

EasySafe P8

EasySafe P8 is a multifunctional ingredient that creates **self-preserving cosmetics** within a **wide pH-range**. It is a versatile, **cost-effective** and easy to use **alternative to conventional preservatives**.

Functions

- Antimicrobial agent
- Humectant
- Re-fatting agent
- Masking agent

Applications

- Skin care
- Hair care
- Make-up
- Toiletries

Performances:

- **EasySafe P8** is **free of conventional preservatives**. Nonetheless it demonstrates a **broad-spectrum antimicrobial activity** against yeasts, moulds, and bacteria. The ingredient disturbs the integrity of microbial cell membranes, a mechanism of action that is unlikely to be affected by common resistance mechanisms. Since **EasySafe P8** is non-ionic, its anti-microbial effect is largely **pH-independent**.
- **EasySafe P8** is a synergistic combination of **two active components**:
 - **Caprylyl Glycol**, a well-known **skin humectant** and an antimicrobial boosting agent.
 - **Phenylpropanol**, an **aroma component** with antimicrobial properties in particular against fungi. This substance naturally occurs in flowers and fruits. Thanks to its faint and attractive scent, Phenylpropanol can **mask undesired odours**. This makes **EasySafe P8** in particular attractive for **hygiene and deodorant** applications.
- **EasySafe P8** is **readily bio-degradable** and **free of fragrance allergens**.

Specifications and characteristics

INCI name	Caprylyl Glycol, Phenylpropanol
CAS reg. N°	1117-86-8, 122-97-4
Recommended pH of use	3 – 10 (unlimited)
Recommended use level	0.5 to 2.0 %
Appearance	Clear, colourless or slightly coloured liquid
Odour	Faint aromatic
Solubility	Soluble in aqueous solutions of surfactants, miscible with polar oils and alcohols
Melting point	< 5 °C
Regulatory status	Globally approved; safety and regulatory data available upon request
Origin	Synthetic / non-natural
Chemical structures	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <chem>CCCCCCCC(O)CO</chem> </div> <div style="text-align: center;"> <chem>OCCc1ccccc1</chem> </div> </div>

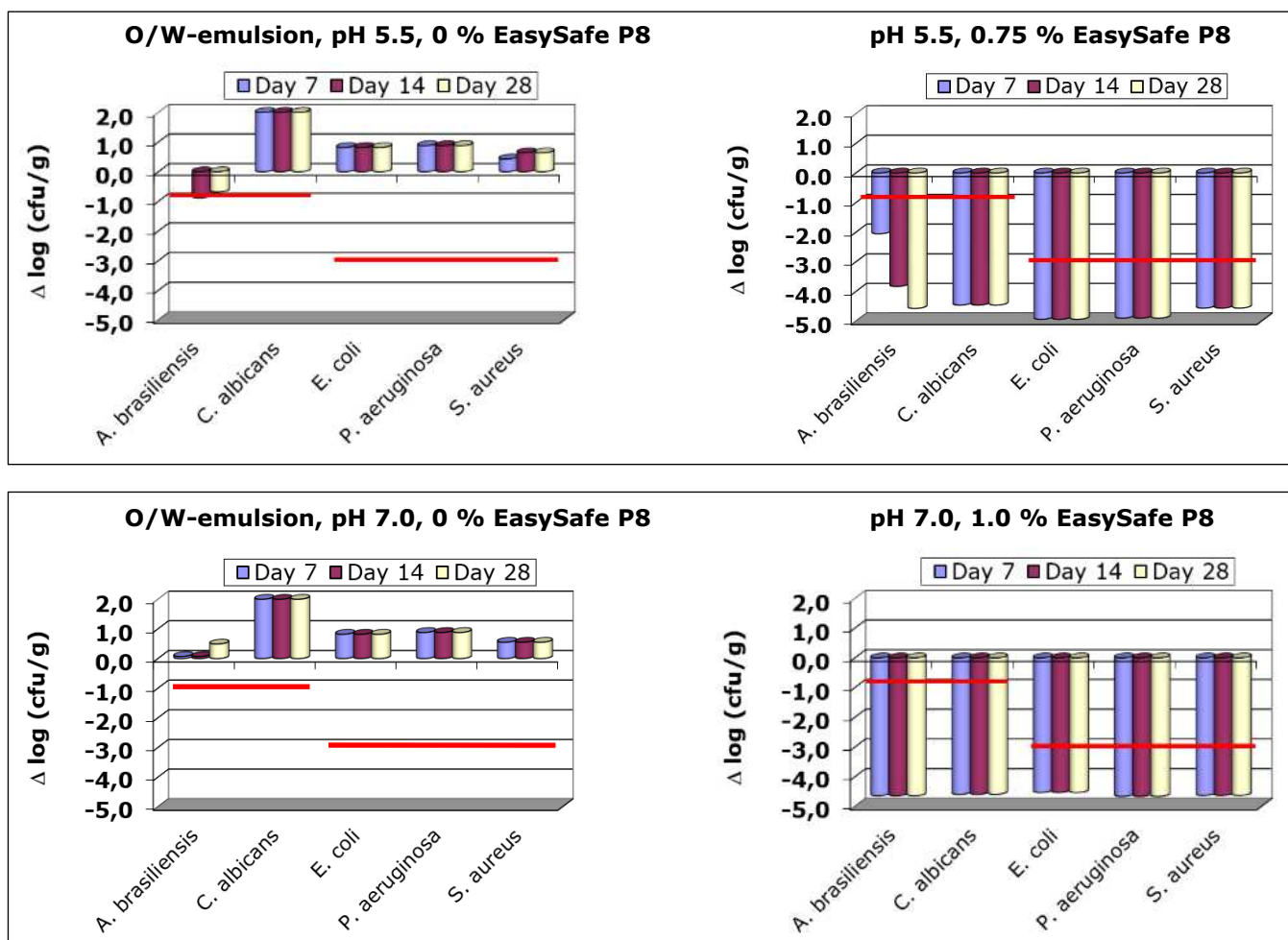
EasySafe P8

Formulation 1: O/W-emulsion

Phase	Ingredient	INCI name	%
A	Water	<i>Aqua</i>	ad 100
	Xanthan Gum ⁽¹⁾	<i>Xanthan Gum</i>	0.5
	EasySafe P8 ⁽²⁾	<i>Caprylyl Glycol, Phenylpropanol</i>	0.75 – 1.5
B	Emulgade PL 68/50 ⁽³⁾	<i>Cetearyl Glucoside (and) Cetearyl Alcohol</i>	5.0
	Shea Butter ⁽⁴⁾	<i>Butyrospermum Parkii (Shea) Butter</i>	3.0
	Joboba Oil ⁽⁴⁾	<i>Simmondsia Chinensis (Jojoba) Oil</i>	3.0
	Hazelnut Oil ⁽⁴⁾	<i>Corylus Avellana (Hazel) Seed Oil</i>	3.0
C	Tocopherol	<i>Tocopherol</i>	0.1
D	Citric Acid (aq.) <u>or</u> Sodium Hydroxide (aq.)	<i>Citric Acid (and) Aqua</i> <u>or</u> <i>Sodium Hydroxide (and) Aqua</i>	q.s.

Raw material suppliers: ⁽¹⁾ Jungbunzlauer, ⁽²⁾ Minasolve, ⁽³⁾ BASF, ⁽⁴⁾ Caesar & Loretz

Antimicrobial performance in challenge tests according to ISO 11930



EasySafe P8

Formulation 2: Green Shampoo

Phase	Raw material	INCI name	%
A	Water	<i>Aqua</i>	72.40
	Xanthan Gum ¹⁾	<i>Xanthan Gum</i>	0.60
	Plantacare 818 UP ²⁾	<i>Coco Glucoside</i>	15.00
	Plantapon ACG HC ²⁾	<i>Sodium Cocoamphoacetate</i>	5.00
	TEGO Betain F 50 ³⁾	<i>Cocamidopropyl Betain</i>	5.00
B	EasySafe P8⁽⁴⁾	<i>Caprylyl Glycol, Phenylpropanol</i>	0.75 – 1.5
C	Citric Acid (aq.) or Sodium Hydroxide (aq.)	<i>Citric Acid (and) Aqua,</i> or <i>Sodium Hydroxide (and) Aqua</i>	q.s.

Raw material suppliers: ⁽¹⁾ Jungbunzlauer, ⁽²⁾ BASF, ⁽³⁾ Evonik, ⁽⁴⁾ Minasolve

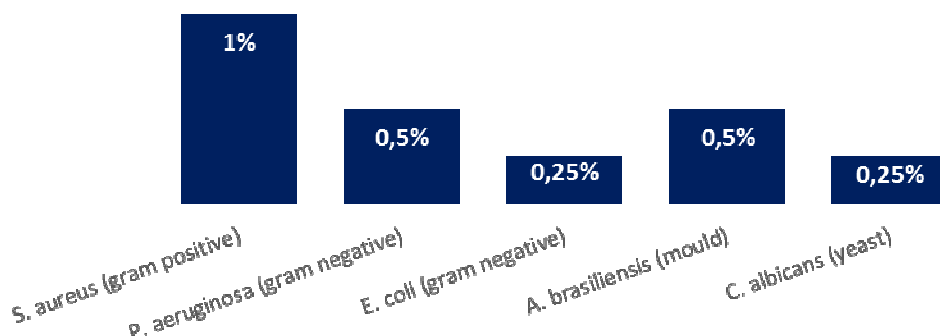
Antimicrobial Protection Effect

EasySafe P8 creates self-preserved formulations within a wide pH-range. It is compatible with common cosmetic ingredients and formulations. However, non-ionic surfactants might partly inactivate **EasySafe P8** due to complexation phenomena or partial incorporation into micelles. In such cases a higher concentration of **EasySafe P8** may be necessary to achieve complete protection. The following table gives an indication of the typical use-levels needed to obtain fully protected products:

Formulation 1: "O/W emulsion"				Formulation 2: "Green Shampoo"			
Use level:	0.5 %	0.75 %	1.0 %	Use level:	1.0 %	1.5 %	2.0 %
pH 4.5	A	A		pH 4.5	A		
pH 5.5	A	A	A	pH 5.5		B	A
pH 7.0		B	A	pH 8.0		B	A
pH 8.0		A	A				
				A	= fulfils criteria A of ISO 11930		
= likely to fulfil criteria A of ISO 11930				B	= fulfils criteria B of ISO 11930		

- **EasySafe P8** protects the "O/W emulsion" already at low concentrations of 0.5 – 1 %.
- **EasySafe P8** can also protect the "Green Shampoo". Since this product contains a non-ionic surfactant, a comparably higher concentration of **EasySafe P8** is needed for a complete protection. **EasySafe P8** can also be favourably combined with other multifunctional ingredients, such as **EasySafe GC 8**.

Minimum Inhibitory Concentrations of EasySafe P8 at pH 7:



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Applications in cosmetic formulations

- **EasySafe P8** is an easy to handle liquid that is stable between +5°C and + 80°C. The ingredient is suitable for hot and cold processes. If **EasySafe P8** is cooled to temperatures below 5°C, it may partly freeze. In this case it should be warmed to $\geq 10^{\circ}\text{C}$ and homogenized before use. The process of freezing and thawing is completely reversible and does not impact the quality of the product.
- **EasySafe P8** needs to be dissolved in the aqueous phase for a maximum antimicrobial effect. The ingredient is therefore preferably added either to the hydrophilic phase or towards the end of the formulation, e.g. after emulsification.
- **EasySafe P8** is soluble in aqueous solutions of surfactants, as well as in lower alcohols, alkanediols and polar vegetal oils. It can be also dissolved in water with the help of common solubilizers (e.g. Tween 20, Polyglyceryl-4 Laurate/Succinate, etc.). **EasySafe P8** is therefore suitable also for clear aqueous formulations.
- **EasySafe P8** consists of neutral substances which are stable at any pH-value without restrictions.
- **EasySafe P8** contains weakly surface-active ingredients that may influence the performance of surfactants or emulsifier systems. This can e.g. impact the viscosity of the final product. Such kind of effects can be reduced by adding **EasySafe P8** just before the end of the formulation process.

Further readings

- Bergfeld W.F. et al., "Final Report of the Cosmetic Ingredient Review on the Safety Assessment of 1,2-Glycols as Used in Cosmetics", *Cosmetic Ingredient Review*, **2011**.
- Pillai R. et al., "1,2-Alkanediols for Cosmetic Preservation", *Cosmetics & Toiletries Magazine* **2008**, 123 (10), 53-61.
- Bathia SP. et al., "Fragrance material review on 3-phenyl-1-propanol", *Food Chem Toxicol.*, 49 (Suppl 2), 246-251, 2011.