

# Leucidal® Liquid SF

## 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 kimchi and sauerkraut, 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, *Lactobacillus* also produces novel antimicrobial peptides, known as bacteriocins, that are capable of providing broad spectrum antimicrobial protection. During the manufacturing process, lysozyme is added to the ferment filtrate to facilitate a controlled cell lysis to ensure the release of the antimicrobial peptides for maximized activity.

**Code Number:** M15019

**INCI Nomenclature:**

*Lactobacillus* Ferment

**INCI Status:** Approved

**REACH Status:** Fully Compliant

**CAS Number:** 68333-16-4

**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 Hazy Liquid

**Soluble/Miscible:**

Aqueous Ferment Filtrate

**Suggested Use Levels:** 2.0 - 4.0%

**Suggested Applications:**

Skin Conditioning, Antimicrobial

# Leucidal® Liquid SF

## 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, showing that this material provides broad spectrum antimicrobial protection.

Microorganism Tested	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 finished formulas. 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 <sup>6</sup>	7.0x10 <sup>5</sup>	5.1x10 <sup>6</sup>	1.7x10 <sup>6</sup>	4.7x10 <sup>6</sup>
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 <sup>7</sup>	1.6x10 <sup>6</sup>	1.0x10 <sup>6</sup>	3.3x10 <sup>6</sup>	1.7x10 <sup>6</sup>
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 using the following guidelines. Incorporate the product into formulations at a pH between 3 and 8, during the cooling phase of the process at temperatures lower than 70°C. Furthermore, when working with xanthan gum or Carbopol Ultrez 10, it is best to add this product prior to the thickener.