Ingredients Information
HYALURONIC ACID

Hyaluronic acid is a non-sulfated glycosaminoglycan distributed widely throughout connective, epithelial, and neural tissues. It is one of the chief components of the extracellular matrix and binds water very strongly. In living tissue it serves as a water reservoir. Hyaluronic acid has a standard molecular weight between 1.5-1.8x10^6 Dalton. It is a very powerful hydration and film forming agent. Low molecular weight sodium salt of hyaluronic acid has a molecular weight below 1.0x10^6 Dalton. Due to its structure and lower molecular weight it is able to penetrate into the skin together with water and also with other substances attached. Low molecular weight hyaluronic acid can serve as an inner moisturizing agent or as a carrier of biological active substances.

Description:
The chemical structure of hyaluronan was determined in the 1950s in the laboratory of Karl Meyer. Hyaluronan is a polymer of disaccharides, themselves composed of D-glucuronic acid and D-N-acetylglucosamine, linked together via alternating β-1,4 and β-1,3 glycosidic bonds.

Other names:
Sodium hyaluronate, hyaluronan.

Source:
Hyaluronic acid is produced by fermentation.

Cosmetic applications:
Hyaluronic acid is a common ingredient in skin care products. It is a very effective moisturizer and film forming agent. Hyaluronic acid and its sodium salt are recommended in all cosmetic formulations where skin hydration is needed: daily skin care, night and regenerating preparations, after sun, decorative cosmetics, pre shaves, after shaves, hair care products.
CODIUM TOMENTOSUM EXTRACT

*Codium tomentosum extract* is a marine moisturizing factor obtained from a green alga called codium tomentosum. Codium tomentosum extract normalizes and balances skin’s moisture content. When formulated into creams or lotions, it rapidly hydrates the skin. Unlike normal moisturizing agents, the hydrating effect of Codium tomentosum extract is long lasting, and its moisturizing effects can still be observed several hours later.

**Description:**
*Codium tomentosum* is a small green alga (up to 30 cm long) with a dichotomously branched, cylindrical frond. The frond is solid and spongy with a felt-like touch and has many colourless hairs which can be seen when the plant is immersed in water. The holdfast is disc-like and formed from many fine threads. Codium tomentosum demonstrates remarkable properties in its ability to maintain a constant hydration level, despite increases (or decreases) in salinity, or the drying effects of the sun and wind when left exposed in shoreline tide pools. These remarkable properties are due to the presence of highly sulphated polysaccharides in the cell membranes and “osmotic” molecules in the cytoplasm.

**Constituents of Codium tomentosum extract:**
Sulfated polysaccharides, Glucuronic acid, Sugars, Minerals, Proteins, Beta-hydroxy acid.

**Properties of Codium tomentosum extract:**
Moisturizing regulating effect, long-term moisturizing, in-depth moisturizing, natural exfoliation.

**Cosmetic applications:**
Moisturizing skin care, oily skin, masks.
**Constituents of Imperata cylindrica root extract:**

Imperata cylindrica is rich in potassium and 3-dimethylsulfopropionate (DMSP).

**Properties of Imperata cylindrica:**

Moisturizes the epidermis for 24 hours.

**Cosmetic applications:**

Dehydrated skin (face and body), make up foundation, dry scalp treatments.
PANTHENOL

Panthenol is the alcohol analog of pantothenic acid (vitamin B5), and is thus the provitamin of B5. In organisms it is quickly oxidized to pantothenate. Panthenol is a highly viscous transparent liquid at room temperature, but salts of pantothenic acid (for example sodium pantothenate) are powders (typically white). It is well soluble in water, alcohol and propylene glycol, soluble in ether and chloroform, and slightly soluble in glycerin.

**Description:**
Panthenol comes in two enantiomers, D and L. Only D-panthenol (dexpanthenol) is biologically active, however both forms have moisturizing properties. For cosmetic use, panthenol comes either in D form, or as a racemic mixture of D and L (DL-panthenol).

**Chemical structure:**

![Chemical structure of Panthenol](image)

**Cosmetic benefits:**
In cosmetics, panthenol is a humectant, emollient and moisturizer. It binds to hair follicles readily and is a frequent component of shampoos and hair conditioners (in concentrations of 0.1-1%). It coats the hair and seals its surface, lubricating follicles and making strands appear shiny.
In ointments it is mixed with allantoin, in concentrations of up to 2-5%, and is used for treatment of sunburns, mild burns and minor skin disorders.
Panthenol is not, however, absorbed through the skin and thus has limited effects that are not due to its provitamin character.
If ingested, panthenol is metabolized to pantothenic acid.

**Cosmetic applications:**
Panthenol is used in skin care, hair care, nail care, sun products, after sun.
In order to maintain longevity, cells must rid themselves of superfluous and altered constituents. One biological pathway is the autophagy process. Autophagy (from the Greek words, "auto" "self" and "phagein" "to eat"), is a mechanism that involves cell degradation of unnecessary or dysfunctional cellular components. It is responsible for the elimination of large-dimensioned bulky waste. One example is lipofuscin, a brownish matter composed of oxidized proteins and lipids. These conglomerates become visible on the surface of the skin and are known as age spots. Polysaccharide α-glucan boosts the autophagy system. It reduces level of oxidized proteins and lipids and improves skin complexion.

**Key benefits – scientifically substantiated claims:**
Polysaccharide α-glucan boosts the autophagy system: in vitro studies with cell cultures of human keratinocytes and fibroblasts show that polysaccharide α-glucan is able to increase autophagy by 19% and to reduce the accumulation of the protein membrane complex lipofuscin by 35%. Tested in vivo at 3% the yeast extract was shown to improve skin radiance.

**Cosmetic applications:**
Regenerating, repairing and detoxifying skincare.
HYDROLYZED LUPIN PROTEIN

Hydrolyzed lupin protein is an active ingredient, obtained from sweet white lupin. It is rich in low molecular weight glutaminated peptides and in oligosaccharides. Hydrolyzed lupin protein favors the synthesis of epidermal proteins and lipids and improves the barrier function of the skin.

Description:

*Lupinus albus*, commonly known as the white lupin, is a member of the genus *Lupinus* in the family Fabaceae. It is a traditional pulse cultivated in the Mediterranean region. The white lupin is annual, more or less pubescent plant, 30 - 120 cm high. It occurs in meadows, pastures, and grassy slopes, predominantly on sandy and acid soils.

Constituents of hydrolyzed lupin protein:
Hydrolyzed lupin protein is rich in glutaminated peptides and oligosaccharides.

Properties of hydrolyzed lupine protein:
Stimulates the synthesis of structural proteins, favors the synthesis of epidermal lipids, reinforces the natural restructuring systems of the epidermis, maintains the epidermis hydration.

Cosmetic applications:
Hydrolyzed lupin protein is recommended for all repairing, regenerating and hydrating products.
Macadamia oil (or Macadamia nut oil) is the non-volatile oil expressed from the nut meat of the macadamia (*Macadamia ternifolia*) tree. Macadamia oil is sometimes used in food as a frying or salad oil, and in cosmetic formulations as an emollient.

**Description:**

The Macadamia nut is also known as the 'Queensland nut'. As this name suggests, it is native to Australia, where it is a staple dietary component for Aboriginal peoples. The Macadamia nut was first cultivated in 1930, on Hawaii, since which time it has become the only plant of Australian origin to acquire commercial significance. Nowadays, these trees, which came originally from an area extending from Queensland to New South Wales and which grow to a height of 15 m, producing 8-15 ovaries per raceme, are cultivated all round the world and the (expensive) nuts are on sale everywhere. Major centres for cultivation are Australia, South Africa and the American state of Hawaii.

**Constituents of Macadamia oil:**

Macadamia nut oil covers a broad fatty acid spectrum, from myristic to tetracosanoic acid, dominated by oleic acid (53-67%), palmitoleic acid (16-24%) and palmitic acid (8-10%). Eicosanoic, eicos-9-enoic-, docosanoic, erucic and tetracosanoic acid amount to 1-3%.

**Properties of Macadamia oil:**

Macadamia oil is excellent as a skin moisturiser and softener.

**Cosmetic applications:**

Macadamia nut oil is an excellent oil for dry, chapped and sensitive skin, because its fatty acid composition is similar to human sebum. It smooths the skin, and it is softening and regenerating.
AVOCADO OIL:

Avocado oil is obtained from the pressure of the fruits of *Persea gratissima*, containing vitamin A, vitamin D and vitamin E. The avocado is one of the most nutritive among fruits. The pulp has a buttery consistency, looks very much like cow’s butter, and has a bland taste with a nutty flavor.

Description: The avocado (*Persea americana*) is a tree native to Mexico, Central America, and Guam, classified in the flowering plant family Lauraceae. The name "avocado" also refers to the fruit of the tree with an egg-shaped pit. *P. americana* has a long history of being cultivated in Central and South America; The tree grows to 20 metres, with alternately arranged leaves 12–25 centimetres long. The flowers are inconspicuous, greenish-yellow, 5–10 millimetres wide. The pear-shaped fruit is a true berry, from 7 to 20 centimetres long, weighs between 100 and 1000 grams, and has a large central seed, 5 - 6.4 centimetres long. An average avocado tree produces about 120 avocados annually.

Constituents of Avocado oil:
The major fatty acid of avocado oil is always oleic, followed by palmitic and linoleic acids. The oil is rich in phytosterols, vitamin A, E and D and minerals like potassium, manganese and phosphorus.

Properties of Avocado oil:
Avocado oil is an emollient, that is anti-aging and stimulates the skin. It also improves dermal metabolism.

Cosmetic applications:
Avocado oil has a high moisturizing and emollient power, that smooth and relax the skin. It is used in daily skin care, body lotions, sun products, after sun products.
SQUALANE

Squalane is an emollient for personal care products derived from olive oil. It is a clear, colorless and odorless oil and has a high stability against oxidation.

**Description:** Squalane (C\textsubscript{30}H\textsubscript{62}) is the saturated form of squalene. It does not contain any double bonds in its chemical structure and therefore is very stable against heat and oxidation. Squalene is an unsaturated hydrocarbon (C\textsubscript{30}H\textsubscript{50}) which is present in vegetable oils, and especially in fish oil. It was traditionally extracted from shark liver oil which, in dependence of the shark species, contains up to 60 per cent squalene. It is of large interest for cosmetics as it is found in human sebum at a level of 12 per cent. Squalene, however, is not suitable for cosmetic formulations because it is highly unsaturated and therefore oxidizes easily. Therefore, it was converted into squalane by hydrogenation and purification. Alternatively, squalene may be obtained from olive oil which has a significant squalane amount from 0.1-0.7 per cent. It has the identical chemical structure as squalane sourced from the shark liver with the benefit of being vegetal in origin.

**Properties of squalane:**
Squalane is a very suitable emollient for cosmetic formulations, has an excellent compatibility with human skin and imparts an elegant non-greasy skin feel.

**Cosmetic applications:**
Skin care products, sun and after sun formulations, massage oils.
ISOSTEARYL STEARATE

Isostearyl stearate is a 100% naturally derived ingredient that optimises the water holding potential of the natural skin barrier. Isostearyl stearate works in synergy with the lipid bilayers of the skin, stabilising them in a more tightly packed structure, optimising their effectiveness in preventing water loss.

Description:
The stratum corneum is made up of corneocytes surrounded by lipids, providing a mechanical and chemical barrier to the environment. The lipids in the stratum corneum arrange themselves into bilayers. Within these lipid bilayers, the lipids can be organised into hexagonal or orthorhombic structures. The packing organisation determines how effective the bilayer is in controlling water loss and stopping the penetration of potential irritants. The orthorhombic structure provides much tighter packing of the lipids, thereby reducing the space between the lipids and preventing water from passing between them. Isostearyl stearate stabilises the orthorhombic packing of the lipids in the natural skin barrier to optimise the skin barrier’s water holding capacity.

Properties of isostearyl isostearate:
Isostearyl isostearate is able to significantly boost the water holding potential of the natural skin barrier for soft, smooth and optimally hydrated skin.

Cosmetic applications:
Moisturizers, anti-ageing, daily facial care, body care.
BISABOLOL

Bisabolol is a natural monocyclic sesquiterpene alcohol. It is a colorless viscous oil that is the primary constituent of the essential oil from German chamomile (*Matricaria recutita*) and *Myoporum grassifolium*. Bisabolol has a weak sweet floral aroma and is used in various fragrances. It has also been used for hundreds of years in cosmetics because of its perceived skin healing properties.

**Description:**
Bisabolol or more formally α-(-)-bisabolol is a natural monocyclic sesquiterpene alcohol. It is a colorless viscous oil that is the primary constituent of the essential oil from German chamomile (*Matricaria recutita*) and *Myoporum grassifolium*.

**Properties of Bisabolol:**
Bisabolol is known to have anti-irritant, anti-inflammatory and anti-microbial properties.

**Cosmetic applications:**
Bisabolol is used in skin care, baby care, after sun products, after shave.
SENSTIVE-COMPLEX

Sensitive-Complex is a synergistic complex of a yeast extract, several botanical extracts and a hydrosoluble vitamin. Rich in saponosides and flavonoids, it strengthens the capillaries, reinforces their resistance and reactivates microcirculation. In addition it has an overall soothing, calming effect. As a result, spider veins and red blotches are reduced and dark circles are diminished. Skin complexion becomes more even, resulting in a younger and healthier appearance.

Description:

**Sensitive-Complex** contains 1 yeast extract, 5 plant extracts and 1 hydrosoluble Vitamin that have anti-inflammatory, anti-edema, phlebotonic, sedative and healing properties. The skin benefits are the result of synergistic effects from the various components:
- Yeast extract (Saccharomyces cerevisiae)
- Butcher’s broom (Ruscus aculeatus)
- Horse chestnut (Aesculus hippocastanum)
- Centella asiatica
- Calendula officinalis
- Licorice extract (Glycyrrhiza glabra)
- Panthenol

**Constituents of Sensitive-Complex**: Panthenol, escin, ruscus aculeatus root extract, ammonium glycyrrhizate, centella asiatica extract and hydrolyzed yeast protein.

**Key benefits – scientifically substantiated claims:**

1. **Mild anti-irritant**: Sensitive-Complex moderates the reactions and soothes skin that overreacts to irritating stimuli of different origins (chemical: detergents; environmental: cold, heat, UV; mechanical; microbial).
2. **Local anti-inflammatory and anti-edemal**: Sensitive Complex has a preventive and repairing action on sensations of local warmth, diffuse redness.
3. **Local soother**: Sensitive complex reduces the reactivity of sensitive skin.

**Cosmetic applications:**

Sensitive complex is ideal for sensitive skin, sun or after sun preparations, after shave care, eye outline care.
VITAMIN C (L-ASCORBIC ACID)

Vitamin C (L-ascorbic acid) is found in most higher animals and in plants in different amounts. It is synthesized in its pure form but as it is very unstable it has to be protected from water, light, air and heat. It supports the action of vitamin E by regenerating and reactivating it as a radical scavenger. Has itself scavenging properties and is involved in the formation of collagen.

**Description:**

Ascorbic acid is a sugar acid with antioxidant properties. Its appearance is white to light-yellow crystals or powder. It is water-soluble and must be formulated at low pH to stay active. The L-enantiomer of ascorbic acid is commonly known as vitamin C.

**Properties of Vitamin C:**

In clinical studies vitamin C has been found to act as an antioxidant and anti-inflammatory agent. In addition, vitamin C has been found to stimulate collagen synthesis and to reduce dark pigmentation of the skin (e.g. age spots). Thus, vitamin C is also considered an anti-aging ingredient.

**Cosmetic applications:**

Skin care, sun care, regeneration, repair, skin whitening.
**VITAMIN E / TOCOPHEROL / TOCOPHERYL ACETATE**

**Tocopherol** (Vitamin E) is a fat soluble vitamin, that reinforces the antioxidative defenses of cell membranes. Tocopheryl Acetate is an ester of tocopherol and acetic acid, used to bind free radicals, and support cell renewal and cellular oxygen metabolism. In foods, the most abundant sources of vitamin E are vegetable oils such as palm oil, sunflower, corn, soybean, and olive oil. Nuts, sunflower seeds, seabuckthorn berries and wheat germ are also good sources.

**Description:**
Tocopherol describes a series of organic compounds consisting of various methylated phenols. Natural vitamin E exists in eight different forms, four tocopherols and four tocotrienols.

**Chemical structure:**

**Properties of Vitamin E:**
Vitamin E binds free radicals and prevents their destructive action on lipids, cells and cell membranes. Vitamin E promotes the biological stability of the cells and smoothes and strengthens the skin. It has also moisturizing properties.

**Cosmetic applications:**
Vitamin E is used in moisturizing creams, sun care, anti-aging products, after sun care, day creams, night creams, body care, hair care.