

## Ferulic Acid synthetic

### Description

Ferulic acid occurs in nature, in plants as a free acid or as ester mainly in seeds, in leaves and in barks. Already in 1866 ferulic acid was isolated from the resin of the plant *Ferula Foetida*. Later in 1925 ferulic acid could be synthesized by the Knoevenagel condensation of vanillin and malonic acid diethyl ester. Ferulic acid usually exist as the trans isomer, while in solution slow isomerization results in an equilibrium ratio of 23 % cis and 77 % trans. The multifunctional effects of ferulic acid make this an active of high interest. Ferulic acid and its esters, like chemical sunscreen agents, have a phenyl-2-propene structure. They have a vinyl group at the benzene ring, which is strongly absorbing UV-light. By this absorption the stabilized phenoxy radical will be formed and a cis-trans-isomerization will occur. Therefore, ferulic acid in barks, leaves and seeds is protecting the plant from the harmful rays of sunlight.

An addition, ferulic acid is able to prevent the development of radicals started by oxygen and UV-radiation. Each reactive radical Lx or L-O-O-x (lipoperoxyl radical) which might get contact with a molecule of ferulic acid abstracts a hydrogen atom from the phenolic group of ferulic acid. A phenoxy radical is generated, which shows a high resonance stabilization. Therefore, ferulic acid is approved as an antioxidant agent in cosmetics and in food. The anti-inflammatory effectiveness of ferulic acid is based on its antioxidative potential. Ferulic acid furthermore shows very good MIC values for gram-positive and gram-negative bacteria.

### Efficacy

- shows the efficacy of a sunscreen (UV-A and UV-B absorption)
- acts as a deodorant
- acts as an antioxidant and protects from damages due to free radicals
- reduces inflammations and counteracts erythema development
- acts antimicrobial in cosmetic formulations
- shows anticarcinogenic properties

### Appearance

off-white, light yellow to light pink powder

### INCI

Ferulic Acid

### Registration

CAS-No.....1135-24-6

EC-No.....214-490-0

### Preservatives / Stabilizers

none

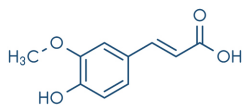


Nature needs no cosmetics,  
but cosmetics need nature

## Ferulic Acid synthetic

### Characteristics

assay of Ferulic Acid.....>= 99 %  
 loss on drying.....<= 0.5 %  
 melting point.....173 °C - 176 °C



ferulic acid

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molecular formula.....C<sub>10</sub>H<sub>10</sub>O<sub>4</sub>  
 synonym: 4-hydroxy-3-methoxycinnamic acid

### Application

high quality cosmetic products  
 daily care products  
 face masks  
 creams and gels  
 ampoules  
 body lotions  
 sun protection

### Application concentration

skin care formulation.....0.1 - 0.5 %

### Incorporation

Ferulic Acid synthetic is soluble in:  
 0.5 % in ethanol or propyl heptyl caprylate at room temperature.  
 0.5 % in pentylene glycol, propylene glycol or glycerin after heating (50 - 80 °C).  
 0.2 % is partly soluble in amaranth, sunflower oil or caprylic/capric triglycerides after heating (50 - 80 °C).

Ferulic Acid synthetic is insoluble in:  
 0.2 % in oil at room temperature and after heating (olive, jojoba and avocado oil).  
 0.5 % in oil at room temperature and after heating (apricot kernel, amaranth and sunflower oil).  
 0.5 % at room temperature and after heating in isoamyl laurate and caprylic/capric triglycerides.

The addition of solubilizer PEG-40 supports solubility in oil. Ferulic acid can be incorporated up to 80 °C.

### Toxicology

non hazardous in normal use concentration

### Storage & Shelf life

Ferulic Acid synthetic should be stored in a dry and light protected place at 10 - 25 °C.

In closed original containers the shelf life is two years.