1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Name: Leucidal® Liquid
Product Code: FSSM15008

1.2. Relevant identified uses of the substance/mixture and uses advised against

Recommended Use: Topical cosmetic use; Antimicrobial
Restrictions on Use: Refer to the detailed list of labeling/restrictions (Section 15 Regulatory Information).

1.3. Details of the supplier of the safety data sheet

Company name: Formulator Sample Shop® Srl
Company address: P.O. Box – 20087 Robecco sul Naviglio (Milan) Italy
Telephone number: +39 (0)2 902 78 641
Fax number: +39 (0)2 903 60 718
E-mail address: info@formulatorsampleshop.eu

1.4. Emergency telephone number

Emergency telephone number: +39 (0)2 902 78 641 - Mon-Fri: 8:30AM-5:30PM

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance/mixture

Classification:

GHS / CLP
Basis for Classification: Based on present data no classification and labeling is required according to GHS, taking into account the national implementation (United Nations version 2011).

USA
OSHA Regulatory Status: This material is non-hazardous as defined by the American OSHA Hazard Communication Standard (29 CFR 1910.1200).

Europe
- This product is not classified as hazardous to health or environment according to the CLP regulation.

Nature of special risks attributed: None in particular

2.2. Labeling Elements

Provided symbols / Pictograph: No hazard symbol expected
Hazard Statements/Signal Words: Not applicable

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Precautionary Statements: P233: Keep container tightly closed
P281: Use personal protective equipment as required
P402: Store in a dry place
P404: Store in a closed container
P410: Protect from sunlight
P411: Store at temperatures not exceeding 25°C

2.3. Other hazards which do not result in classification:
No particular fire or explosion hazard.
By mechanical effect: No particular hazards
By hydroscopic effect: No particular hazards

US NFPA 704 (National Fire Protection Association) Hazard Rating System:
Health hazard: Rating 0; Normal Material
Flammability: Rating 0, Will Not Burn
Reactivity: Rating 0, Stable
Other Hazard Information: None

Results of PBT and vPvB assessment:
-PBT: Not applicable
-vPvB: Not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Composition/information on ingredients
Common Chemical Name: Leuconostoc/Radish Root Ferment Filtrate
Generic Name: Chemical Family: Ferment

Description: Mixture: consisting of the following components. This section describes all components of the mixture.

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS Numbers</th>
<th>EC Numbers</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>48.00 – 52.00%</td>
</tr>
<tr>
<td>Leuconostoc/Radish Root Ferment Filtrate</td>
<td>1686112-10-6 (or)</td>
<td>N/A (or)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>84775-94-0</td>
<td>283-918-6</td>
<td>48.00 – 52.00%</td>
</tr>
</tbody>
</table>

Formula: Not applicable

4. FIRST AID MEASURES

4.1. Description of first aid measures
General: In all cases of doubt, or when symptoms persist, seek medical attention.
Direct contact with skin: Rinse immediately with soap and water. Get medical advice if irritation develops.

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Direct contact with eyes: Immediately rinse with plenty of water for at least 15 minutes, while keeping the eyes wide open. Consult with a physician.

Inhalation: Move to fresh air from exposure area. Get medical attention for any breathing difficulty.

Ingestion: Consult with a physician.

Protection of first-aiders: No special protection required.

4.2. Most important symptoms and effects, both acute and delayed
Symptoms and effects: No data available

4.3. Indication of any immediate medical attention and special treatment needed
Indication: No data available

5. FIREFIGHTING MEASURES

5.1. Extinguishing media
Extinguishing Media: Water, dry chemicals, foam and carbon dioxide.

5.2. Special hazards arising from the substance/mixture
Unusual Fire and Explosion Hazards: None known

5.3. Advice for firefighters
Special Fire Fighting Procedures: Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low area.

Protection for fire-fighters: Boots, gloves, goggles.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures
For non-emergency personnel: Avoid contact with eyes.
For emergency responders: Avoid contact with eyes.

Personal Protective Equipment:
- Protective goggles

6.2. Environmental precautions
Environmental Protection Measures: Prevent entry into sewers and waterways. Do not allow material to contaminate ground water system.

6.3. Methods and material for containment and cleaning up
Recovery: Pick up free liquid for recycling or disposal. Residual liquid can be absorbed on an inert material.

Cleaning/Decontamination: Wash non-recoverable remainder with water.

6.4. Reference to other sections
References: Refer to paragraphs 8 and 13 for more information.
7. HANDLING AND STORAGE

7.1. Precaution for safe handling

Technical measures: Labeling: Keep out of the reach of children.
Measures: For industrial use, only as directed.
Safe handling advice: Wash hands after use. Avoid storage near feed or food stuff.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures: Keep container closed.
Recommended Storage Conditions: Store in a cool, dry place. This material must be stored at room temperature (23°C/25°C). It should not be exposed to excessive heat or cold. Do not freeze.
Incompatible products: Avoid contact with strong oxidizers.
Packaging: Product may be packaged in normal commercial packaging.
Packaging materials: Recommended - Polypropylene & High Density Polyethylene.

7.3. Specific and use(s)

Use(s): Cosmetic use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Precautionary statements: Ensure adequate ventilation.

8.1. Control parameters

Occupational exposure Limits:

France: Not Determined
ACGIH: Not Determined
Korea: Not Determined
UK: Not Determined

Surveillance procedures: Not Determined
Engineering measures: Not Determined

8.2. Exposure controls/ Personal Protective Equipment:

Respiratory protection: Local exhaust.
Hand protection: Protective gloves made of rubber or neoprene.
Eye protection: Safety glasses.
Collective emergency equipment: Eye fountain.
Skin and Body Protection: Suitable protective clothing.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice.

Measures related to the Environment: No particular measures.
9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Clear to slightly hazy liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Yellow to light amber</td>
</tr>
<tr>
<td>Odor</td>
<td>Characteristic</td>
</tr>
<tr>
<td>Solids (1g-105°C-1hr)</td>
<td>48.0 – 52.0%</td>
</tr>
<tr>
<td>pH</td>
<td>4.0 – 6.0</td>
</tr>
<tr>
<td>Specific Gravity (25°C)</td>
<td>1.140 – 1.180</td>
</tr>
<tr>
<td>Ninhydrin</td>
<td>Positive</td>
</tr>
<tr>
<td>Phenolics (tested as Salicylic Acid)</td>
<td>18.0 – 22.0%</td>
</tr>
<tr>
<td>Heavy Metals</td>
<td>&lt; 20 ppm</td>
</tr>
<tr>
<td>Lead</td>
<td>&lt; 10 ppm</td>
</tr>
<tr>
<td>Arsenic</td>
<td>&lt; 2 ppm</td>
</tr>
<tr>
<td>Cadmium</td>
<td>&lt; 1 ppm</td>
</tr>
<tr>
<td>Bacteriocins (HPLC)</td>
<td>0.10 – 0.50%</td>
</tr>
<tr>
<td>Minimum Inhibitory Concentration Organism</td>
<td></td>
</tr>
<tr>
<td>E. coli (#8739)</td>
<td>0.50 – 4.00%</td>
</tr>
<tr>
<td>S. aureus (#6538)</td>
<td>0.25 – 2.00%</td>
</tr>
<tr>
<td>P. aeruginosa (#9027)</td>
<td>1.00 – 4.00%</td>
</tr>
<tr>
<td>C. albicans (#10231)</td>
<td>0.25 – 2.00%</td>
</tr>
<tr>
<td>A. brasiliensis (#16404)</td>
<td>0.25 – 2.00%</td>
</tr>
<tr>
<td>Vapor pressure (@ 20°C)</td>
<td>~20 mm Hg</td>
</tr>
<tr>
<td>Vapor density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>100°C</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>0°C</td>
</tr>
<tr>
<td>Melting point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt; 200°F</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Non oxidizing material according to EC criteria.</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble</td>
</tr>
<tr>
<td>In water</td>
<td></td>
</tr>
<tr>
<td>In organic solvents</td>
<td>Not determined</td>
</tr>
<tr>
<td>$K_{ow}$</td>
<td>0.013</td>
</tr>
<tr>
<td>Log($K_{ow}$)</td>
<td>-1.92</td>
</tr>
</tbody>
</table>

9.2. Other information

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Information: N/A
10. STABILITY AND REACTIVITY

10.1. Reactivity
Reactivity: None known

10.2. Chemical stability
Stability: Stable under ordinary conditions of use and storage up to one year then re-test to full product specifications to extend shelf life.

10.3. Possibility of hazardous reactions
Hazardous reaction: None known

10.4. Conditions to avoid
Conditions to avoid: No dangerous reactions known under use of normal conditions. Avoid extreme heat.

10.5. Incompatible materials
Incompatibility: No dangerous reaction known with common products.

10.6. Hazardous decomposition products
Hazardous decomposition: None known

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects
Ingestion: Not Determined
Dermal: Non-Irritant (Dermal Irritation Model & 48 Hour Patch Test)
Ocular: Non-Irritant (Ocular Irritation Model)
Inhalation: Not Determined

Acute toxicity data: EC₅₀ (Acute Daphnia): 131 mg/L - Not harmful to aquatic organisms
Sensitization: Non-Primary Irritant & Non-Primary Sensitizer (RIPT, In-Vitro Skin Sensitization Report & Direct Peptide Reactivity Assay)

Repeated dose toxicity: No known effects
Subacute to chronic toxicity: Not Determined

Mutagenicity/genotoxicity: Non-mutagenic

Additional Toxicological Information: This product is not subject to classification according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version.

Specific effects:
Carcinogenicity: No known effects
Mutagenicity: No known effects
Reproductive toxicity: No known effects
Neuro-toxicity: No known effects
For more information: Does not present any particular risk on handling under normal conditions of good occupational hygiene practice.

This product has not been tested for the following:
- Primary cutaneous and corrosive irritation
- Acute oral toxicity

12. ECOLOGICAL INFORMATION

12.1. Toxicity
Toxicity: Not determined

12.2. Persistence and degradability
Persistence and degradability: Readily Biodegradable

12.3. Bioaccumulative potential
Bioaccumulative potential: Not determined

12.4. Mobility

12.5. Results of PBT and vPvB assessment
Results of PBT and vPvB assessment: Not determined

12.6. Other adverse effects
Other adverse effects: None known

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods
Residues from product
Prohibition: Do not allow the product to be released into the Environment.
Destruction/Disposal: Dispose of in accordance with relevant local regulations

Contaminated packaging
Decontamination/cleaning: Cleaning is not required prior to disposal.
Destruction/Disposal:
Note: Take all necessary precautions when disposing of this product according to local regulations.

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14. TRANSPORT INFORMATION

14.1. UN number
Number: None

14.2. UN proper shipping name
Shipping name: None

14.3. Transport hazard class(es)
Hazard class: Not classified as dangerous for transport.

Land (rail/road): Material is not restrictive for land transport and is not regulated by ADR/RID
Sea: Material is not restrictive for sea transport and is not regulated by IMO/IMDG
Air: Material is not restrictive for land transport and is not regulated by ICA/IATA

Marine Pollutant: No

Transport/Additional Information: Not regulated for US DOT Transport in non-bulk containers.
This material is not dangerous or hazardous.

14.4. Picking group
Picking group: None

14.5. Environmental hazards
Environmental hazards: None

14.6. Special precautions for user
Precautions: None known

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Transport in bulk: N/A

The above regulatory prescriptions are those valid on the date of publication of this sheet. However, given the possible evolution of transport regulations for hazardous materials and in the event of the MSDS in your possession dating back more than 12 months, it is advisable to check their validity with your sales office.

15. REGULATORY INFORMATION

15.1. Safety, health an environmental regulations/legislation specific for the substance/mixture

Labeling/Restrictions:
EC regulations: Not to be used for children under three years of age
Chinese regulations: Not to be used for children under three years of age
Brazilian regulations: Not to be used for children under three years of age
ASEAN regulations: Not to be used for children under three years of age
Mexico regulations: Not to be used for children under three years of age
Further regulations

United Kingdom: Handle in accordance with relevant British regulation: control of substance Hazardous to Health Regulations Environmental Hygiene Guidance: EH40 Workplace Exposure Limits (revised annually)
Korea regulations: Industrial safety and hygiene regulation: No Hazardous material control regulation: No Fire prevention regulation: No

Other regulations:

EINECS inventory status: Aqua: 231-791-2 Leuconostoc/Radish Root Ferment Filtrate: N/A
TSCA inventory status: Exempt
AICS inventory status: Not Listed: 1686112-10-6 Listed: 7732-18-5
Canadian (CEPA DSL) inventory status: Not Listed: Leuconostoc/Radish Root Ferment Filtrate (1686112-10-6) Listed as Water (DSL)
Japan (MITI list): Water & Leuconostoc/Radish Root Ferment Filtrate
Korea: Water & Leuconostoc/Radish Root Ferment Filtrate**
China inventory status: Water & Leuconostoc/Radish Root Ferment Filtrate
Philippines inventory status: Not Listed: Leuconostoc/Radish Root Ferment Filtrate (1686112-10-6) Listed as Water

*Listed on 2010 INCI Standard Chinese Name Directory
**Not listed in 2004 CTFA Dictionary – Registered with Personal Care Products Council

15.2. Chemical safety assessment

Assessment: N/A

Note: The regulatory information given above only indicates the principal regulations specifically applicable to the products described in this sheet. The user’s attention is drawn to the possible existence of additional provision which complete these regulations. Please refer to all applicable international, national and local regulations and provisions

16. OTHER INFORMATION

Prohibited uses: For specific uses, food industry, ask the manufacturer for more information.

Last Revision Date: 06/02/2018

Preparation Date: 13/02/2018

MSDS summary of changes
- Removed freezing range under Section 7 (Handling and Storage)
- Added Precautionary Statements - Section 2 (Hazard Identification)
- Added Minimum Inhibitory Concentration – Section 9 (Physical & Chemical Properties)
- Updated Transport Information – Section 14 (Transport Information)
- Added Sensitization Data – Section 11 (Toxicological Information)

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Material Safety Data Sheet
According to Regulation (EU) No. 453/2010

MSDS summary of changes (cont.)
- Updated CAS/EINECS#’s – Section 3 (Composition / Information on Ingredients) & Section 15 (Regulatory Information)
- Added Sensitization Data – Section 11 (Toxicological Information)
- Added Lead & Cadmium – Section 9 (Physical & Chemical Properties)
- Updated CAS/EINECS#’s – Section 3 (Composition / Information on Ingredients) & Section 15 (Regulatory Information)
- Added Octanol Partition Coefficient – Section 9 (Physical & Chemical Properties)
- Added Bacteriocins – Section 9 (Physical & Chemical Properties)
- Updated Bacteriocins – Section 9 (Physical & Chemical Properties)

Further information:
This document is in accordance with EC Directive 2001/58/EC and the Regulation(EC) 1907/2006 (REACH) Annex II.

The information given is based on our knowledge of this product, at the time of publication in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than which it was intended. This is not in any way excuse the user from knowing and applying all the regulations governing their activity. It is sole responsibility of the user to take all precautions required in handling the product. The purpose of mandatory regulation mentioned is to help the user to fulfill his obligations regarding the use of products. This information is not exhaustive, this is not exonerate the user from ensuring that legal obligations other than those mentioned, relating to the use and storage.

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