

Technical Data Sheet

Evicide® levulinate

- ☆ Mild natural antimicrobial
- ☆ Powerful bactericide
- ☆ Fully water-soluble
- ☆ Cost Efficient
- ☆ Globally approved
- ☆ Multifunctional additive
- ☆ 100% natural
- ☆ INCI: Levulinic Acid, Glycerine, Sodium Levulinate, Aqua

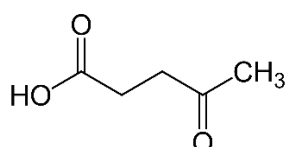


The Evicide® line

Evicide® stands for modern preservation. With the access to new and sustainable technologies the possibilities of safe preservation have changed fundamentally in the personal care industry. Nature-identical food preservatives have gained attention as well as antimicrobial, multifunctional ingredients. These act as boosting agents for mild and skin friendly preservatives or allow to even work completely without traditional preservatives. The idea behind the Evicide® product line is that with *evident* smart solutions formulators can create a product as safe as with traditional preservatives that are sometimes less skin-friendly and very often subject to criticism of consumers.

There are a number of organic acids well known for their preservation effect, like Benzoic Acid, Sorbic Acid or p-Hydroxybenzoic Acid, which is the basic structure from which Parabens are derived. Some of those products have lost popularity in recent years because of reported side-effects.

Evicide® levulinate also belongs into the group of organic acid, is a 100% natural antimicrobial sourced from sugar cane and corn and well known to be powerful against bacteria and yeast. Like other actives this molecule is a result of intensive research and studies to find milder and more accepted alternatives to traditional preservatives. Experienced formulators know that it is easily possible to replace traditional preservatives with modern, natural concepts like Evicide® levulinate. This ingredient is found in hundreds of products worldwide, especially in natural cosmetics and sustainable brands.



Evicide® levulinate's main active Levulinic Acid

Evicide® levulinate

Evicide® levulinate has become famous as one of the green platform chemicals identified by the US government for sustainable chemistry. It has also been known for a long time as a flavouring substance in the food industry. We are offering Evicare® levulinate with various functions for the use in personal care. Besides its pH-regulating effect and skin conditioning properties it is mainly used for its antimicrobial activity as it stands out in terms of efficacy. Evicide® levulinate has an

excellent performance against bacteria and yeast – at a very good cost-performance ratio. With the right combination of Evicide® ingredients it is very easy to protect cosmetic products without traditional preservatives.

When studied in formulations with preservative efficacy tests (PET), the excellent performance of Evicide® levulinate can be seen in almost every formulation. Also the prediction of needed concentration in finished products becomes more precise with PET in comparison to MIC. Evicide® levulinate makes the difference in natural preservation of cosmetics and is very easy to use.

The mode of action of Evicide® levulinate is best understood if you consider the target at a cellular level. Microorganisms are very sensitive to changes of the pH in their organism, but not that much in the outside environment. Just like humans who have a sophisticated pH buffer in the blood, if something goes wrong with the pH in our blood we will feel it very quickly and the consequence can be dramatic. Same for microorganisms. They have developed a barrier in their membrane that allows them to survive in a broad pH range. However, if we design a molecule to enter the microbes and change the pH from the inside then we have a powerful antimicrobial active. That's the case with Evicare® levulinate. At the pH-level of usual cosmetic products (usually 5.0–5.5 according to the pH in human skin) it is effective in penetrating the microbes' membrane and changes the pH inside the cell. This results in a de-activation of vital functions in the cell and kills the microorganisms without being chemically aggressive.

It is important to note that – like every organic acid – also Evicide® levulinate is pH dependant. It is effective in a recommended pH-range of 3.5 – 6.0 which matches most personal care formulations because of the physiological pH of human skin. It can also be used at pH up to 6.5 but then at a higher dosage because of the unfavourable equilibrium of acid vs salt/anion of the acid. Please find details to the dosage at different pH levels below in the Application section.

Properties of Evicide® levulinate				
Appearance	Clear, pale-yellow liquid			
INCI	Levulinic Acid, Sodium Levulinate, Water, Glycerine			
Recommended dosage	0,5 – 1.0 %			
Antimicrobial performance	Gram+	Gram-	Yeast	Mould
★★★ very good ★ good	★★★	★★★	★★★	★★★
★★★ moderate ★ not sufficient	★★★	★★★	★★★	★★★
pH-range	3.5 – 6.0			

Application

Example concentrations: 0.5 % at a pH of 3.5
0.6 % at a pH of 4.5
0.8 % at a pH of 5.5
1.0 % at a pH of 6.0

Solubility: very good water solubility

Formulation Tips: a) add product to the water phase under stirring
b) the water phase may be heated to 80° C
c) add before homogenizing

Packing and Storage

Packing sizes: 5 kg canister, 25 kg canister and 200 kg drums

Storage conditions: The product should be stored in a dry place
protected from direct sunlight, heat

Shelf life: 24 months in unopened container and when stored
under proper conditions

Further Information

Refer to the MSDS and Quality and Regulatory Information Sheet