluble
Maximum Process Temperature	60°C

In use concentrations	Recommendation	EU Cosmetic Regulation (Max)
Leave-on	0.5 – 1.0%	1.14%*
Rinse-off	0.5 – 1.0%	1.14%*

*Not to be used in aerosol dispensers (sprays)

In use concentrations vary according to the formulation type and other ingredients present. The correct use dosage should be determined by microbial challenge testing of the finished formulation.

Formulating Information: Preservative 221 is compatible with most personal care ingredients. In **Aqueous Formulations**, heating to 40°C may be required in order to fully dissolve the preservative. However, prolonged exposure to high temperatures should be avoided in order to protect against discolouration. Preservative 221 works effectively at pH values below 6.5, though for optimal efficacy we recommend that the pH of the finished product is less than 6. Preservative 221 is not to be used in aerosol dispensers (sprays) according to the EU Cosmetic Regulation.

Minimum Inhibitory Concentrations

Microorganism	MIC (%)
Bacteria (gram-negative)	
Pseudomonas aeruginosa	0.40
Escherichia coli	0.40
Bacteria (gram-positive)	
Staphylococcus aureus	0.40

Minimum Inhibitory Concentrations

Microorganism	MIC (%)
Yeasts	
Candida albicans	0.15
Moulds	
Aspregillus niger	0.15

Paraben Free	Thiazolinone Free	Formaldehyde Free	Preservative Free	Natural
Yes	Yes	Yes		

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