

OptiMarine™ (EPS)

TECHNICAL DATA SHEET

PRODUCT DETAILS

Description:	Extracellular sulfated polysaccharides derived from the microalga <i>Porphyridium cruentum</i> .
Origin:	Non-GMO microalga (<i>Porphyridium</i> sp.).
INCI:	<i>Porphyridium cruentum</i> extract.
Manufacturing:	Water-based extraction, solvent-free. Microalgae cultivated under controlled conditions in closed photobioreactors. Produced in Spain.
Uses:	COSMETIC FIELD: It is used to formulate facial & body skin care (anti-aging, moisturizing and regenerating formulas). Recommended Dosage: 2-5 %

GENERAL CHARACTERISTICS


Appearance:	Viscous hydrogel
Odor:	Characteristic. Fragrance-free
Color:	White
Solubility:	Soluble in water.
Viscosity:	5500 cP. Viscosity measured with an NDJ-1 rotational viscometer (12rpm, spindle 3).
pH:	5.,5 - 7, 5. The final pH may vary depending on the preservative system use.
Additives:	A broad range of stabilizers may be employed to ensure product stability. See the following section for more details.
Format:	Available in multiple formats. The product is supplied as a stabilized solution at a concentration of 12000 ppm.
Shelf Life:	24 months when stored in the original, unopened container. After this period, a quality control test is recommended before use.
Storage:	In stabilized solution form, store at temperatures below 25 °C. In powder form, store at ambient temperature, protected from light.

Instructions for use:

This ingredient is intended for general use in cosmetic applications. It is highly stable across a broad range of temperatures and pH levels and can be easily incorporated into most cosmetic formulations. Soluble in water. Add directly. Recommended dosage: 2–5% in cosmetic formulations.

MICROBIOLOGICAL CONTAMINANT PARAMETERS. Parameters verified for each production batch.

<i>Aerobic mesophilic bacterial count</i>	< 10 cfu/g	ISO 21149
<i>Molds and yeasts</i>	< 10 cfu/g	ISO 16212
<i>Staphylococcus aureus</i>	Absence / g	ISO 22718
<i>E. coli</i>	Absence / g	ISO 21150
<i>Pseudomonas aeruginosa</i>	Absence / g	ISO 22717
<i>Candida albicans</i>	Absence / g	ISO 18416



One Ingredient, Multiple Benefits for Well-being and Health

- ◆ **Facial and Body Care**
Serums, moisturizers, anti-aging products, and urban protection formulations.
- ◆ **Dermo cosmetics:**
Formulations for sensitive skin, soothing, and reparative products.
- ◆ **Natural and Vegan Cosmetics**
Eco-friendly ingredient, solvent-free, and suitable for vegan formulations.

PRESERVATIVE SYSTEM VALIDATION

This product has been validated with different preservative systems to ensure microbiological stability. All formulations have successfully passed the Challenge Test in accordance with ISO 11930:2019, meeting the requirements for antimicrobial protection as defined by international cosmetic standards. The product is compatible with the following preservative systems:

Preservative System	INCI
OPTIMARINE	Porphyridium cruentum extract, Benzyl Alcohol, Glyceryl Caprylate, Glyceryl Undecylenate
OPTIMARINE ^{ECO}	Porphyridium cruentum extract, 1,2-Hexanediol, Glyceryl Caprylate, Glyceryl Undecylenate
OPTIMARINE ^{EHG}	Porphyridium cruentum extract, Phenoxyethanol, Ethylhexylglycerin

The choice of preservative may slightly influence the final pH of the product. Please refer to the corresponding preservative supplier documentation for detailed formulation guidelines.

CHARACTERISTIC VALUES

The values shown are based on the analysis of several product batches and are expressed as average results. All values refer to dry biomass. This information is provided for guidance purposes and may be subject to slight natural variations typical of the product.

GENERAL COMPOSITION (% dry weight)

Parameters	% dry weight	Analysis method*
Neutral sugars	35-40	Sulphuric/anthrone method.
Sulphate (bonded to EPS)	3,5-4,5	Spectroscopy XRF
Uronic acid	55-65	Meta-hydroxydiphenyl micromethod
Proteins	<0.5	Bicinchoninic acid protein determination.
Marine minerals	<0.1	Spectroscopy XRF

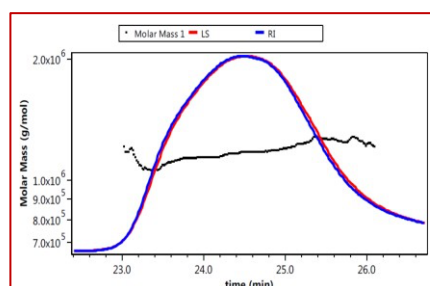
Chemical Composition & Functional Properties

OptiMarine is composed of a complex mixture of sulfated polysaccharides (EPS) derived from *Porphyridium*. These macromolecules are known for their broad spectrum of biological activities and multifunctional cosmetic benefits.

The polysaccharide structure is composed of the following neutral monosaccharides, as detailed in the table below. This composition contributes to the hydrophilic nature, bioactivity, and moisturizing capacity of the polysaccharide matrix.

NEUTRAL MONOSACCHARIDES (% of total neutral monosaccharides)

Monomer	%
Xylose (Xyl)	51,4
Galactosa (Gal)	29,4
Glucose (Glc)	18,4
Manose (Man)	0,4
Arabinose (Ara)	0,2
Fucose (Fuc)	0,2
Rhamnose (Rha)	n.d
TOTAL	100



The product contains a heterogeneous blend of sulfated polysaccharides, differing in chain length and structural complexity. Analysis by SEC-MALS (Size Exclusion Chromatography–Multi-Angle Light Scattering) reveals a main polysaccharide with an average molecular weight of 1291 ± 104 kDa, and a molecular weight distribution ranging from 700 to 2000 kDa. Minor fractions of oligosaccharides and monosaccharides are present in small amounts.

SCIENTIFIC EVIDENCE & EFFICACY STUDIES

OptiMarine has been rigorously evaluated through a combination of in vivo, in vitro, and dermatological studies conducted by GlobalBioActives, demonstrating its efficacy and safety as an innovative functional cosmetic ingredient.

In Vivo Clinical Evaluations

A 28-day study was conducted on 49 volunteers, using cosmetic formulations containing OptiMarine applied daily. Results confirmed its multifunctional skin benefits:

- +32% increase in skin hydration, measured by corneometry
- +14% improvement in elasticity, indicating enhanced firmness
- 18% reduction in sebum production, promoting balanced and healthier-looking skin

These results confirm OptiMarine’s effectiveness in deep hydration, elasticity improvement, and sebum regulation, making it ideal for anti-aging treatments and care for combination or oily skin types.

Skin Barrier Reinforcement

OptiMarine supports the epidermal barrier and helps protect the skin from environmental stressors, making it especially suitable for urban protection, hydration formulas, and dry or damaged skin.

- TEWL (Trans epidermal Water Loss) measurements showed a significant reduction within 3 hours, indicating improved water retention and barrier function.

Demonstrates a natural film-forming effect, forming a protective layer that shields the skin from pollution and external aggressors.

In Vitro Studies

Cell-based assays further confirmed OptiMarine’s antioxidant and anti-inflammatory properties, which are key in formulations targeting sensitive or environmentally stressed skin:

- Reduction of oxidative stress by limiting free radical formation, helping prevent premature aging
- Downregulation of pro-inflammatory cytokines (IL-6, TNF- α), demonstrating a calming and soothing effect

Dermatological Compatibility & Safety

OptiMarine has undergone comprehensive safety testing to ensure its compatibility with even the most sensitive skin types:

- HRIPT (Human Repeat Insult Patch Test): No sensitization or allergenic reactions detected
- Sensitive Skin Testing: Confirmed compatibility with reactive and atopic-prone skin, making it ideal for dermo cosmetic and clean beauty formulations.

HEAVY METALS

Heavy metals such as lead, cadmium, arsenic, mercury, and nickel are not intentionally added to the product. Trace amounts, if present, are below the limits commonly accepted by international guidelines (EU, FDA, Health Canada) and are considered technically unavoidable. Safety has been evaluated according to Regulation (EC) No 1223/2009.

Arsenic	< 2 mg/kg	GFAAS/HGAAS
Cadmium	< 3 mg/kg	GFAAS/HGAAS
Lead	< 3 mg/kg	GFAAS/HGAAS
Mercury	< 0, 1 mg/kg	GFAAS/HGAAS

GMO STATEMENT

This product complies with the requirements of Regulations (EC) No. 1829/2003 and No. 1830/2003 concerning genetically modified organisms (GMOs).

- It does not contain, and is not composed of, any genetically modified organisms.
- It does not include ingredients derived from genetically modified organisms.
- Therefore, it is considered GMO-free.

PACKAGING COMPLIANCE

The packaging materials used for this product are suitable for cosmetic use and are compliant with:

- The requirements set forth in Regulation (EC) No. 1223/2009 on cosmetic products, specifically regarding packaging safety and substance migration (Article 17).
- ISO 22716 guidelines (Good Manufacturing Practices for Cosmetics), which recommend control and qualification of packaging materials.
- In addition, materials follow the safety principles of Regulation (EC) No. 1935/2004 on materials intended to come into contact with food, as a precautionary industry standard for materials in prolonged contact with sensitive cosmetic formulations.

Compatibility between the packaging and the product has been verified to ensure stability and avoid any migration of harmful substances.

IRRADIATION

This product complies with Directive 1999/2/EC and Directive 1999/3/EC, applied by analogy from the food industry as a precautionary standard in cosmetics.

- The product has not been subjected to ionizing or non-ionizing irradiation processes.
- It has not been manufactured using raw materials that have undergone such treatments.
- Accordingly, the product is considered non-irradiated.

STATEMENT OF ORIGIN

The product has been manufactured and packaged in Spain

This product is manufactured in accordance with Good Manufacturing Practices (GMP) for cosmetics, as defined by the ISO 22716:2007 standard. Production takes place under a quality management system certified by an ACCREDIA-accredited body (Italy), ensuring full compliance with GMP guidelines for the production, control, storage, and distribution of cosmetic ingredients.

Date of Issue: Dec. 2025
Quality Control Department
TDS. OptiMarine, December 2025

The information contained in this document is provided to the best of our knowledge and understanding as of the date of issuance. The declared values refer to the added quantities and not to those that may be analytically detectable. The amounts of the components contained in the product may present slight variations from the declared values due to the natural variability of raw materials. The above information does not exempt you, under any circumstances, from the obligation to identify and verify the product in relation to its intended use.