

# EasySafe Hexam +

## The Innovative Preservative Solution for Sensitive Skin

**EasySafe Hexam+** is a **patented** and dual-functional blend, designed for the **microbial protection** of cosmetics and for the **moisturizing of the skin**. It is especially suitable for application in products for **sensitive skin**.

- **EasySafe Hexam+** is a **synergistic mixture** of the bio-based skin-care agent Pentylene Glycol and the preservative Hexamidine Diisethionate, an ingredient with a **long track record of safe use**. [1,2] It has a **good cutaneous and mucous tolerance** and its **broad-spectrum anti-microbial activity** ensures complete protection of cosmetic formulations.
- **EasySafe Hexam+** exhibits a **long-lasting skin moisturizing effect** comparable to that of glycerin. It contributes to a pleasant, non-sticky and non-greasy skin feel.
- **EasySafe Hexam+** contains a unique quality of Hexamidine Diisethionate, manufactured via a proprietary **eco-improved process** that inherently avoids the presence of toxic impurities.
- **EasySafe Hexam+** is based on a novel grade of Pentylene Glycol that is **sustainably made** from the bio-based raw material "sugarcane bagasse".
- **EasySafe Hexam+** can be used in a variety of products, as highlighted by the following example formulations: **Micellar Water, Men's Aftershave Balsam and Blueberry Children's Shampoo** (products and recipes available upon request).

### Functions

- Preservative
- Long lasting skin moisturizer

### Applications

- Skin care • Hair care • Make-up • Toiletries
- With a special focus on sensitive skin

### Specifications and characteristics

<b>INCI names</b>	Pentylene Glycol (and) Water (and) Hexamidine Diisethionate
<b>CAS reg. N°</b>	5343-92-0; 7732-18-5; 659-40-5
<b>Appearance</b>	Clear, colourless to slightly coloured liquid
<b>Odour</b>	Odourless or faint
<b>pH of EasySafe Hexam+</b>	4.0 ± 1.0
<b>Density at 20 °C</b>	0.99 – 1.01 g/ml
<b>Purity by HPLC</b>	≥ 98 area-%
<b>Recommended pH of use</b>	3.5 – 6.0
<b>Recommended use level</b>	0.2 % to max. 2.0 %
<b>Regulatory status</b>	Globally approved, safety and regulatory data available on request
<b>Solubility</b>	Miscible with water and ethanol in all proportions
<b>Origin, ISO 16128</b>	<ul style="list-style-type: none"> <li>- <b>Derived natural</b></li> <li>- <b>Natural origin index: 0.95</b></li> <li>- <b>95 % renewable carbon</b></li> </ul>
<b>Chemical structure:</b> <div style="text-align: center;"> </div>	

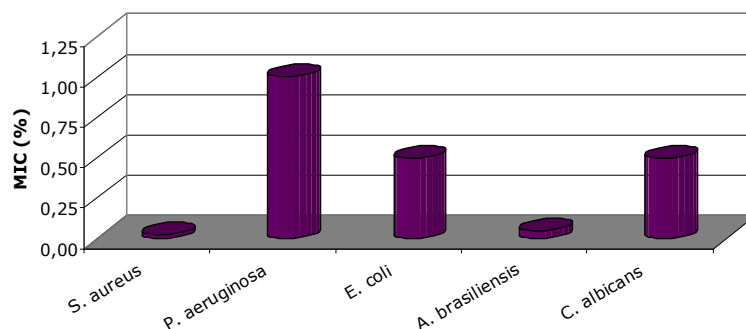
The above information is accurate to the best of our knowledge. Customers are advised to make their own studies on the usefulness of any ingredient for a particular application. Recommended usage information is only provided as indication and should not be considered as recommendations to use Minasolve SAS's products in violation of any laws, patents, or official regulations dealing with manufacture, composition, local procedures, product design, or end usage.

# EasySafe Hexam +

## Performances

### Minimum Inhibitory Concentrations

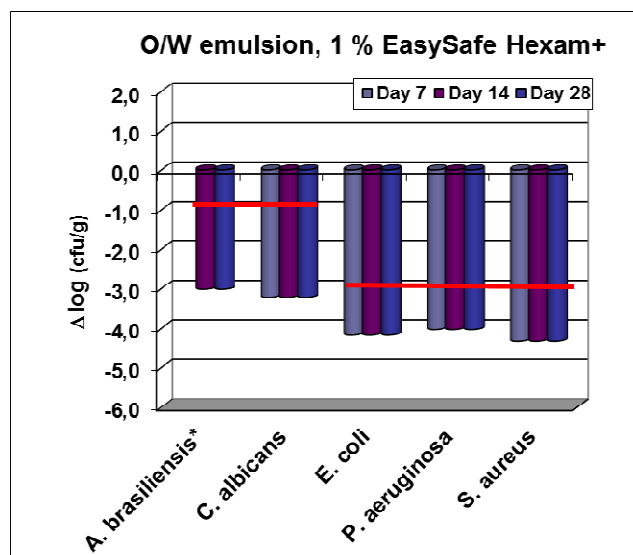
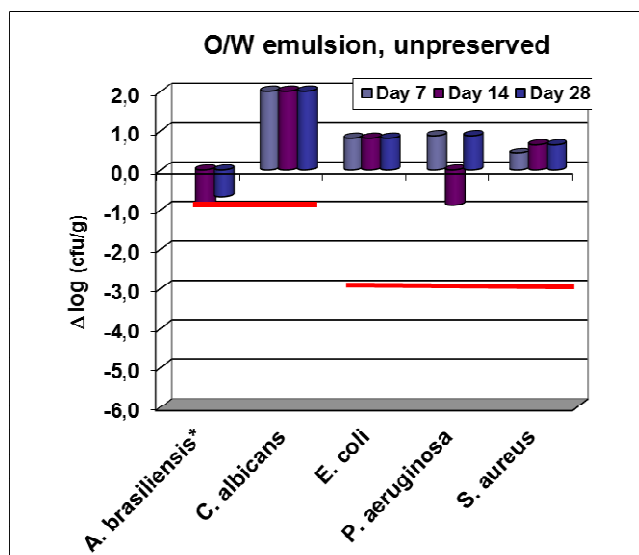
**EasySafe Hexam+** is a powerful broad spectrum **antimicrobial agent** that inhibits the growth of bacteria, yeasts and fungi. Its powerful microbiostatic activity is demonstrated by low Minimum Inhibitory Concentrations (MIC).



**EasySafe Hexam+** acts as a **broad-spectrum standalone preservative**, as demonstrated by microbial challenge tests on cosmetic products according to ISO 11930:

### Challenge Test 1: O/W-emulsion, pH 5.5

Phase	Ingredient	INCI name	%
A	Water	<i>Aqua</i>	ad 100.0
	<b>EasySafe Hexam+</b>	<b>Pentylene Glycol (and) Water (and) Hexamidine Diisethionate</b>	<b>1.0</b>
	Xanthan Gum	<i>Xanthan Gum</i>	0.5
B	Emulgade PL 68/50	<i>Cetearyl Glucoside (and) Cetearyl Alcohol</i>	5.0
	Shea Butter	<i>Butyrospermum Parkii (Shea) Butter</i>	3.0
	Jojoba Oil	<i>Simmondsia Chinensis (Jojoba) Oil</i>	3.0
	Hazelnut Oil	<i>Corylus Americana (Hazel) Seed Oil</i>	3.0
C	Bioxan T70	<i>Tocopherol</i>	0.1
D	Sodium Hydroxide (10 % aq.)	<i>Aqua (and) Sodium Hydroxide</i>	ad pH 5.5



\* According to the ISO 11930 norm, the total germ count of A. brasiliensis is not to be assessed at day 7.

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

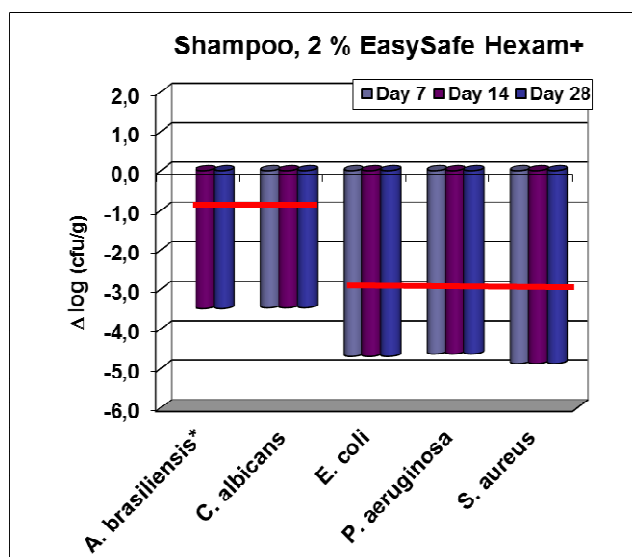
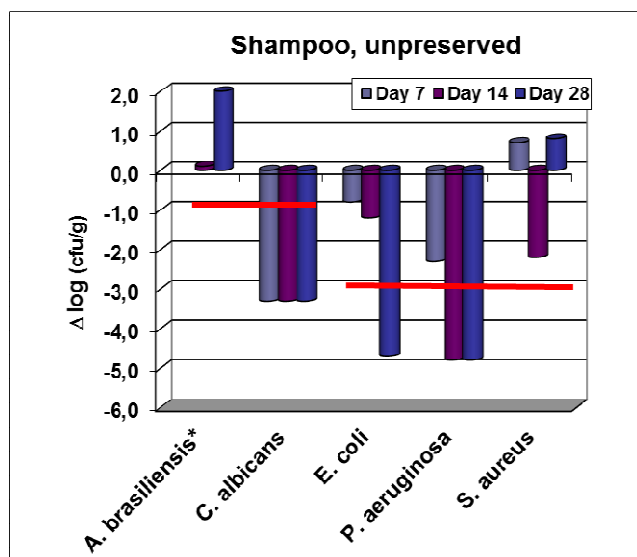
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## Hexam +

### Challenge Test 2: Sulfate-free Shampoo, pH 5.5

Phase	Ingredient	INCI name	%
A	Water	Aqua	ad 100.0
	Xanthan Gum	Xanthan Gum	0.6
	Plantacare 818 UP	Coco-Glucoside	15.0
	Plantapon ACG HC	Sodium Cocoamphoacetate	5.0
	Tego Betain F 50	Cocamidopropyl Betain	5.0
B	<b>EasySafe Hexam+</b>	<b>Pentylene Glycol (and) Water (and) Hexamidine Diisethionate</b>	<b>2.0</b>
C	Citric acid (50% aq. solution)	Aqua (and) Citric acid	ad pH 5.5

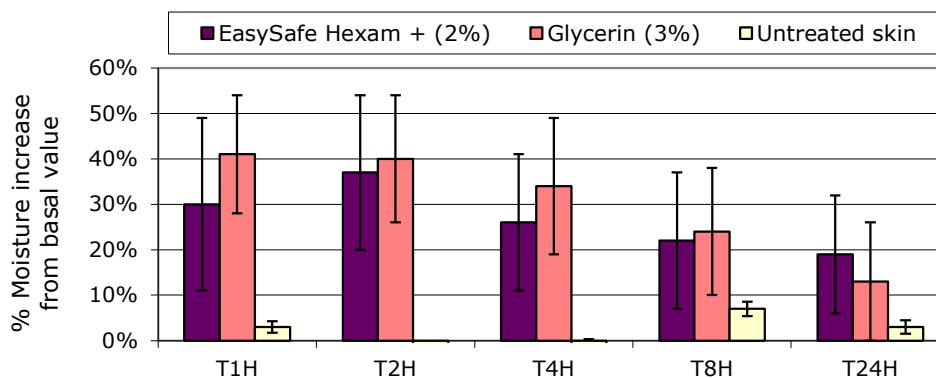


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— ISO 11930 requirements for reduction of log (cfu/g) after 28 days (criteria A)

### Corneometry study of aqueous solutions – PhD Trials, Lisbon

**EasySafe Hexam+** is an effective **skin humectant**. In a corneometry study, **EasySafe Hexam+** showed a long lasting moisturizing effect similar to that of Glycerin. Both test substances were applied as aqueous solutions to the forearm areas.



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# EasySafe Hexam +

## Formulation guidelines

**EasySafe Hexam+** is an easy to handle, water soluble liquid that can be introduced at any stage of the formulation **within a pH-range of 3.5-6.0**. It is suitable for cold and hot processes.

## Compatibility

**EasySafe Hexam+** contains **Hexamidine Diisethionate**, a cationic molecule which can interact with anionic ingredients.

Before adding **EasySafe Hexam+** to any formulation, the **pH of the product should be adjusted to  $\leq 6.0$**  in order to avoid the precipitation of neutralized Hexamidine.

**EasySafe Hexam+** is **compatible** with **standard anionic surfactants**, such as e.g. Sodium Laureth Sulfate, Sodium Cocoamphoacetate and Sodium Cocoyl Glutamate.

Other charged ingredients, such as **amphoterics** (Betain), **cationics** (Polyquats) or **anionic azo-dyes** (e.g. D&C Red 33) are compatible with **EasySafe Hexam+**. **Plant extracts** with low mineral content can also be formulated with **EasySafe Hexam+**.

In products where a thickening agent is required, **EasySafe Hexam+** is best formulated with **non-ionic thickeners**, e.g. non-surface treated cellulose and cellulose derivatives, gums (tara, guar, arabic, Konjac Mannan), or polyethylene oxide-based thickeners (Poloxamers, PEGs).

When formulating with **anionic polymers** (e.g. Xanthan Gum, acrylates), a blend of **EasySafe Hexam+** with surfactants at  $\text{pH} \leq 6.0$  can be prepared prior to the addition to the polymer in its gelled form. The addition of surfactants to a Carrageenan or Xanthan Gum gel allows for the addition of **EasySafe Hexam+** without leading to gel collapse.

## Bibliography

- [1] Becker L, "Final Report on the Safety Assessment of Hexamidine and Hexamidine Diisethionate", *International Journal of Toxicology* **2007**, 26 (Suppl. 3), 79-88.
- [2] Konaté N et al., "From pharma to skin care products: Hexamidine diisethionate as preservative for cosmetic products targeting sensitive skin", *Household & Personal Care Today* **2016**, 6, 34-37.

## Further reading

Paulus W, "Dibenzamidines" in *Directory of Microbicides for the Protection of Materials – A Handbook*, Springer, 1<sup>st</sup> edition **2005**, pp 634-638.

Konaté N. et al., "Sustainably Sourced Pentylene Glycol – a Green Allrounder", *SOFW Journal*, 142, 44-48, October **2016**.