

GENENCARE® OSMS BA

Product description

GENENCARE® OSMS BA is a highly purified anhydrous betaine, extracted from sugar beet. 100% bio-based, this amino-acid derivative naturally occurs in plants and animals. Betaine is a natural osmoprotectant, an osmolyte that protects cells from environmental stress like oxidative (UV radiations) and thermal stress (dehydration) by controlling cell water balance. GENENCARE® OSMS BA also reinforces the epidermal barrier (Tight Junctions), bringing moisturizing, protection and sensorial benefits in many applications: skin care, hair care and color cosmetics.

Benefits for skin care

Protection

- **Osmoprotectant / Protein protection against denaturation***
Osmolytes, by attracting water away from the protein surface, protect them from denaturation, increase their thermodynamic stability and preserve their native folded 3-D functional conformation (Fig. 1).
- **Improvement of keratinocytes' Tight Junctions integrity/skin barrier strengthening**
(*in vitro**) TJ are cell-cell junctions connecting keratinocytes in the granular layer of the epidermis. They have an important role in the epidermis cohesion and skin barrier functions. GENENCARE® OSMS BA significantly increases the strength of TJ in a dose dependent manner compared to control, at 24h from application, but partially already after 1h.

Moisturization

- **Osmoprotectant / Manage water balance in living cells**
(*in vitro**) Protection of keratinocytes from dehydration when exposed to oxidative (UV radiations) and thermal stress (dehydration). Synthesis of specific osmolyte transporters (BGT-1) to increase betaine uptake and allow cell rehydration.
- **Short term moisturizer** (24h clinical study, 21 volunteers)
4% GENENCARE® OSMS BA, significantly decreases the visual dryness score at 2h, 4h, 8h and 24h and increases the skin moisturization (skicon) during 6 h after a single application.
- **Long term moisturizer** (4-week clinical study, 40 volunteers)
3% GENENCARE® OSMS BA, significantly decreases the Transepidermal Water Loss (TEWL), already after 3 days, during 29 days and also 2 days after the treatment stops.

Sensory (clinical sensory analysis by an expert panel*)

4% GENENCARE® OSMS BA and a mixture of 2% GENENCARE® OSMS BA + 2% glycerin, improve the sensory profile of hand sanitizers compared to 4% glycerin (reduced stickiness, improved spreadability and silky after-feel), while bringing the same moisturization efficacy.

Product Identification

INCI name: Betaine
Chemical name: Trimethylglycine, glycine betaine
CAS number: 107-43-7

Typical characteristics

Appearance	free-flowing white crystals
Bulk density	0.6 – 0.8 g/ml
Melting point	241 – 242°C
Molar weight	117,15 g/mol
pH (5% 0.02M KCl solution)	5 – 7
Betaine solubility at 25°C in:	
Water	160g/100g (readily soluble in water)
Methanol	55g/100g
Ethanol	8.7g/100g
Purity	min 99% d.s. betaine
Moisture	max 2% (when packed)

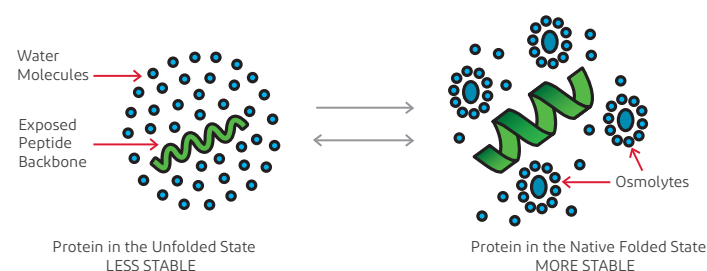
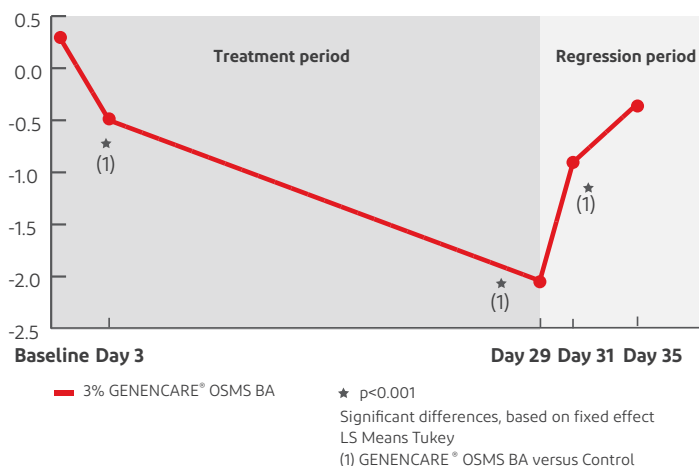


Figure 1 Protein stabilizing effect of osmolytes

Osmolytes, by attracting water away from the protein surface, allows the protein to fold in its native 3-D stable conformation, and to be protected from denaturation.



ΔTEWL: difference in TransEpidermal Water Loss compared to control (placebo). Control as baseline (O/W polymeric emulsion).

Figure 2

Evolution of the TEWL during a four-week moisturization study of GENENCARE OSMS BA on 40 volunteers.

Benefits for hair care

- **Protection**
Strengthens the hair and protects against heat damages (Fig. 3). Mitigates the irritation of surfactants
- **Moisturization**
Increases water retention capacity of hair fibers.
- **Sensory**
Hair conditioning effect. Improves hair shine and soft feel. Gives more luxurious, more stable and richer foam.

Benefits for color cosmetics

Please refer to GENENCARE OSMS CC data sheet.

Applications

Category: Skin care, hair care, color cosmetics

Recommended use: 1 – 5%

Formulation

GENENCARE OSMS BA is readily soluble in water and therefore easy to formulate. It gives colorless solutions and is compatible with most ingredients allowing a wide range of applications and formulation possibilities. GENENCARE OSMS BA can be used also as formulation aid to ease polymeric thickeners (carbomers) dispersions and swelling. In hot process, to be preferably added at the end of the formulation, at T°C <40°C. Starting point formulations are available for download on ULProsector.com

Certifications and statements

- Natural certifications: Ecocert/Cosmos, Natrue
- KOSHER certified under the Circle-U
- Halal statement available



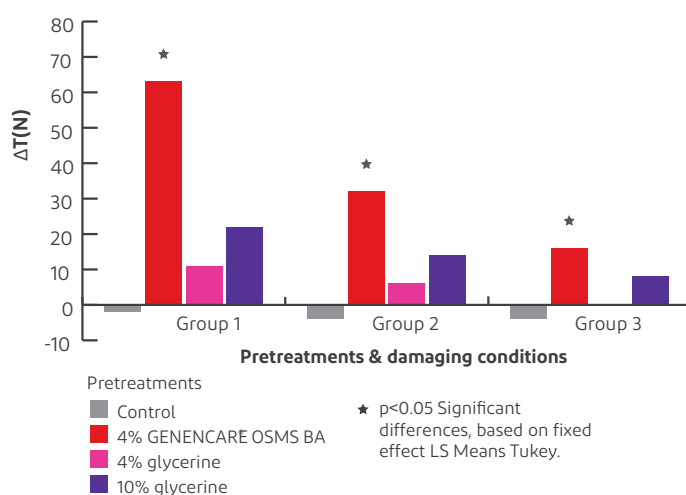
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Regulatory information

- Listed on all relevant global chemical inventories.
- Complies with European, United States, Canada, Australia/ New Zealand, Korea, China, Japan, Brazil and Taiwan cosmetic regulations for use in general cosmetics.
- Complies with Japan for use in Quasi-Drugs for the following uses:
Medicated soaps, shampoos, rinses, hair removers, hair growers, medicated skin lotions, creams, milky lotions, hand creams, cosmetic oils, sunburn protection, skin packs, bath agent – restricted at 10%. (not authorized for medical lip or toothpaste use).
- Current uses up to 8.7% (leave-on skin care) have been reviewed by the Cosmetic Ingredient Review (CIR) panel and considered safe.

Shelf life

Thirty six (36) months from date of manufacture when stored in original packaging.



Group 1: 4 hours of drying at 32°C under nitrogen;
Group 2: 2 hours of drying at 45°C and 52% RH;
Group 3: 4 hours of drying at 45°C and 52% RH.

Figure 3

The effect of GENENCARE OSMS BA on tensile strength of Caucasian hair

Customer relations

North America

Rochester, New York (USA)
Tel.: +1 800 847 5311
Fax.: +1 585 256 5295

Latin America

Buenos Aires, Argentina
Tel.: +54 11 4021 4700
Fax : +54 11 4021 4800

Europe, Middle East & Africa

Leiden, The Netherlands
Tel.: +31 71 5686 168
Fax: +31 71 5686 169

Asia/Pacific - Singapore

Tel.: +65 6586 3607
Fax: +65 6586 3675

personalcare@dupont.com

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