

EasySafe OC 8

EasySafe OC 8 is an efficient and **eco-friendly alternative** to many out-of-date preservatives, such as Triclosan or Triclocarban.

EasySafe OC 8 contains the **mild preservative o-Cymen-5-ol**, a powerful anti-microbial agent with **antioxidant activity**.

Functions

- Preservative
- Humectant
- Anti-oxidant
- Masking agent

Applications

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

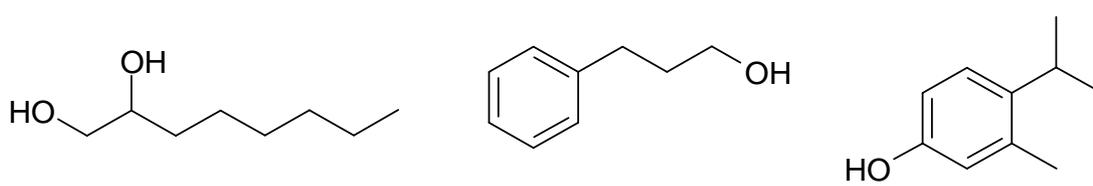
Performances:

- **EasySafe OC 8** shows a **broad-spectrum antimicrobial activity** against yeasts, moulds, and bacteria. It disturbs the integrity of microbial cell membranes, a mechanism of action that is unlikely to be affected by common resistance mechanisms. Being a non-ionic ingredient, the anti-microbial effect of **EasySafe OC 8** is largely **pH-independent**.
- **EasySafe OC 8** is a synergistic mixture of **three active components**:
 - **o-Cymen-5-ol** is a mild preservative and an isomer of the natural anti-microbial agent Thymol. Its **antioxidant** activity protects the skin, as well as formulations, **against oxidative stress**.
 - **Caprylyl Glycol** is a well-known **skin humectant** and an antimicrobial boosting agent.
 - **Phenylpropanol** is an **aroma component** with antimicrobial properties. It naturally occurs in flowers and fruits. Phenylpropanol can **mask undesired odours**, which makes **EasySafe OC 8** particularly interesting for **hygiene and deodorant** applications.
- **EasySafe OC 8** is **readily biodegradable**. Each of its single components passes biodegradation tests according to OECD 301. This fact distinguishes **EasySafe OC 8** from many antiquated preservatives, in particular from those containing halogens.

Specifications and characteristics

INCI name	Caprylyl Glycol, Phenylpropanol, o-Cymen-5-ol
CAS reg. N°	1117-86-8, 122-97-4, 14246-53-8
Recommended pH of use	3.0 – 8.0
Recommended use level	0.5 to 1.5 %
Appearance	Clear, colourless or slightly yellow liquid
Odour	Faint aromatic
Solubility	Soluble in aqueous solutions of surfactants, miscible with polar oils and alcohols
Melting point	< -10 °C
Regulatory status	Globally approved; safety and regulatory data available upon request
Origin	Synthetic

Chemical structures



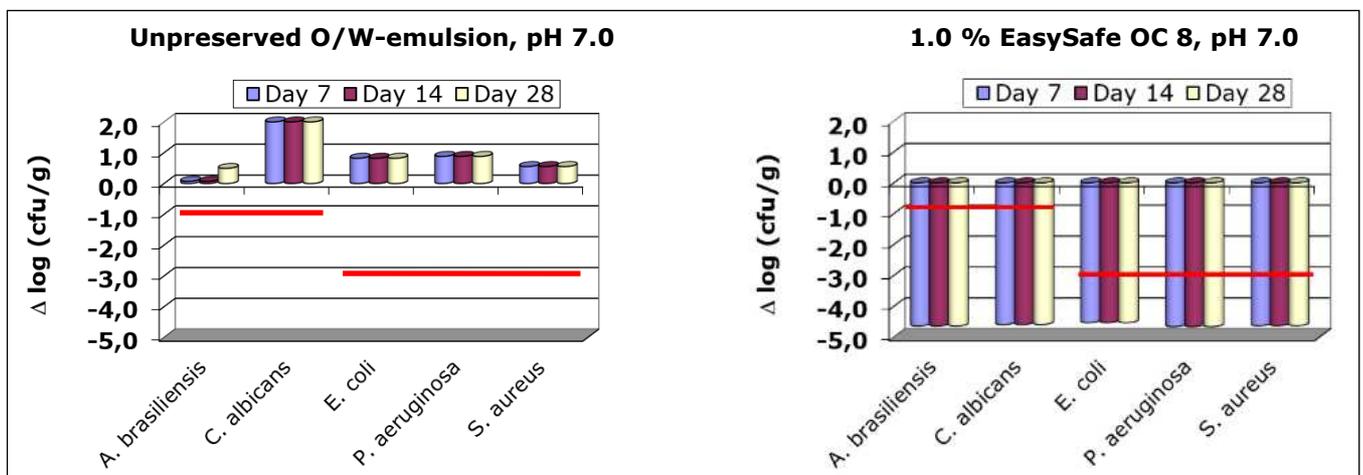
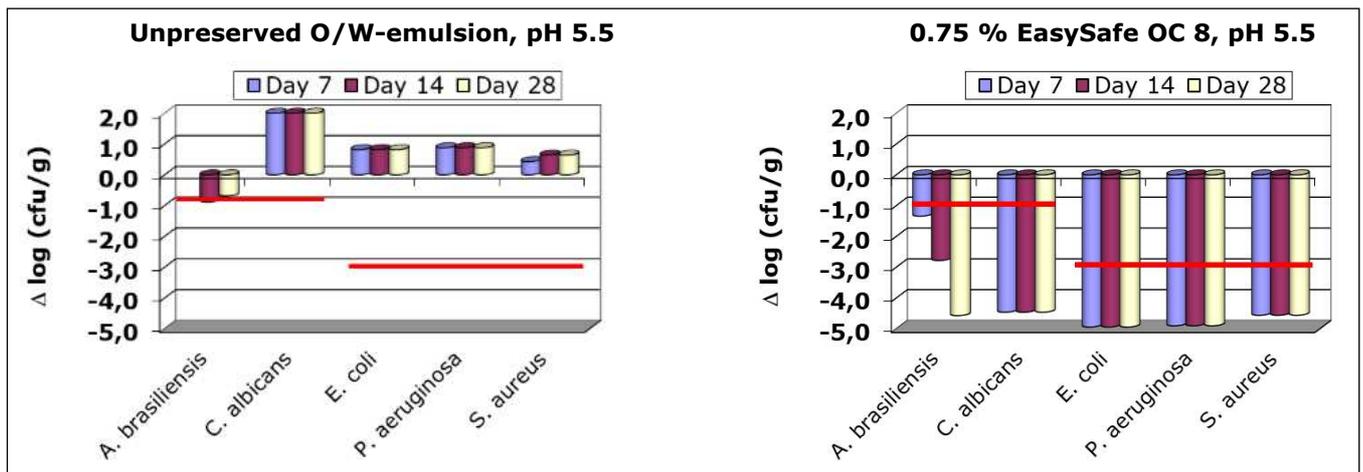
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Formulation 1: O/W-emulsion

Phase	Ingredient	INCI name	%
A	Water	Aqua	ad 100
	Xanthan Gum ⁽¹⁾	Xanthan Gum	0.5
	EasySafe OC 8 ⁽²⁾	Caprylyl Glycol, Phenylpropanol, o-Cymen-5-ol	0.75 – 1.5
B	Emulgade PL 68/50 ⁽³⁾	Cetearyl Glucoside (and) Cetearyl Alcohol	5.0
	Shea Butter ⁽⁴⁾	Butyrospermum Parkii (Shea) Butter	3.0
	Joboba Oil ⁽⁴⁾	Simmondsia Chinensis (Jojoba) Oil	3.0
	Hazelnut Oil ⁽⁴⁾	Corylus Avellana (Hazel) Seed Oil	3.0
C	Tocopherol	Tocopherol	0.1
D	Citric Acid (aq.) <u>or</u> Sodium Hydroxide (aq.)	Citric Acid (and) Aqua <u>or</u> Sodium Hydroxide (and) Aqua	pH 5.5 / 7.0

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

Antimicrobial performance in challenge tests according to ISO 11930



— ISO 11930 requirements for reduction of log (cfu/g) after 28 days ("criteria A")

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Formulation 1: 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 OC 8 ⁽⁴⁾	Caprylyl Glycol, Phenylpropanol, o-Cymen-5-ol	0.75 – 1.5
C	Citric Acid (aq.) or Sodium Hydroxide (aq.)	<i>Citric Acid (and) Aqua, or: Sodium Hydroxide (and) Aqua</i>	q.s. pH 4.5 / 8.0

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

Performance as Preservative

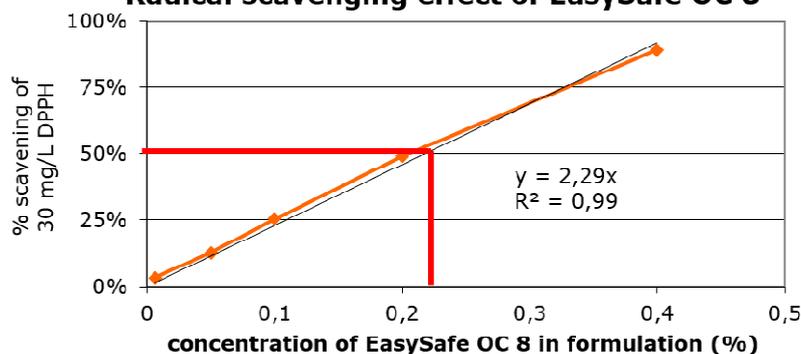
EasySafe OC 8 acts as a standalone preservative within a wide pH-range. It is compatible with common cosmetic ingredients and formulations. However, non-ionic surfactants might partly inactivate **EasySafe OC 8** due to complexation phenomena or partial incorporation into micelles. In such cases a higher concentration of **EasySafe OC 8** may be needed to achieve complete preservation. The following table gives an indication of the typical use-levels needed to obtain full preservation:

Formulation 1: "O/W emulsion"				Formulation 2: "Green Shampoo"			
Use level:	0.5 %	0.75 %	1.0 %	Use level:	0.75 %	1.0 %	1.5 %
pH 4.5	A	A		pH 4.5	B	A	
pH 5.5	A	A	A	pH 5.5	B	B	A
pH 7.0		B	A	pH 8.0			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		

Conclusion:

- **EasySafe OC 8** protects the "O/W emulsion", even at low concentrations of 0.5 – 1.0%.
- **EasySafe OC 8** also protects the "Green Shampoo". Since this product contains a non-ionic surfactant, a higher concentration of **EasySafe OC 8** is needed for a complete preservation. Alternatively, **EasySafe OC 8** can be combined with other multifunctional ingredients, such as **EasySafe GC 8**.

Radical scavenging effect of EasySafe OC 8



Antioxidant effect

EasySafe OC 8 is an anti-oxidant, due to its constituent o-Cymen-5-ol.

EasySafe OC 8 at a use-level of 0.22 % is able to scavenge 50% of the free radicals in a 30 mg/L solution of DPPH (2,2-diphenyl-1-picrylhydrazyl, photometric assay).

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Applications in cosmetic formulations

- **EasySafe OC 8** is an easy to handle liquid which is stable between -10°C and + 80°C. It is suitable for hot and cold processes. If frozen at very low temperatures, **EasySafe OC 8** should be warmed to 10°C and homogenized before use.
- **EasySafe OC 8** should not be added to fatty phases, because it needs to be present in the aqueous phase in order to take its action as a preservative. **EasySafe OC 8** is therefore preferably added towards the end of the formulation, e.g. after emulsification.
- **EasySafe OC 8** is soluble in aqueous solutions of surfactants, as well as in alcohols, alkanediols and polar vegetal oils. **EasySafe OC 8** can be dissolved in water with the help of common solubilizers (e.g. Tween 20, Polyglyceryl-4 Laurate/Succinate, etc.). It is therefore well suitable for clear aqueous formulations. Only when adding **EasySafe OC 8** to pure water, o-Cymen-5-ol may precipitate.
- The maximum recommended concentration of use for **EasySafe OC 8** is 1.5 %, which corresponds to a maximum concentration of 0.1 % o-Cymen-5-ol.
- **EasySafe OC 8** consists only of neutral substances and therefore stays active under alkaline, neutral and acidic conditions. However, o-Cymen-5-ol can react as a weak acid under strongly caustic conditions, where it may form an inactive salt. It is therefore recommended to apply **EasySafe OC 8** in products with a maximum pH of 8.

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.* **2011**, 49 (Suppl 2), 246-251.