



Leucidal® Liquid SF

Active Micro Technologies

Technical Data Sheet

BACKGROUND

Consumer choice is the most important factor when it comes to cosmetic sales. Today, a growing number of consumers are opting to move away from synthetic preservatives such as parabens, formaldehyde donors and phenoxyethanol. In addition to public pressure, the use of these synthetic materials in cosmetics is also becoming more strictly regulated. For these reasons, formulators have been actively searching for alternatives to synthetic preservatives that can provide broad spectrum antimicrobial activity and can be added into a wide range of cosmetic applications.

Active Micro Technologies (AMT) has developed a full line of products derived from naturally occurring compounds that provide broad spectrum antimicrobial protection. As a result, these novel natural antimicrobials are considered self-preserving cosmetic actives and therefore can be used as consumer-friendly alternatives to synthetic preservatives in a wide range of cosmetic applications.

SCIENCE

Leucidal Liquid SF is a probiotic-based ingredient created by the fermentation of *Lactobacillus* in a defined growth medium. *Lactobacillus* is one of the species of microorganisms used



to produce fermented products such as sauerkraut and kimchi, a Korean dietary staple, from cabbage. Like many members of the lactic acid bacteria family, *Lactobacillus* is capable of restricting the growth of other microorganisms by acidifying its environment. However, in addition to acidifying its environment, *Lactobacillus* also produces novel antimicrobial peptides, also known as bacteriocins, that are capable of providing broad spectrum antimicrobial protection.

Code Number: M15019

INCI Nomenclature:

Lactobacillus Ferment

INCI Status: Conforms

REACH Status: Fully Compliant

CAS Number: N/A

EINECS Number: N/A

Origin: Biotechnology

Lactobacillus

Processing:

GMO Free

No Ethoxylation

No Irradiation

No Sulphonation

No Ethylene Oxide treatment

No Hydrogenation

Additives: None

-Preservatives: None

-Antioxidants: None

Other additives: None

Solvents used: Water

Appearance: Clear to Slightly Hazy Liquid

Soluble/Miscible:

Aqueous Ferment Filtrate

Suggested Use Levels: 2.0 - 4.0%

Suggested Applications:

Skin Conditioning Antimicrobial,



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During the manufacturing process, lysozyme is added to the ferment filtrate to facilitate a controlled cell lysis. This step helps ensure the release of the antimicrobial peptides for maximized activity.

BENEFITS

The ability of **Leucidal Liquid SF** to inhibit the growth of a variety of bacteria and fungi was determined using the Minimum Inhibitory Concentration (MIC) test. The results are illustrated in Table 1 which show that this material provides broad spectrum antimicrobial protection.

Microorganism	MIC (%)
<i>E. coli</i>	0.75
<i>P. aeruginosa</i>	1.00
<i>S. aureus</i>	1.00
<i>A. brasiliensis</i>	1.00
<i>C. albicans</i>	0.75

Table 1. MIC Data for **Leucidal Liquid SF**

A double challenge test using 2% **Leucidal Liquid SF** was also conducted to evaluate the ability of the product to provide antimicrobial protection in cosmetic finished products. A basic O/W emulsion was used as the base. The samples were inoculated with *E. coli*, *P. aeruginosa*, *S. aureus*, *C. albicans* and *A. brasiliensis* and incubated for 28 days. During this period, samples were periodically collected and tested for the presence of viable microorganisms. Following the initial 28 days of incubation, the samples were re-inoculated with the microbial cultures for another period of 28 days. The results are illustrated in Table 2.

	<i>E. coli</i>	<i>P. aeruginosa</i>	<i>S. aureus</i>	<i>A. brasiliensis</i>	<i>C. albicans</i>
Inoculum (initial)	7.0x10 ⁶	7.0x10 ⁵	5.1x10 ⁶	1.7x10 ⁶	4.7x10 ⁶
Day 0	>99.999%	99.857%	>99.999%	99.996%	99.997%
Day 7	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%
Day 14	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%
Day 21	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%
Day 28	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%
Inoculum (re-inoculated)	8.2x10 ⁷	1.6x10 ⁶	1.0x10 ⁶	3.3x10 ⁶	1.7x10 ⁶
Day 7	>99.999%	99.985%	99.987%	99.977%	99.975%
Day 14	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%
Day 21	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%
Day 28	>99.999%	>99.999%	>99.999%	>99.999%	>99.999%

Table 2. Challenge Test results for 2% **Leucidal Liquid SF** in O/W emulsion.

USE RECOMMENDATIONS

Leucidal Liquid SF can be used in a wide range of cosmetic products, however to ensure optimum results we recommend adding it into products with a pH between 3 and 8 and during the cooling phase of the formulation process at temperatures lower than 70°C.