SAFETY DATA SHEET

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name: INGEO™ LACTIDE
Product code: L50
EC-No: 202-468-3
CAS-No.: 95-96-5
REACH Reg. No: 01-2119533056-46-XXXX

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

Product Use: Use as an intermediate, Polymer preparations and compounds, raw material for polymer (monomer)

1.3. Details of the supplier of the safety data sheet

Supplier:
NatureWorks
17400 Medina Rd, Suite# 800
Plymouth, MN 55447
sdsinquiry@natureworksllc.com

1.4. Emergency telephone number

Emergency telephone numbers (24 hours a day):
(Medical Information) (651) 632-9273
(Transportation Information) CHEMTREC: 800-424-9300 (in the United States)
(Transportation Information) CHEMTREC: (703) 527-3887 (outside the United States)

Additional information:
Emergency telephone number Europe 112, CHEMTREC (Chemical Transportation Emergency Centre) +44 20 3885 0382

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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture:
   2.1.1. Classification according to Regulation (EC) No. 1272/2008 [CLP]
   Serious Eye Damage/Irritation; Category 1

2.2. Label elements:

   Signal word: DANGER
   Hazard Statements: H318 - Causes serious eye damage
   Precautionary Statements: P280 - Wear protective gloves/protective clothing/eye protection/face protection
                              IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

2.3. Other hazards: Decomposes in contact with water. Hazardous decomposition products:. Lactic Acid. The following addresses exposure to some of the ingredients of Lactic Acid, not exposure to the product. Avoid contact with eyes, skin and clothing. Contact may irritate or burn skin and eyes. Contact may cause burns to skin and eyes. May cause permanent eye injury. For additional information, see Safety Data Sheet.

SECTION 3: Composition/information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>EC-No:</th>
<th>Weight %</th>
<th>Classification:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,6-Dimethyl-1,4-dioxane-2,5-dione</td>
<td>202-468-3</td>
<td>90 - 100%</td>
<td>H318 - Causes serious eye damage</td>
</tr>
</tbody>
</table>

Other Standards: None
SECTION 4: First aid measures

Emergency telephone numbers (24 hours a day):
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(Transportation Information) CHEMTREC: 800-424-9300 (in the United States)
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4.1. Description of first aid measures

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove any contact lenses if easy to do. Call a physician or Poison Control Center immediately.

Skin contact: Rinse immediately with plenty of water for at least 15 minutes. If symptoms persist, call a doctor.

Inhalation: Move to fresh air. If symptoms persist, call a doctor.

Ingestion: IF SWALLOWED: rinse mouth. Do NOT induce vomiting. Call a physician or Poison Control Center immediately. Never give anything by mouth to an unconscious person.

Notes to physician: Treatment should be symptomatic and supportive.

4.2. Most important symptoms and effects, both acute and delayed: Risk of serious damage to eyes.

4.3. Indication of any immediate medical attention and special treatment needed: None known.

SECTION 5: Firefighting measures

Flammability:

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5.1. Extinguishing media

Suitable extinguishing media: Carbon dioxide (CO2). Dry chemical. Foam. Water spray or fog. Alcohol resistant foams are preferred if available. General-purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively.

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

5.2. Special hazards arising from the substance or mixture:
Hazardous decomposition products: Carbon dioxide Carbon monoxide (CO) Aldehydes organic acids

5.3. Advice for firefighters

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear, Evacuate area and fight fire from a safe distance, Avoid contact with skin and eyes, In case of contact, Positive pressure self-contained breathing apparatus (SCBA) and structural firefighters’ protective clothing will provide adequate protection

Under fire conditions: Water mist may be used to cool closed containers

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel:
Use personal protective equipment as required. Avoid contact with skin and eyes. Ensure adequate ventilation. Avoid breathing vapours or mists.

6.1.2. For emergency responders:
Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Soak up with inert absorbent material. Clean up under the supervision of an expert after material has solidified.
Avoid contact with skin and eyes. Ensure adequate ventilation. Avoid breathing vapours or mists. Avoid contact with eyes. Sweep up to prevent slipping hazard.

6.2. Environmental precautions:
Do not allow material to contaminate ground water system. Do not flush into surface water or sanitary sewer system.

6.3. Methods and material for containment and cleaning up:
Protect from water. Soak up with inert absorbent material. Allow material to solidify, and scrape up. Sweep up and shovel into suitable containers for disposal. Decomposes in contact with water. Do not release unneutralised acid. Absorb spilled liquid in suitable material. See section 13 for more information.

6.4. Reference to other sections: For further specification, refer to section 8 of the SDS

SECTION 7: Handling and storage

7.1. Precautions for safe handling:
Avoid contact with skin, eyes and clothing. Workers should be protected from the possibility of contact with molten material during fabrication. Avoid dust formation.

7.2. Conditions for safe storage, including any incompatibilities:
Keep containers tightly closed in a dry, cool and well-ventilated place. Keep under nitrogen blanket. Solidifies at about 176 °F (80 °C). Handling: Temperatures above 100 °C / 212 °F

7.3. Specific end use(s):

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Engineering measures: Ensure adequate ventilation. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated.

8.2. Exposure controls

8.2.1. Appropriate Engineering Controls:

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8.2.2. Personal protection equipment:

**Eye protection:** Goggles face-shield. safety glasses with side-shields.

**Skin and body protection:** Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Hand protection:** Preventive skin protection. The instructions and information provided by the glove manufacturer on use, storage, maintenance and replacement must be followed.

**Hygiene measures:** Ensure that eyewash stations and safety showers are close to the workstation location Handle in accordance with good industrial hygiene and safety practice Keep working clothes separately.

**Respiratory protection:** Vapours and/or aerosols which may be formed at elevated temperatures may be irritating to eyes and respiratory tract. Use NIOSH-approved air-purifying respirator with organic vapour cartridge or canister, as appropriate. Consult an industrial hygiene professional prior to respirator selection and use. Use a positive-pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Special hazard:** Workers should be protected from the possibility of contact with molten material during fabrication.

8.2.3. Environmental exposure controls: Do not allow material to contaminate ground water system. Do not flush into surface water or sanitary sewer system.
SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid, Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>solid (waxy)</td>
</tr>
<tr>
<td>Colour</td>
<td>White</td>
</tr>
<tr>
<td>Odour</td>
<td>Acrid</td>
</tr>
<tr>
<td>pH</td>
<td>No information available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not determined</td>
</tr>
<tr>
<td>Vapour density</td>
<td>Not determined</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not determined</td>
</tr>
<tr>
<td>Partition Coefficient (n-octanol/water)</td>
<td>Not determined</td>
</tr>
<tr>
<td>Density</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not determined</td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>482-500°F / 250-260°C, @ 101.3 kPa</td>
</tr>
<tr>
<td>Melting point / melting range</td>
<td>203°F / 95°C, @ 101.3 kPa</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not determined</td>
</tr>
<tr>
<td>Freezing point °C</td>
<td>Not determined</td>
</tr>
<tr>
<td>Flash point</td>
<td>150-160 °C</td>
</tr>
<tr>
<td>Flammability</td>
<td>No information available</td>
</tr>
<tr>
<td>Flammability Limits in Air</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Water solubility</td>
<td>Not determined</td>
</tr>
<tr>
<td>Solubility</td>
<td>No information available</td>
</tr>
<tr>
<td>Other Standards</td>
<td>None</td>
</tr>
</tbody>
</table>

9.2. Other information

9.2.1. Information with regards to physical hazard classes:
Workers should be protected from the possibility of contact with molten material during fabrication. Contact with product at elevated temperatures can result in thermal burns.

9.2.2. Other safety characteristics:
See section 8 for more information

SECTION 10: Stability and reactivity

10.1. Reactivity:
None expected under conditions of normal use.

10.2. Chemical stability:

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10.3. Possibility of hazardous reactions:
None expected under conditions of normal use

10.4. Conditions to avoid:
Temperatures above 440°F (230°C). Exposure to moisture. Heat. Due to gaseous decomposition products, over-pressure can occur in tightly sealed containers.

10.5. Incompatible materials:

10.6. Hazardous decomposition products:

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity: Specific symptoms in animal studies. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. May cause adverse kidney effects.

Principle routes of exposure: Eye contact, Skin contact, Inhalation, Ingestion
Skin: LD50/dermal/rabbit > 2000 mg/kg
Ingestion: LD50/oral/rat = >5000 mg/kg

Skin corrosion/irritation: Based on available data, the classification criteria are not met

Long term toxicity: No data available

Serious eye damage/eye irritation: Causes serious eye damage

Respiratory or skin sensitisation: Based on available data, the classification criteria are not met

Germ cell mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Did not show mutagenic effects in animal experiments

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Carcinogenic effects: Based on available data, the classification criteria are not met

Reproductive toxicity: Based on available data, the classification criteria are not met

STOT - single exposure;

Target organ effects: Reported animal effects In case of ingestion Organs affected: stomach kidneys

Aspiration hazard: Based on available data, the classification criteria are not met

11.2. Information on other hazards

Local effects: Decomposes in contact with water. Hazardous decomposition products: Lactic Acid. The following addresses exposure to some of the ingredients of Lactic Acid, not exposure to the product. Avoid contact with eyes, skin and clothing. Contact may irritate or burn skin and eyes. Contact may cause burns to skin and eyes. May cause permanent eye injury. For additional information, see Safety Data Sheet.

Specific effects: Inhalation may provoke the following symptoms: Lung irritation severe shortness of breath Difficulty in breathing Ingestion may provoke the following symptoms: Nausea diarrhoea Vomiting

11.2.1. Endocrine disrupting properties: No data is available on the product itself.

11.2.2. Other information:

SECTION 12: Ecological information

12.1. Toxicity: No data available

12.2. Persistence and degradability: No data available

12.3. Bioaccumulative potential: Bioconcentration factor (BCF) < 100 Not likely to bioaccumulate

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12.4. Mobility in soil:
Partition coefficient n-octanol /water (log KOW) = 1.65 Henry’s Law Constant = 1.22x10^-5 atm m3/mol log Koc = 50 If product enters soil, it will be mobile and may contaminate groundwater

12.5. Results of PBT and vPvB assessment:
Not applicable

12.6. Endocrine disrupting properties:
No data is available on the product itself.

12.7. Other adverse effects:

SECTION 13: Disposal considerations

13.1. Waste treatment methods

In compliance with the requirements of Directive 2008/98/EC

Waste from residues / unused products: Dispose of in accordance with federal, state and local regulations. Dispose of wastes in an approved waste disposal facility. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

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SECTION 14: Transport information

Applicable:
ADR/RID:
ICAO/IATA:
IMDG:
US DOT (Department of Transportation):

14.1. UN number: None
14.2. UN proper shipping name: If transported at ambient temperature: Not regulated

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14.3. Transport hazard class(es): Not regulated
Packaging group: None
14.5. Environmental hazards: See Section 12 for more information
14.6. Special precautions for user: None
14.7. Maritime transport in bulk according to IMO instruments: None

Additional information: Elevated temperature information for transport, Temperatures above 100 °C / 1003 °F, UN3257, Elevated temperature liquid, n.o.s., at or above 100°C (212°F), and below its flash point, 9, III, APPLIES ONLY DURING ROAD TRANSPORT; IATA - Substances Forbidden from Air Transport

SECTION 15: Regulatory information

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

15.2. Chemical safety assessment:
Not applicable.

Regulatory Information:
(Not meant to be all inclusive--selected regulations represented)

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U.S. REGULATIONS

TSCA Inventory List: Listed

State Regulations
California Proposition 65: Not Listed

International Inventories
Canada NDSL Inventory List: Listed

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SECTION 16: Other information

Label information: INGEOM™ LACTIDE
Product code: L50
Reason for revision: Document Review
Revision Number: 8
Revision date: 06/23/2022
Print Date: 06/23/2022
Prepared by: NatureWorks LLC Health and Safety

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