

SOFTISAN[®] MULTIFUNCTIONALS

ANTIMICROBIAL
MULTIFUNCTIONAL INGREDIENTS



IOI OLEOCHEMICAL

IOI Oleo GmbH
PERSONAL CARE

SOFTISAN® Multifunctionals

SOFTISAN® GC8 and SOFTISAN® PG2 C10 can be used in emulsions, surfactant-based or hydroalcoholic formulations. Their versatile properties including refatting, wetting performance, and antimicrobial activity make them multifunctional ingredients for a variety of personal care and cosmetic applications. At a typical dosage between 0.3–1.0% SOFTISAN® GC8 is used as a boosting agent for conventional or natural preservatives. For deodorant applications, SOFTISAN® PG2 C10 is a mild active ingredient, being used at a typical dosage between 0.5–1.0% for control of bad smell on human skin. Both products are monoesters produced of only vegetable glycerol, caprylic or capric acid and are in conformity with all natural cosmetics standards. SOFTISAN® GC 8 and SOFTISAN® PG2 C10 are available in RSPO MB quality as well.



SOFTISAN® GC8

In recent years, chemical preservatives in cosmetic products, whether justified or not, have come under fire in public discussions. A growing demand for more natural and mild ingredients is therefore also linked with an interest in alternative approaches to protect cosmetic products from microbiological spoilage. One way of achieving preservative-free cosmetics is the application of SOFTISAN® GC8. Due to its hydrophilic/lipophilic character it is not only used as emollient, solubilizing aid, foam stabilizer, or co-emulsifier. It also interacts with the cell membranes of microorganisms and leads to their degradation.

Characteristics



INCI: Glyceryl Caprylate

- 100% natural
- Appearance: white, pasty, crystalline mass
- Melting point around 30 °C
- Minimum 88% monoester content
- Oil-soluble
- Dispersible in water

SOFTISAN® PG2 C10

Deodorants require different active ingredients in order to achieve an optimum result. Usually formulators use anti-perspirant active ingredients that prevent sweating (e.g. by blocking sweat glands) in combination with deodorant active ingredients. The latter are usually mild antimicrobial active ingredients reducing the population of bacteria on the skin that lead to bad smell.

Characteristics

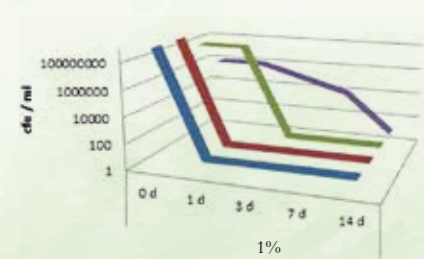


INCI: Polyglyceryl-2 Caprate

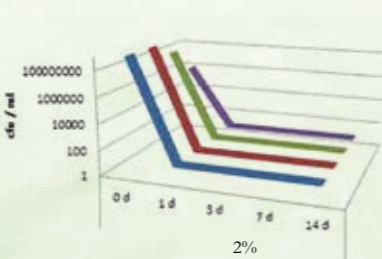
- Appearance: colorless, viscous liquid
- Minimum 70% monoester content
- Deodorizing activity
- Good activity against gram-positive bacteria
- Makes texture of creams remarkably softer

Antimicrobial activity of SOFTISAN® GC8

1% SOFTISAN® GC8 in O/W emulsion



2% SOFTISAN® GC8 in O/W emulsion



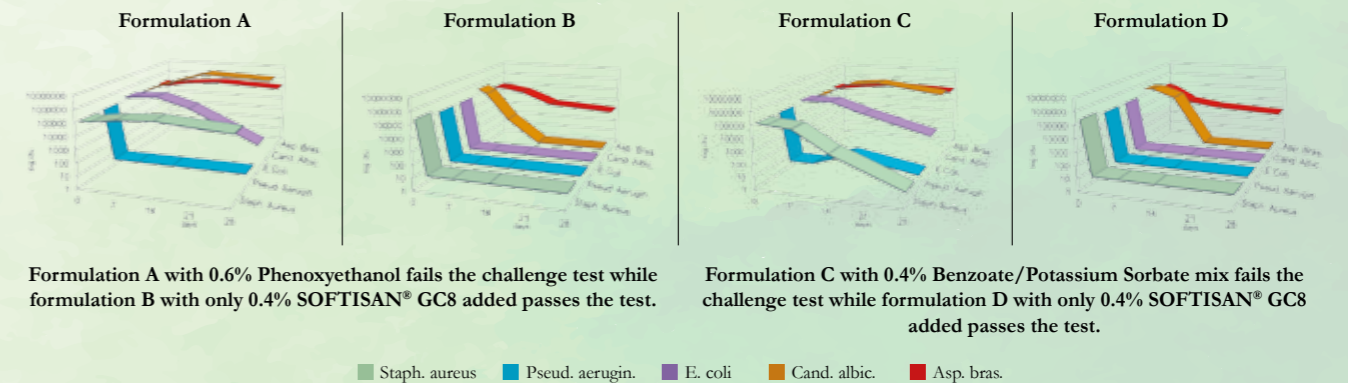
- Staphylococcus aureus
- Candida albicans
- Pseudomonas aeruginosa
- Aspergillus brasiliensis

Results of microbiological challenge test according to Ph. Eur. shows a quick reduction of all microorganisms in a cosmetic formulation.

Preservation boosting in O/W emulsion with SOFTISAN® GC8

A basic formulation was tested with different variations of preservative systems (see table below). It should be demonstrated that the boosting effect of the natural SOFTISAN® GC8 enables formulators to use very mild preservatives at low dosage to get a safely preserved product. It is clearly shown that the simple mild preservative systems (0.6% Phenoxyethanol in formulation A and 0.4% Sodium Benzoate/Potassium Sorbate mix in formulation C) are failing the microbiological challenge test. The addition of only 0.4% SOFTISAN® GC8 (formulation B 0.6% Phenoxyethanol + 0.4% SOFTISAN® GC8 and formulation D 0.4% Sodium Benzoate/Potassium Sorbate mix + 0.4% SOFTISAN® GC8) dramatically increases the efficacy of the mild preservatives used and the formulations easily pass the challenge test according to either Ph. Eur., USP, or ISO 11930. The boosting effect of SOFTISAN® GC8 works very well with other preservative systems, too. It is used with e.g. parabens, chlorophenesine, and alternative preservation systems to enhance the efficacy.

| Tradename | INCI | Formulation | | | |
|-------------------------------|------------------------------------|-------------|----------|----------|----------|
| | | A % | B % | C % | D % |
| IMWITOR® 372 P | Glyceryl Stearate Citrate | 3.0 | 3.0 | 3.0 | 3.0 |
| IMWITOR® 900 K | Glyceryl Stearate | 2.0 | 2.0 | 2.0 | 2.0 |
| WITARIX® MCT 60/40 | Caprylic/Capric Triglyceride | 20.0 | 20.0 | 20.0 | 20.0 |
| Ginol 1618 50/50 | Cetearyl Alcohol | 1.0 | 1.0 | 1.0 | 1.0 |
| SOFTISAN® GC8 | Glyceryl Caprylate | – | 0.4 | – | 0.4 |
| Phenoxyethanol | Phenoxyethanol | 0.6 | 0.6 | – | – |
| Benzoate/sorbate mix | Sodium Benzoate, Potassium Sorbate | – | – | 0.4 | 0.4 |
| Keltrol® F | Xanthan Gum | 0.3 | 0.3 | 0.3 | 0.3 |
| Glycerin | Glycerin | 5.0 | 5.0 | 5.0 | 5.0 |
| Aqua dem. | Aqua | ad 100.0 | ad 100.0 | ad 100.0 | ad 100.0 |
| Disodium EDTA | Disodium EDTA | 0.1 | 0.1 | 0.1 | 0.1 |
| Sodium hydroxide 10% in water | Sodium Hydroxide | q.s. | q.s. | q.s. | q.s. |



Formulation A with 0.6% Phenoxyethanol fails the challenge test while formulation B with only 0.4% SOFTISAN® GC8 added passes the test.

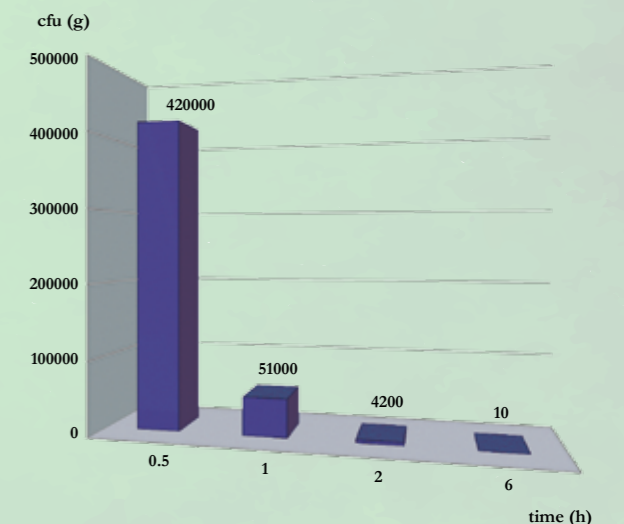
Formulation C with 0.4% Benzoate/Potassium Sorbate mix fails the challenge test while formulation D with only 0.4% SOFTISAN® GC8 added passes the test.

- Staph. aureus
- Pseud. aerugin.
- E. coli
- Cand. albic.
- Asp. bras.

Antimicrobial activity of SOFTISAN® PG2 C10 as deodorant

SOFTISAN® PG2 C10 has selective antimicrobial activity especially against gram-positive bacteria, while other - beneficial - bacteria on the skin remain unaffected. *Corynebacterium xerosis* is the standard germ that is tested in-vitro for evaluating deodorant active ingredients. Please note the quick and total reduction of the test germ in a regular roll-on formulation containing SOFTISAN® PG2 C10 in the graph.

In-vitro activity of SOFTISAN® PG2 C10 against *Corynebacterium xerosis*



FORMULATIONS

Day Cream No. 720

| Phase | Tradename | INCI | % |
|-------|--------------------------------|--|----------|
| A | SOFTIGEN® Shea RSB 45 | Butyrospermum Parkii Butter | 10.00 |
| A | IMWITOR® 372 P | Glyceryl Stearate Citrate | 4.00 |
| A | IMWITOR® 900 K | Glyceryl Stearate | 3.00 |
| A | MIGLYOL® Coco 810 | Coco Caprylate/Caprates | 5.00 |
| A | MIGLYOL® 829 | Caprylic/Capric/Succinic Triglyceride | 4.00 |
| A | MIGLYOL® 8810 | Butylene Glycol Dicaprylate/ Dicaprate | 4.00 |
| A | NACOL® 16-98 | Cetyl Alcohol | 4.00 |
| A | ISOFOL® 20 | Octyldodecanol | 3.00 |
| B | Glycerin 99,5% | Glycerin | 2.00 |
| B | Phenoxyethanol | Phenoxyethanol | 0.5 |
| B | SOFTISAN® GC8 | Glyceryl Caprylate | 0.7 |
| B | Keltrol® CG-F | Xanthan Gum | 0.2 |
| B | Aqua dem. | Aqua | ad 100.0 |
| C | Fragrance | Parfum (EU)/ Fragrance (US) | q.s. |
| C | Tocopherol | Tocopherol | 0.5 |
| D | Sodium hydroxide 10 % in water | Sodium Hydroxide | q.s. |

Preparation

1. Mix phase B in given order
2. Heat phase A + B to approx. 80 °C
3. Add phase B to phase A by stirring.
4. Homogenize.
5. Cool with gentle stirring to approx. 30 °C
6. Add phase C
7. Homogenize for a short time
8. Adjust with phase D to a pH value of 5.5

Supplier

IOI Oleo GmbH: IMWITOR®, MIGLYOL®, SOFTIGEN®, SOFTISAN®
Sasol: ISOFOL®, NACOL®
CP Kelco: Keltrol®

Deo Roll-On No. 699

| Phase | Tradename | INCI | % |
|-------|--------------------|--|------|
| A | Aqua dem. | Aqua | 40.0 |
| A | Keltrol® CG-T | Xanthan Gum | 0.2 |
| A | Plantacare® 81 LIP | Caprylyl/Decyl Glucoside | 1.0 |
| B | IMWITOR® 372 P | Glyceryl Stearate Citrate | 1.0 |
| B | IMWITOR® 928 | Glyceryl Cocoate | 0.5 |
| B | Dicaprylyl Ether | Dicaprylyl Ether | 3.0 |
| B | SOFTISAN® GC8 | Glyceryl Caprylate | 0.4 |
| B | SOFTISAN® PG2 C10 | Polyglyceryl-2 Caprate | 0.3 |
| B | Tegodeo® PY 88 | Zinc Ricinoleate | 2.0 |
| C | Phenonip® XB | Phenoxyethanol (and) Methylparaben (and) Ethylparaben (and) Propylparaben | 0.5 |
| C | Keltrol® CG-T | Xanthan Gum | 0.2 |
| C | Aqua dem. | Aqua | 49.7 |
| D | Fragrance | Parfum (EU) / Fragrance (US) | q.s. |
| E | Citric acid p. a. | Citric Acid | q.s. |

Preparation

1. Heat phase A to approx. 80 °C and homogenize
2. Heat phase B to the same temperature
3. Add phase B to phase A and homogenize
4. Homogenize phase C and add to phase A/B by stirring
5. Cool with gentle stirring to approx. 30 °C and add phase D
6. Adjust pH value to 6.5 with phase E

Supplier

IOI Oleo GmbH: SOFTISAN®, IMWITOR®
Evonik: Tegodeo®
Clariant: Plantacare®
CP Kelco: Keltrol®

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