
Technical Information

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RetiSTAR™

Stabilized Retinol

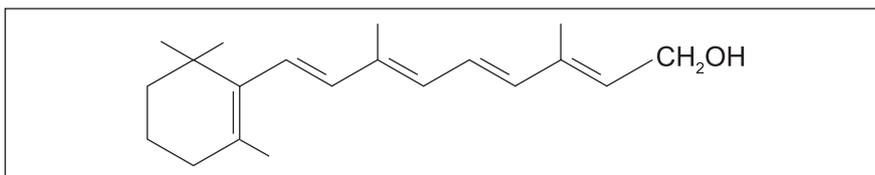
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Active cosmetic ingredient providing stable retinol for cosmetic formulations

cosmetic
INGREDIENTS

- Hair Care
- Skin Care
- Oral Care

 **BASF**
The Chemical Company

Structural formula**Synonyms**

all-trans-retinol, Vitamin A alcohol

Molecular formula $C_{20}H_{30}O$ **Molar mass**

286,5

INCI name

Caprylic/Capric triglyceride (and) Sodium Ascorbate (and) Tocopherol (and) Retinol

CAS-No.

65381-09-1, 134-03-2, 10191-41-0, 68-26-8

Specification

Parameter	Specification	Method
Assay - Retinol	$\geq 5\%$	05/0353.00
Purity - all-trans-Retinol in total retinol - cis-isomers in total retinol	$\geq 95\%$ $\leq 5\%$	05/0079.00
Identity	Passes test	5/0353.00

Description

RetiSTAR™ stabilized retinol is an oily dispersion containing retinol, tocopherol, sodium ascorbate and PEG-40 Hydrogenated Castor Oil in caprylic/capric triglycerides. The ratio and absolute concentration of these three ingredients is well balanced to achieve maximum stability of retinol in cosmetic emulsions.

Applications

Retinol is an active ingredient for sophisticated cosmetic skin care products. It is a highly effective substance for the care of aging skin and it protects against photo-aging. Most signs of skin aging - wrinkles, fine lines, age spots, loss in elasticity - are avoidable. They are almost entirely the result of the way we live and the environment we live in.

Efficacy

Retinol increases the mitotic activity and normalizes the enzyme activity of keratinocytes, thus improving the epithelization of the skin. Retinol improves the appearance of fine lines and wrinkles, and helps to normalize the physiology of the epidermis. This leads to an improved barrier function and helps retain skin moisture. Retinol has a normalizing effect on skin pigmentation.

Retinol not only improves the appearance of existing wrinkles, it also helps to prevent wrinkles. Recent studies have shown that retinoids counteract the physiological processes that actually lead to wrinkled, photoaged skin.

Solubility

Dissolves quickly in oil-in-water, as well as in water-in-oil emulsions.

Technical properties

RetiSTAR™ offers significantly enhanced stability in cosmetic formulations compared to all other retinol products. It allows the cosmetic manufacturer to produce retinol-containing emulsions (lotions, cream) without relying on the use of inert gas technology during manufacturing and packaging.

RetiSTAR™ can be simply added to the cosmetic emulsion at lower temperatures. After homogenization the emulsion should be filled into light- and oxygen-impermeable packaging, such as aluminum-lined tubes. The well-balanced combination of retinol, tocopherol, and sodium ascorbate gives maximum stability to retinol in the emulsion, without the need for manufacturing or packaging under inert gas.

As RetiSTAR™ is an oily dispersion some sedimentation may occur during storage. Sedimentation can be easily reversed by straking or stirring RetiSTAR™ prior to use.

Stability during storage

RetiSTAR™ remains stable for at least twelve months when stored at low temperatures (5-10°C).

Once opened, the RetiSTAR™ containers can be stored closed at 5-10°C without inert gas for several weeks without significant loss of retinol (<10%). For longer storage times, the air in the containers should be replaced by an inert gas (preferably argon). It is advisable to check the retinol concentration before use.

Stability in cosmetic emulsions

RetiSTAR™ gives sufficient stability to retinol in your formulation. Stored at room temperature, the recovery is approx. 90% after one year. The absolute value might depend on your final formulation and should be checked individually.

pH-Stability

RetiSTAR™ has been successfully used in a pH-range of 5.5 to 8 in oil-in-water emulsions.

Formulator recommendations

RetiSTAR™ can be used in water-in-oil, as well as in oil-in-water emulsions.

Used at 1% it results in final retinol concentrations of 0.05%, which is the recommended level for most products. At this concentration RetiSTAR™ delivers the adequate amount of technical antioxidants to the formulation.

The use of additional technical antioxidants (e.g. ascorbyl palmitate, see table 1) might lead to a decreased stability of retinol and is not recommended. Furthermore incompatibilities with titanium dioxide have been observed. Formulations using this ingredient should be checked carefully (see table 2).

	Technical antioxidants
Vitamin E	Tocopherol
Vitamin C	Ascorbic Acid, Ascorbyl Palmitate, Sodium Ascorbate
Target	Emulsion ingredients

Table 1: Incompatibilities with RetiSTAR™

	UV Absorbers
Inorganic pigment	Titanium Dioxide
Target	Sun protection

Table 2: Incompatibilities with RetiSTAR™

In contrast, physiologically active antioxidants, such as tocopheryl acetate or sodium ascorbyl phosphate (SAP), do not have an impact on the stability of retinol and give further value to your formulation (see table 3).

	Skin antioxidants
Vitamin E	Tocopheryl acetate
Vitamin C	Sodium Ascorbyl Phosphate
Target	Skin

Table 3: Compatibilities with RetiSTAR™

Technical antioxidants, such as BHT (Dibutylhydroxytoluene) and BHA (Butylhydroxyanisol), do not have an impact on the stability of retinol (see table 4). Preservatives, like Phenoxxyethanol, can be applied too.

	Technical antioxidants
Phenol	BHT
Phenol	BHA
Target	Emulsion ingredients

Table 4: Compatibilities with RetiStar™

Safety Data Sheet

Safety Data Sheet is available on request.

Note

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