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

- **Product identifier**
- **Trade name:** Isohumulones
- **Part number:** TS-7004002
- **Application of the substance / the mixture** Laboratory chemicals

- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:** ULTRA Scientific, Inc.
    250 Smith Street
    North Kingstown, RI 02852
    USA

- **Information department:**
  - Telephone: (401) 294-9400
  - Fax: (401) 295-2300
  - E-mail: regulatory@ultrasci.com
- **Emergency telephone number:**
  - US: (800) 424-9300
  - Outside US: (703) 527-3887

2 Hazard(s) identification

- **Classification of the substance or mixture**

  ![GHS02 Flame](image)
  Flam. Liq. 2  H225  Highly flammable liquid and vapor.

  ![GHS06 Skull and crossbones](image)
  Acute Tox. 3  H331  Toxic if inhaled.

  ![GHS08 Health hazard](image)
  STOT SE 1  H370  Causes damage to organs.

- **Label elements**
  - **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms**

  ![GHS02](image)  ![GHS06](image)  ![GHS08](image)

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  - methanol

- **Hazard statements**
  - Highly flammable liquid and vapor.
  - Toxic if inhaled.
Trade name: Isohumulones

Causes damage to organs.

- **Precautionary statements**
  - Keep away from heat/sparks/open flames/hot surfaces. No smoking.
  - Use explosion-proof electrical/ventilating/lighting/equipment.
  - Do not breathe dust/fume/gas/mist/vapors/spray.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - Ground/bond container and receiving equipment.
  - Use only non-sparking tools.
  - Take precautionary measures against static discharge.
  - Wash thoroughly after handling.
  - Do not eat, drink or smoke when using this product.
  - Use only outdoors or in a well-ventilated area.
  - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - Specific treatment (see on this label).
  - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  - In case of fire: Use for extinction: CO2, powder or water spray.
  - Store locked up.
  - Store in a well-ventilated place. Keep container tightly closed.
  - Store in a well-ventilated place. Keep cool.
  - Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**
- **NFPA ratings (scale 0 - 4)**
  - Health = 3
  - Fire = 3
  - Reactivity = 0

- **HMIS-ratings (scale 0 - 4)**
  - Health = *3
  - Fire = 3
  - Reactivity = 0

- **Other hazards**
- **Results of PBT and vPvB assessment**
  - **PBT:** Not applicable.
  - **vPvB:** Not applicable.

**3 Composition/information on ingredients**

- **Chemical characterization:** Mixtures
- **Description:** Mixture of the substances listed below with nonhazardous additions.

- **Dangerous components:**

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
<td>99.924%</td>
</tr>
</tbody>
</table>

**4 First-aid measures**

- **Description of first aid measures**
- **General information:**
  - Immediately remove any clothing soiled by the product.
  - Remove breathing apparatus only after contaminated clothing have been completely removed.
  - In case of irregular breathing or respiratory arrest provide artificial respiration.
44.2.6

· After inhalation:
  Supply fresh air or oxygen; call for doctor.
  In case of unconsciousness place patient stably in side position for transportation.
· After skin contact: Immediately wash with water and soap and rinse thoroughly.
· After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.
· After swallowing: If symptoms persist consult doctor.
· Information for doctor:
  · Most important symptoms and effects, both acute and delayed No further relevant information available.
  · Indication of any immediate medical attention and special treatment needed
    No further relevant information available.

5 Fire-fighting measures

· Extinguishing media
  · Suitable extinguishing agents:
    CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· Special hazards arising from the substance or mixture No further relevant information available.
· Advice for firefighters
  · Protective equipment: Mouth respiratory protective device.

6 Accidental release measures

· Personal precautions, protective equipment and emergency procedures
  Wear protective equipment. Keep unprotected persons away.
· Environmental precautions:
  Dilute with plenty of water.
  Do not allow to enter sewers/ surface or ground water.
· Methods and material for containment and cleaning up:
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  Dispose contaminated material as waste according to item 13.
  Ensure adequate ventilation.
· Reference to other sections
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.
· Protective Action Criteria for Chemicals

<table>
<thead>
<tr>
<th>PAC-1</th>
<th>PAC-2</th>
<th>PAC-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-56-1 methanol</td>
<td>7664-38-2 phosphoric acid</td>
<td>67-56-1 methanol</td>
</tr>
<tr>
<td>530 ppm</td>
<td>3 mg/m³</td>
<td>2,100 ppm</td>
</tr>
</tbody>
</table>
7 Handling and storage

- **Handling:**
  - **Precautions for safe handling**
    Ensure good ventilation/exhaustion at the workplace.
  - **Information about protection against explosions and fires:**
    Keep ignition sources away - Do not smoke.
    Protect against electrostatic charges.
    Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
  - **Storage:**
    - **Requirements to be met by storerooms and receptacles:** Store in a cool location.
    - **Information about storage in one common storage facility:** Not required.
  - **Further information about storage conditions:**
    Keep receptacle tightly sealed.
    Store in cool, dry conditions in well sealed receptacles.
- **Specific end use(s)**: No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
  - **Components with limit values that require monitoring at the workplace:**
    **67-56-1 methanol**
    - **PEL**
      Long-term value: 260 mg/m³, 200 ppm
    - **REL**
      Short-term value: 325 mg/m³, 250 ppm
      Long-term value: 260 mg/m³, 200 ppm
      Skin
    - **TLV**
      Short-term value: 328 mg/m³, 250 ppm
      Long-term value: 262 mg/m³, 200 ppm
      Skin; BEI
  - **Ingredients with biological limit values:**
    **67-56-1 methanol**
    - **BEI**
      15 mg/L
      Medium: urine
      Time: end of shift
      Parameter: Methanol (background, nonspecific)
- **Additional information:** The lists that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
  Keep away from foodstuffs, beverages and feed.
  Immediately remove all soiled and contaminated clothing.
  Wash hands before breaks and at the end of work.
  Store protective clothing separately.
- **Breathing equipment:**
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
Protection of hands:
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the
chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Material of gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and
varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of
the glove material cannot be calculated in advance and has therefore to be checked prior to the application.
Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be
observed.
Eye protection:
Tightly sealed goggles

9 Physical and chemical properties

- Information on basic physical and chemical properties
  - General Information
  - Appearance:
    - Form: Fluid
    - Color: Colorless
  - Odor:
    - Alcohol-like
  - Odor threshold:
    - Not determined.
  - pH-value:
    - Not determined.
- Change in condition
  - Melting point/Melting range: -98 °C (-144 °F)
  - Boiling point/Boiling range: 64 °C (147 °F)
- Flash point:
  - 9 °C (48 °F)
- Flammability (solid, gaseous):
  - Not applicable.
- Ignition temperature:
  - 455 °C (851 °F)
- Decomposition temperature:
  - Not determined.
- Auto igniting:
  - Product is not selfigniting.
- Danger of explosion:
  - Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
- Explosion limits:
  - Lower: 5.5 Vol %
  - Upper: 44 Vol %
- Vapor pressure at 20 °C (68 °F):
  - 100 hPa (75 mm Hg)
- Density at 20 °C (68 °F):
  - 0.80058 g/cm³ (6.681 lbs/gal)
- Relative density:
  - Not determined.
- Vapor density:
  - Not determined.
Trade name: Isohumulones

<table>
<thead>
<tr>
<th>· Evaporation rate</th>
<th>Not determined.</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Solubility in / Miscibility with Water:</td>
<td>Fully miscible.</td>
</tr>
<tr>
<td>· Partition coefficient (n-octanol/water):</td>
<td>Not determined.</td>
</tr>
<tr>
<td>· Viscosity:</td>
<td></td>
</tr>
<tr>
<td>Dynamic:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Kinematic:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>· Solvent content:</td>
<td></td>
</tr>
<tr>
<td>Organic solvents:</td>
<td>99.9 %</td>
</tr>
<tr>
<td>VOC content:</td>
<td>99.9 %</td>
</tr>
<tr>
<td></td>
<td>800 g/l / 6.68 lb/gl</td>
</tr>
<tr>
<td>Solids content:</td>
<td>0.1 %</td>
</tr>
<tr>
<td>· Other information</td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

10 Stability and reactivity

| · Reactivity                      | No further relevant information available. |
| · Chemical stability              |                                            |
| · Thermal decomposition / conditions to be avoided: | No decomposition if used according to specifications. |
| · Possibility of hazardous reactions | No dangerous reactions known.             |
| · Conditions to avoid             | No further relevant information available. |
| · Incompatible materials:         | No further relevant information available. |
| · Hazardous decomposition products: | No dangerous decomposition products known. |

11 Toxicological information

| · Information on toxicological effects |                                      |
| · Acute toxicity:                     |                                      |
| · LD/LC50 values that are relevant for classification: |                                  |

ATE (Acute Toxicity Estimates)

<table>
<thead>
<tr>
<th>Inhalative</th>
<th>LC50/4 h</th>
<th>3 mg/L</th>
</tr>
</thead>
</table>

67-56-1 methanol

<table>
<thead>
<tr>
<th>Oral</th>
<th>LD50</th>
<th>5628 mg/kg (rat)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal</td>
<td>LD50</td>
<td>15800 mg/kg (rabbit)</td>
</tr>
</tbody>
</table>

| · Primary irritant effect: |                                      |
| · on the skin:             | No irritant effect.                  |
| · on the eye:              | No irritating effect.                 |
| · Sensitization:           | No sensitizing effects known.        |
| · Additional toxicological information: | The product shows the following dangers according to internally approved calculation methods for preparations: Toxic |
| · Carcinogenic categories  |                                      |
| · IARC (International Agency for Research on Cancer) | None of the ingredients is listed. |
2 Ecological information

- **Toxicity**
  - **Aquatic toxicity:** No further relevant information available.
  - **Persistence and degradability** No further relevant information available.
  - **Behavior in environmental systems:**
  - **Bioaccumulative potential** No further relevant information available.
  - **Mobility in soil** No further relevant information available.
  - **Additional ecological information:**
    - **General notes:**
      - Water hazard class 1 (Self-assessment): slightly hazardous for water
      - Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
    - **Results of PBT and vPvB assessment**
      - **PBT:** Not applicable.
      - **vPvB:** Not applicable.
    - **Other adverse effects** No further relevant information available.

3 Disposal considerations

- **Waste treatment methods**
  - **Recommendation:**
    - Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
  - **Uncleaned packagings:**
    - **Recommendation:** Disposal must be made according to official regulations.
    - **Recommended cleansing agent:** Water, if necessary with cleansing agents.

4 Transport information

- **UN-Number**
  - DOT, IMDG, IATA: UN1992
- **UN proper shipping name**
  - DOT: Flammable liquids, toxic, n.o.s. (Methanol)
  - IMDG, IATA: FLAMMABLE LIQUID, TOXIC, N.O.S. (METHANOL)
- **Transport hazard class(es)**
  - **DOT:**
    - **Class:** 3 Flammable liquids
Trade name: Isohumulones

- **Label**: 3, 6.1
- **IMDG**
- **Class**: 3 Flammable liquids
- **Label**: 3/6.1
- **IATA**
- **Class**: 3 Flammable liquids
- **Label**: 3 (6.1)
- **Packing group**: II
- **DOT, IMDG, IATA**
- **DOT**: Quantity limitations
  - On passenger aircraft/rail: 1 L
  - On cargo aircraft only: 60 L
- **IMDG**
  - Limited quantities (LQ): 1L
  - Code: E2
  - Excepted quantities (EQ)
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 500 ml
- **UN "Model Regulation":** UN 1992 FLAMMABLE LIQUIDS, TOXIC, N.O.S. (METHANOL), 3 (6.1), II

**15 Regulatory information**

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - **Sara**
  - **Section 355 (extremely hazardous substances):**
    - None of the ingredients is listed.
Trade name: Isohumulones

- **Section 313 (Specific toxic chemical listings):**
  - 67-56-1 methanol
  - 7664-38-2 phosphoric acid

- **TSCA (Toxic Substances Control Act):**
  - 67-56-1 methanol
  - 7664-38-2 phosphoric acid

- **Proposition 65**
  - **Chemicals known to cause cancer:**
    None of the ingredients is listed.
  - **Chemicals known to cause reproductive toxicity for females:**
    None of the ingredients is listed.
  - **Chemicals known to cause reproductive toxicity for males:**
    None of the ingredients is listed.
  - **Chemicals known to cause developmental toxicity:**
    67-56-1 methanol

- **Carcinogenic categories**
  - **EPA (Environmental Protection Agency)**
    None of the ingredients is listed.
  - **TLV (Threshold Limit Value established by ACGIH)**
    None of the ingredients is listed.
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    None of the ingredients is listed.

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms**
    - GHS02
    - GHS06
    - GHS08

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  - methanol

- **Hazard statements**
  - Highly flammable liquid and vapor.
  - Toxic if inhaled.
  - Causes damage to organs.

- **Precautionary statements**
  - Keep away from heat/sparks/open flames/hot surfaces. No smoking.
  - Use explosion-proof electrical/ventilating/lighting/equipment.
  - Do not breathe dust/fume/gas/mist/vapors/spray.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - Ground/bond container and receiving equipment.
  - Use only non-sparking tools.
  - Take precautionary measures against static discharge.
  - Wash thoroughly after handling.
  - Do not eat, drink or smoke when using this product.
Trade name: Isohumulones

Use only outdoors or in a well-ventilated area.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
Specific treatment (see on this label).
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
In case of fire: Use for extinction: CO2, powder or water spray.
Store locked up.
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Department issuing SDS: Document Control / Regulatory
- Contact: regulatory@ultrasci.com
- Date of preparation / last revision 03/11/2017 / -
- Abbreviations and acronyms:
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - IMDG: International Maritime Code for Dangerous Goods
  - DOT: US Department of Transportation
  - IATA: International Air Transport Association
  - ACGIH: American Conference of Governmental Industrial Hygienists
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - ELINCS: European List of Notified Chemical Substances
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - HMIS: Hazardous Materials Identification System (USA)
  - VOC: Volatile Organic Compounds (USA, EU)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent
  - PBT: Persistent, Bioaccumulative and Toxic
  - vPvB: very Persistent and very Bioaccumulative
  - NIOSH: National Institute for Occupational Safety
  - OSHA: Occupational Safety & Health
  - TLV: Threshold Limit Value
  - PEL: Permissible Exposure Limit
  - REL: Recommended Exposure Limit
  - BEI: Biological Exposure Limit
  - Flam. Liq. 2: Flammable liquids – Category 2
  - Acute Tox. 3: Acute toxicity – Category 3
  - STOT SE 1: Specific target organ toxicity (single exposure) – Category 1