

# Ethyl Ferulate COS

## Description

Ethyl ferulate is a naturally lipophilic derivative of ferulic acid isolated from rice bran oil. 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 in the presence of secondary amines. 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 (lipoperoxy 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
- soothes the skin

## Appearance

creamy white powder

## INCI

Ethyl Ferulate

## Registration

CAS-No.....4046-02-0  
 EC-No.....223-745-5

Raw material approved by ECOCERT GREENLIFE, conform to the COSMOS Standard.



Nature needs no cosmetics,  
 but cosmetics need nature

## Ethyl Ferulate COS

### Preservatives / Stabilizers

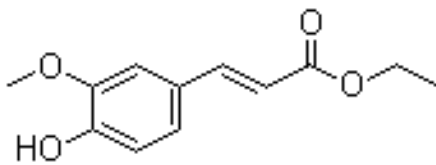
none

### Application concentration

skin care formulation.....0.5 - 1 %

### Characteristics

purity (HPLC).....> 98 %  
 assay of Ferulic Acid.....< 1 %  
 loss on drying.....< 10 %  
 melting point.....53°C - 65°C



(source www.chemblink.com)

molecular formula.....C<sub>12</sub>H<sub>14</sub>O<sub>4</sub>  
 synonym:  
 ethyl 4-hydroxy-3-methoxycinnamate, 3-methoxy-4-hydroxycinnamic acid ethyl ester

### Incorporation

Ethyl Ferulate COS is soluble in ethanol, pentylene glycol, propylene glycol or emulsifiers. It is insoluble in glycerin.

In a pure water/ethanol system 3 % ethyl ferulate is stable in 60 % of water and 37 % of ethanol. If you add additional substances, please reduce the water content and not the ethanol content. In case an emulsifier or an oil phase is added the possible ethanol and water concentration may vary from above values.

At room temperature Ethyl Ferulate COS is insoluble in sunflower oil, olive oil, Tegosoft P, Tegosoft CT and M.

Under heating (> 50°C) Ethyl Ferulate COS is soluble up to 0.5 % in sunflower oil or in Tegosoft P and the solution is clear after cooling down.

### Application

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

### Toxicology

non hazardous in normal use concentration  
 pure raw material is irritating to skin, eye and may cause respiratory irritation

### Storage & Shelf life

Ethyl Ferulate COS should be stored in a dry and light protected place at 10 - 25°C.

In closed original containers the shelf life is three years.