dr. straetmans®

Technical Information

dermosoft® 1388 NaL

The Product: dermosoft® 1388 NaL

dermosoft® 1388 NaL is a multifunctional blend of organic acids combined with moisturizing glycerol. Besides its cosmetic functions, such as masking, skin conditioning and pH regulating, it has an outstanding antimicrobial activity. In combination with antimicrobial surface active substances, there is no need for traditional preservatives. Suitable for the commercialization to China.

CHARACTERISTICS

- INCI: Glycerin; Aqua; Sodium Levulinate; p-Anisic Acid; Sodium Hydroxide
- Appearance: Clear, colorless to light brownish liquid

- Cosmetic functions:
  Hydrating: thanks to moisturizing glycerol
  Masking: gentle scent, but no interference with other fragrances
  pH-regulating
  Anti-inflammatory [1] [2] (see Literature Review on penultimate page)
  Antimicrobial activity

- Standalone solution for antimicrobial protection in rinse-off products
- In emulsions, synergistic boosting effect in combination with antimicrobial surface active substances
- Suitable for all types of emulsions and surfactant based products

- Easy to handle: liquid and clear water soluble
- Cold processable
- Good skin compatibility
- Recommended pH range: 4.0 – 5.5

DOSAGE

Product Concept	Dosage
Emulsions	2.0 – 4.0 % + co-actives*
Surfactant based products	2.0 – 4.0 %
Aqueous based products	Max. 2.5 %

Note: the lower the pH, the lower the required dosage
* In emulsions, it is advised to combine with boosting actives for full antimicrobial protection of the product.

ANTIMICROBIAL EFFICACY

Gram +	Gram –	Yeast	Mould
++	++	++	++

Legend: + = good, but needs a co-active | ++ = very good alone

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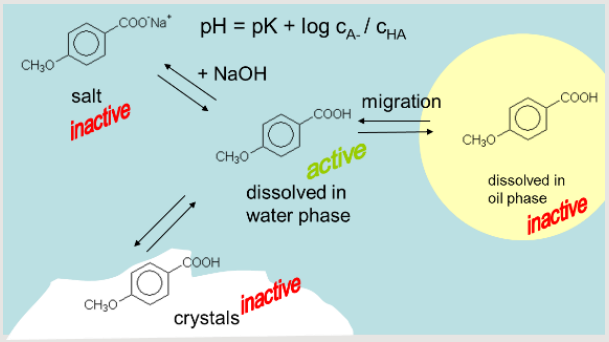
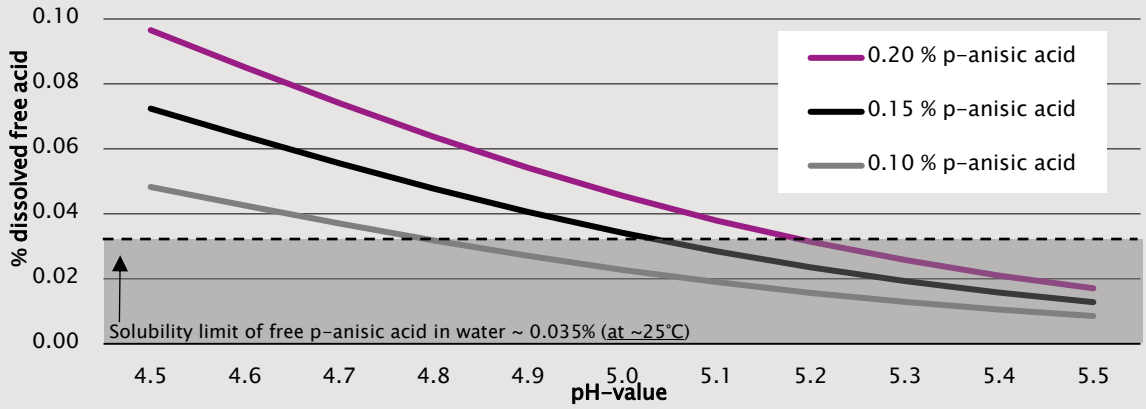
How to work with dermosoft® 1388 NaL

The use level of **dermosoft® 1388 NaL** is limited by the solubility of its component **p-anisic acid** in water. There is an interdependency between the pH, the concentration and the solubility of p-anisic acid. Moreover, the temperature also influences the dissolution and recrystallization of the material.
Overdosage or pH shifts may cause an irreversible crystallization of the p-anisic acid in the formulation. It is therefore recommended to check carefully that the raw material will not crystallize.



Only the dissolved free acid is antimicrobially active.

(1) Free active p-anisic acid (pKa = 4.47) in water (at ~25°C)



Lower pH
→ less p-anisic acid can be dissolved
→ more free acid will be in the solution
→ more antimicrobial activity of the material
→ consider solubility limit and recrystallization

Higher pH
→ more p-anisic acid can be dissolved
→ less free acid will be in the solution
→ less activity of the material

The addition of ethanol, surfactants, or glycols may improve the solubility.
In the end of the formulation process, the pH of the product needs to be adjusted to below 5.5.

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How to work with dermosoft® 1388 NaL

MANUFACTURING PROCEDURE *(LABORATORY SCALE)*

For emulsions:

1. It is recommended to add **dermosoft® 1388 NaL** to the water phase.
2. At the end of the formulation process, adjust pH to < 5.5 to regenerate the active p-anisic acid and levulinic acid.

For surfactant based products:

1. Mix **dermosoft® 1388 NaL** with the surfactants and proceed as usual.
2. Adjust the pH at the end of formulation process (see above).

Note: The pH of the raw material is 7.0-8.5 - consider the electrolyte input for your formulation.

For aqueous based systems:

Consider recrystallization of **dermosoft® 1388 NaL** *in aqueous based systems:*

1. Before the incorporation, the pH needs to be > 7. Therefore, mix **dermosoft® 1388 NaL** ideally with the pure water phase.
2. Add the remaining components of the water phase and mix with the prepared solubilizer phase.
3. At the end of formulation process, carefully adjust the pH to below 5.5 to avoid recrystallization.

FORMULATION ADVICE

Compatible with		Ethanol
		Glycols
		Surface active substances
Incompatibility		Electrolyte-sensitive materials
		Lecithin
For working with lecithins		Hydrate lecithin first and add **dermosoft® 1388 NaL** at the end of the formulation process
Dosage in aqueous based systems		Max. dosage **dermosoft® 1388 NaL** 2.5% + solvent (solubilizer)
Boost antimicrobial performance	**In emulsions**	Combine with surface active antimicrobials (e.g. **dermosoft® Octiol** or **dermosoft® Hexiol**)
	In aqueous based systems	Incorporate additional organic acid (e.g. **dermosoft® 700B**) and/or water soluble boosting agents (e.g. **dermosoft® PEA, dermosoft® Hexiol**).

APPLICATION IDEAS

Perfectly suitable for all kinds of emulsions, rinse-off products and tonics.

For more formulation ideas visit us at:
https://www.dr-straetmans.de/en/products/

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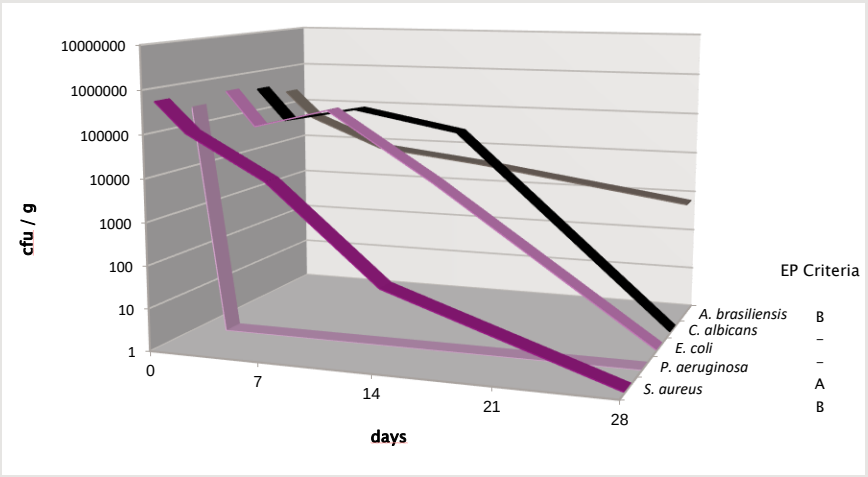
Proof of Performance

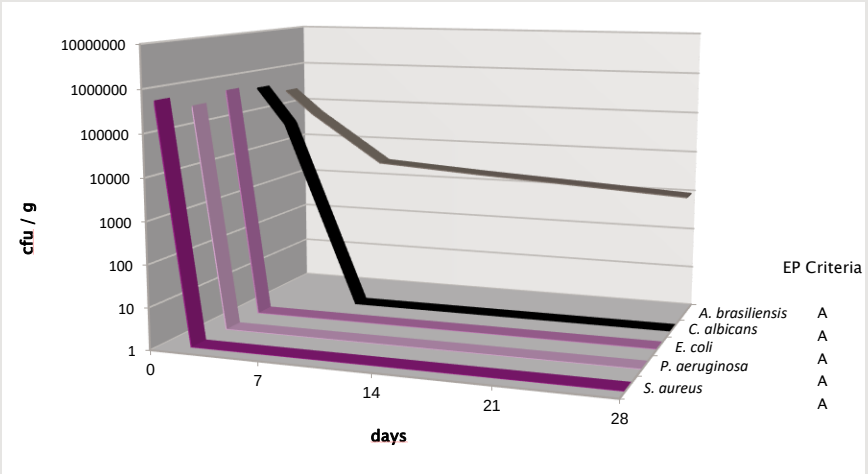
MICROBIOLOGICAL CHALLENGE TESTS

Performance in O/W-emulsions used alone and boosted by wetting agents

Basic emulsion with 3.5% dermosoft® 1388 NaL (pH 5.3)

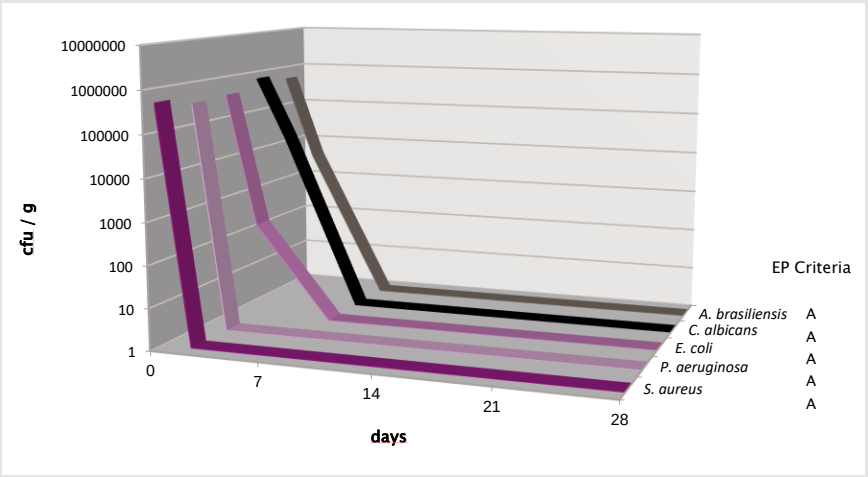


Basic emulsion with 3.5% dermosoft® 1388 NaL and 0.3% dermosoft® GMCY MB (pH 5.3)



Performance in surfactant based product when used alone

PEG-free Shampoo with 3.5 % dermosoft® 1388 NaL (pH 5.3)



Trade Information

International Approval*	EU, USA, Canada, China, Japan, Korea.
Packaging	25 kg / 200 kg
Shelf life (stored in original container)	36 months

* Information is based on our best knowledge and reviewed for the most requested regions only. We recommend to check current regulatory requirements in individual target countries. For more information, refer to Product Data Record (PDR) document chapter 5.

LITERATURE

Anti-inflammatory activity of p-anisic acid described in the following literature:
[1] Singh, N. et al. (2006). "Crystal Structures of the Complexes of a Group IIA Phospholipase A_2 with Two Natural Anti-inflammatory agents, Anisic Acid, and Atropine Reseal a Similar Mode of Binding". *PROTEINS*, *64*, 89-100.
[2] Chen, S. (2011). "Natural Products Triggering Biological Targets- A Review of the Anti-Inflammatory Phytochemicals Targeting the Arachidonic Acid Pathway in Allergy Asthma and Rheumatoid Arthritis". *Current Drug Targets*, *12*, 288-301.

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