1. IDENTIFICATION

Product Description: LACTIC ACID 88%

CAS # MIXTURE

Other means of identification
Vigon Item # 500663

Recommended use Concentrated flavor ingredient which may be used in flavor compounds according to legal and FEMA GRAS/FDA guidelines.

Recommended restrictions For Manufacturing Use Only

24 Hour Emergency Response Information
INFOTRAC (ACCT# 78928);
1-800-535-5053 WITHIN THE U.S.A.
1-352-323-3500 OUTSIDE THE U.S.A.

Company Vigon International, Inc.
127 Airport Road
E. Stroudsburg, PA 18301

For information call: 570-476-6300
Web Site: www.vigon.com

Manufacturer/Importer/Supplier/Distributor information

Manufacturer
Company name Vigon International, Inc.
Address 127 Airport Road
E. Stroudsburg, PA 18301
United States

Telephone For information call: 570-476-6300
Website www.vigon.com
E-mail Not available.

Emergency phone number INFOTRAC (ACCT# 78928);
1-800-535-5053 WITHIN THE U.S.A.
1-352-323-3500 OUTSIDE THE U.S.A.

2. HAZARD(S) IDENTIFICATION

Physical hazards Not classified.

Health hazards Acute toxicity, inhalation Category 4
Skin corrosion/irritation Category 2
Serious eye damage/eye irritation Category 1

Environmental hazards Not classified.

Label elements

Signal word Danger

Hazard statement Causes skin irritation. Causes serious eye damage. Harmful if inhaled.
SAFETY DATA SHEET

500663 LACTIC ACID 88%

Precautionary statement

Prevention
Avoid breathing vapors. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear eye protection/face protection. Wear protective gloves.

Response
IF ON SKIN: Wash with plenty of water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

Storage
Store away from incompatible materials.

Disposal
Dispose of waste and residues in accordance with local authority requirements.

Hazard(s) not otherwise classified (HNOC)
None known.

Supplemental information
75% of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 75% of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>LACTIC ACID</td>
<td>2-hydroxypropanoic acid</td>
<td>79-33-4</td>
<td>50 - &lt; 100</td>
</tr>
<tr>
<td></td>
<td>2-hydroxy-2-methylacetic acid</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>propanoic acid, 2-hydroxy-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other components below reportable levels
Other related CAS 50-21-5

4. FIRST-AID MEASURES

Inhalation
If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. For breathing difficulties, oxygen may be necessary. Call a physician if symptoms develop or persist.

Skin contact
Take off immediately all contaminated clothing. Get medical attention if irritation develops and persists. Wash skin thoroughly with soap and water for several minutes.

Eye contact
Remove contact lenses, if present and easy to do. Get medical attention if irritation develops and persists. Promptly wash eyes with plenty of water while lifting the eye lids.

Ingestion
Call a physician or poison control center immediately. If swallowed, rinse mouth with water (only if the person is conscious). Do not induce vomiting. If vomiting occurs, the head should be kept low so that stomach vomit doesn't enter the lungs.

Most important symptoms/effects, acute and delayed
Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain.

Indication of immediate medical attention and special treatment needed
Not available.

General information
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.
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5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Water spray, fog, CO2, dry chemical, or alcohol resistant foam.

Unsuitable extinguishing media
Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical
Fire may produce irritating, corrosive and/or toxic gases.

Special protective equipment and precautions for firefighters
Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Structural firefighters protective clothing will only provide limited protection. Wear self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode when fighting fires.

Fire fighting equipment/instructions
In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Water runoff can cause environmental damage. Ventilate closed spaces before entering them. Keep run-off water out of sewers and water sources. Dike for water control.

Specific methods
Use water spray to cool unopened containers.

General fire hazards
Static charges generated by emptying package in or near flammable vapor may cause flash fire.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Eliminate all sources of ignition. Avoid contact with skin or inhalation of spillage, dust or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them.

Methods and materials for containment and cleaning up
Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb with inert absorbent such as dry clay, sand or diatomaceous earth, commercial sorbents, or recover using pumps.

This product is miscible in water.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Prevent product from entering drains. Absorb in vermiculite, dry sand or earth and place into containers.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use. This material and its container must be disposed of as hazardous waste. Collect and dispose of spillage as indicated in section 13 of the SDS.

Environmental precautions
Retain and dispose of contaminated wash water. Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water.

7. HANDLING AND STORAGE

Precautions for safe handling
Do not handle or store near an open flame, heat or other sources of ignition. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Avoid breathing vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Wash thoroughly after handling.
SAFETY DATA SHEET

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Conditions for safe storage, including any incompatibilities

Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

This mixture has no ingredients that have PEL, TLV, or other recommended exposure limit.

Biological limit values

No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls

Use explosion-proof ventilation equipment to stay below exposure limits. Adequate ventilation should be provided so that exposure limits are not exceeded.

Individual protection measures, such as personal protective equipment

Eye/face protection
Avoid contact with eyes.

Skin protection
Chemical resistant gloves.

Hand protection

Use of an impervious apron is recommended.

Other

Respiratory protection
Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Refer to Spec Sheet

Physical state
Liquid.

Form
Liquid.

Color
Refer to Spec Sheet

Odor
Characteristic.

Odor threshold
Not available.

pH
Not available.

Melting point/freezing point
62.24 °F (16.8 °C)

Initial boiling point and boiling range
251.6 °F (122 °C) 1.999835 kPa

Flash point
> 200.0 °F (> 93.3 °C) Closed Cup

Evaporation rate
Not available.

Flammability (solid, gas)
Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)
Not available.

Flammability limit - upper (%)
Not available.

Explosive limit - lower (%)
Not available.

Explosive limit - upper (%)
Not available.

Vapor pressure
0.02 mm Hg at 25 °C
### Vapor density
3.1

### Relative density
Not available.

### Solubility(ies)
- **Solubility (water)**: Soluble

### Partition coefficient
(n-octanol/water)
-0.72

### Auto-ignition temperature
Not available.

### Decomposition temperature
Not available.

### Viscosity
Not available.

### Other information
- **Density**: 1.25 g/cm\(^3\) estimated at 15 °C
- **Dynamic viscosity**: 6.69 mPa.s
- **Explosive properties**: Not explosive.
- **Molecular formula**: C\(_3\)H\(_6\)O\(_3\)
- **Molecular weight**: 90.08 g/mol
- **Oxidizing properties**: Not oxidizing.
- **pH in aqueous solution**: < 2 at 25 °C
- **Specific gravity**: 1.2 at 25 °C

### 10. STABILITY AND REACTIVITY

#### Reactivity
The product is stable and non-reactive under normal conditions of use, storage and transport.

#### Chemical stability
Material is stable under normal conditions.

#### Possibility of hazardous reactions
No dangerous reaction known under conditions of normal use.

#### Conditions to avoid
Avoid temperatures exceeding the flash point. Contact with incompatible materials.

#### Incompatible materials
Strong oxidizing agents.

#### Hazardous decomposition products
No hazardous decomposition products if stored and handled as indicated.

### 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure
- **Inhalation**: Harmful if inhaled.
- **Skin contact**: Causes skin irritation.
- **Eye contact**: Causes serious eye damage.
- **Ingestion**: Expected to be a low ingestion hazard.

#### Symptoms related to the physical, chemical and toxicological characteristics
Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Skin irritation. May cause redness and pain.

#### Information on toxicological effects

#### Acute toxicity
Harmful if inhaled.
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<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>LACTIC ACID 88%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
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</tr>
<tr>
<td>LD50</td>
<td>Rabbit</td>
<td>&gt; 2000 mg/kg</td>
</tr>
<tr>
<td>Oral</td>
<td>Rat</td>
<td>3730 mg/kg</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation
- Causes skin irritation.
  - Species: guinea pig
  - Result: Mild skin irritation
- Species: rabbit
  - Result: Severe skin irritation

Serious eye damage/eye irritation
- Causes serious eye damage.
  - Species: rabbit
  - Result: irritating

Respiratory or skin sensitization
- Respiratory sensitization: Not a respiratory sensitizer.
- Skin sensitization: This product is not expected to cause skin sensitization.

Germ cell mutagenicity
- Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Carcinogenicity
- IARC Monographs. Overall Evaluation of Carcinogenicity
  - Not listed.
  - Not regulated.
- US. National Toxicology Program (NTP) Report on Carcinogens
  - Not listed.
- US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
  - Not available.

Reproductive toxicity
- This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure
- Not classified.

Specific target organ toxicity - repeated exposure
- Not classified.

Aspiration hazard
- Not an aspiration hazard.

12. ECOLOGICAL INFORMATION

Ecotoxicity
- The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
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Revision Date: 03-08-2019
Version # 04

<table>
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<tr>
<td>LACTIC ACID 88%</td>
<td></td>
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<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Algae</td>
<td>LC50</td>
<td>Green algae (Selenastrum capricornutum)</td>
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<tr>
<td></td>
<td></td>
<td>&gt; 320 - &lt; 468 mg/l, 96 hours</td>
</tr>
<tr>
<td><strong>Acute</strong></td>
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<td></td>
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<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Daphnia pulex</td>
</tr>
<tr>
<td></td>
<td></td>
<td>240 mg/l, 48 hours</td>
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<tr>
<td>Fish</td>
<td>LC50</td>
<td>Fish</td>
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<tr>
<td></td>
<td></td>
<td>320 mg/l, 48 hours</td>
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<tr>
<td><strong>Components</strong></td>
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<td></td>
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<tr>
<td>LACTIC ACID (CAS 79-33-4)</td>
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<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Water flea (Daphnia magna)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; 180 - &lt; 320 mg/l, 48 hours</td>
</tr>
</tbody>
</table>

Persistence and degradability
Readily biodegradable.

Bioaccumulative potential
Partition coefficient n-octanol / water (log Kow)
LACTIC ACID 88% -0.72

Mobility in soil
No data available.

Other adverse effects
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. DISPOSAL CONSIDERATIONS

Disposal instructions
Do not discharge into drains, water courses or onto the ground. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations
Dispose in accordance with all applicable regulations.

Hazardous waste code
Not established.

Waste from residues / unused products
Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

ADN
UN number 3265
UN proper shipping name CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (LACTIC ACID)
Transport hazard class(es) 8
Subsidiary class(es) -
Packing group III
Environmental hazards No
Labels required 8
SAFETY DATA SHEET

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ADR
- UN number: 3265
- UN proper shipping name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (LACTIC ACID)
- Transport hazard class(es): 8
- Subsidiary class(es): -
- Packing group: III
- Environmental hazards: No
- Labels required: 8

RID
- UN number: 3265
- UN proper shipping name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (LACTIC ACID)
- Transport hazard class(es): 8
- Subsidiary class(es): -
- Packing Group: III
- Environmental Hazards: No
- Labels required: 8
- Special precautions for user: Read safety instructions, SDS and emergency procedures before handling.

DOT

BULK
- UN number: 3265
- Proper shipping name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (LACTIC ACID)
- Hazard class: 8
- Packing group: III
- Environmental hazards:
  - Marine pollutant: No
- Packaging exceptions: 154
- Packaging bulk: 241
- Labels required: 8

DOT

NON-BULK
- UN number: 3265
- Proper shipping name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (LACTIC ACID)
- Hazard class: 8
- Packing group: III
- Environmental hazards:
  - Marine pollutant: No
- Packaging exceptions: 154
- Packaging non bulk: 203
- Labels required: 8

IATA
- UN number: 3265
- UN proper shipping name: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (LACTIC ACID)
- Transport hazard class(es): 8
- Subsidiary class(es): -
15. REGULATORY INFORMATION

US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CERCLA Hazardous Substance List (40 CFR 302.4)
Not listed.

SARA 304 Emergency release notification
Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not available.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)
Not regulated.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
SARA 302 Extremely hazardous substance
Not listed.
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Acute toxicity (any route of exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation

SARA 313 (TRI reporting)
Not regulated.

Other federal regulations
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.
Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.
Safe Drinking Water Act (SDWA)
Not regulated.
Food and Drug Administration (FDA)
- Total food additive
- Direct food additive
- GRAS food additive

US state regulations
California Proposition 65
California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
Not listed.

16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Issue date 11-25-2015
Revision date 03-08-2019
Version # 04
HMIS® ratings
- Health: 3
- Flammability: 1
- Physical hazard: 0
Disclaimer

Vigon International, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. The above information relates only to this product and not to its use in combination with any other material or any particular process and is designed only as guidance for the safe handling, use, processing, storage, transportation, and disposal and should not be considered as a guarantee or quality specification. This product has not been evaluated for safe use in e-cigarettes or any vaping application where the product(s) is/are intentionally vaporized and inhaled. Vigon International, Inc. has performed no testing on these products in e-cig/vaping applications. It is the sole responsibility of the individual(s) purchasing this product to assess its safety in the final application. The above information relates only to this product and not to its use in combination with any other material or any particular process and is designed only as guidance for the safe handling, use, processing, storage, transportation, disposal, and should not be considered as a guarantee or quality specification. The above information is based on data provided by and collected from recognized sources such as distributors, manufacturers, and technical groups and is considered to be accurate to the best of Vigon’s knowledge as of the date of this document. It is the responsibility of the user to review all safety information about this product and determine its safety and suitability in their own processes and operations. Appropriate warnings and safe handling procedures should be provided to all handlers and users, taking into account the intended use and the specific conditions and factors relating to such use in accordance with all applicable laws and regulations.

Revision information

This document has undergone significant changes and should be reviewed in its entirety.