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

- Product identifier
- Trade name: Custom Standard
- Part number: CUS-5059
- 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
    Flam. Liq. 2 H225  Highly flammable liquid and vapor.
  - GHS08 Health hazard
    Carc. 1A   H350  May cause cancer.

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

- Signal word: Danger

- Hazard-determining components of labeling:
  ethanol

- Hazard statements
  Highly flammable liquid and vapor.
  May cause cancer.

- Precautionary statements
  Keep away from heat/sparks/open flames/hot surfaces. No smoking.
  Use explosion-proof electrical/ventilating/lighting/equipment.
  Wear protective gloves/protective clothing/eye protection/face protection.
  Ground/bond container and receiving equipment.

(Contd. on page 2)
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Keep container tightly closed.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF exposed or concerned: Get medical advice/attention.
In case of fire: Use for extinction: CO2, powder or water spray.
Store locked up.
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 = 0
  - Fire = 3
  - Reactivity = 0

- HMIS-ratings (scale 0 - 4)
  - HEALTH
  - Fire = 0
  - 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:
  - 64-17-5 ethanol | 100.0%

4 First-aid measures

- Description of first aid measures
- After inhalation: Supply fresh air; consult doctor in case of complaints.
- After skin contact: Generally the product does not irritate the skin.
- After eye contact: Rinse opened eye for several minutes under running water.
- 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.
- For safety reasons unsuitable extinguishing agents: Water with full jet
- Special hazards arising from the substance or mixture: No further relevant information available.
- Advice for firefighters
  - Protective equipment: No special measures required.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
  Wear protective equipment. Keep unprotected persons away.
- Environmental precautions: Prevent seepage into sewage system, workpits and cellars.
- 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>ETHANOL</th>
<th>DIACETYL</th>
<th>64-17-5</th>
<th>431-03-8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,800 ppm</td>
<td>0.02 mg/m³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PAC-2</th>
<th>ETHANOL</th>
<th>DIACETYL</th>
<th>64-17-5</th>
<th>431-03-8</th>
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<tr>
<td></td>
<td>3300* ppm</td>
<td>120 mg/m³</td>
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<table>
<thead>
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<th>PAC-3</th>
<th>ETHANOL</th>
<th>DIACETYL</th>
<th>64-17-5</th>
<th>431-03-8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15000* ppm</td>
<td>310 mg/m³</td>
<td></td>
<td></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.
- 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.
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:
  The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.
  The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.
  At this time, the remaining constituent has no known exposure limits.
  At this time, the other constituents have no known exposure limits.

<table>
<thead>
<tr>
<th>64-17-5 ethanol</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PEL</strong> Long-term value: 1900 mg/m³, 1000 ppm</td>
</tr>
<tr>
<td><strong>REL</strong> Long-term value: 1900 mg/m³, 1000 ppm</td>
</tr>
<tr>
<td><strong>TLV</strong> Short-term value: 1880 mg/m³, 1000 ppm</td>
</tr>
</tbody>
</table>

- 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.
    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:
    Protective gloves

  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 can not 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: According to product specification
- Odor:
  - Characteristic
- Odor threshold:
  - Not determined.
- pH-value:
  - Not determined.
- Change in condition
  - Melting point/Melting range: -114.5 °C (-174 °F)
  - Boiling point/Boiling range: Undetermined.
- Flash point:
  - 13 °C (55 °F)
- Flammability (solid, gaseous):
  - Not applicable.
- Ignition temperature:
  - 425 °C (797 °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: 3.5 Vol %
  - Upper: 15 Vol %
- Vapor pressure at 20 °C (68 °F):
  - 45 hPa (34 mm Hg)
- Density at 20 °C (68 °F):
  - 0.8 g/cm³ (6.676 lbs/gal)
- Relative density:
  - Not determined.
- Vapor density:
  - Not determined.
- Evaporation rate:
  - Not determined.
- Solubility in / Miscibility with Water at 20 °C (68 °F):
  - 1.000 g/l
- Partition coefficient (n-octanol/water):
  - Not determined.
- Viscosity:
  - Dynamic:
    - Not determined.
  - Kinematic:
    - Not determined.
- Solvent content:
  - Organic solvents:
    - 100.0 %
  - VOC content:
    - 100.0 %
    - 1000 g/l / 8.35 lb/gl
Safety Data Sheet
acc. to OSHA HCS

Printing date 05/03/2017
Reviewed on 05/03/2017
Version Number 1

Trade name: Custom Standard

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**:
    | 64-17-5 ethanol |
    | Oral LD50 | >5000 mg/kg (rat) |
    | Inhalative LC50/4 h | 20000 mg/L (rat) |
- **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:
- **Carcinogenic categories**
  - **IARC (International Agency for Research on Cancer)**
    | 64-17-5 ethanol |
    | 1 |
  - **NTP (National Toxicology Program)**
    - None of the ingredients is listed.
  - **OSHA-Ca (Occupational Safety & Health Administration)**
    - None of the ingredients is listed.

12 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**: Not known to be hazardous to water.
  - **Results of PBT and vPvB assessment**
    - **PBT**: Not applicable.
    - **vPvB**: Not applicable.
Trade name: Custom Standard

- Other adverse effects: No further relevant information available.

13 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.

14 Transport information

- UN-Number
- DOT, IMDG, IATA: UN1993

- UN proper shipping name
  - DOT: Flammable liquids, n.o.s. (Ethanol)
  - IMDG: FLAMMABLE LIQUID, N.O.S. (ETHANOL (ETHYL ALCOHOL))
  - IATA: FLAMMABLE LIQUID, N.O.S. (ETHANOL)

- Transport hazard class(es)
  - DOT
    - Class: 3 Flammable liquids
    - Label: 3

  - IMDG, IATA
    - Class: 3 Flammable liquids
    - Label: 3

- Packing group
  - DOT, IMDG, IATA: II

- Environmental hazards: Not applicable.

- Special precautions for user
  - Warning: Flammable liquids
  - Danger code (Kemler): 33
  - EMS Number: F-E,S-E
  - Stowage Category: B

- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.
Trade name: Custom Standard

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.
    - Section 313 (Specific toxic chemical listings):
      None of the ingredients is listed.
    - TSCA (Toxic Substances Control Act):
      All ingredients are listed.
    - 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:
        64-17-5 ethanol
    - Carcinogenic categories
      - EPA (Environmental Protection Agency)
        None of the ingredients is listed.
      - TLV (Threshold Limit Value established by ACGIH)
        64-17-5 ethanol A3
      - 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).
      (Contd. on page 9)
Trade name: Custom Standard

- **Hazard pictograms**
  - GHS02
  - GHS08

- **Signal word** Danger

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

- **Hazard statements**
  - Highly flammable liquid and vapor.
  - May cause cancer.

- **Precautionary statements**
  - Keep away from heat/sparks/open flames/hot surfaces. No smoking.
  - Use explosion-proof electrical/ventilating/lighting/equipment.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - Ground/bond container and receiving equipment.
  - Keep container tightly closed.
  - Use only non-sparking tools.
  - Take precautionary measures against static discharge.
  - Obtain special instructions before use.
  - Do not handle until all safety precautions have been read and understood.
  - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - IF exposed or concerned: Get medical advice/attention.
  - In case of fire: Use for extinction: CO2, powder or water spray.
  - Store locked up.
  - Store in a well-ventilated place. Keep cool.
  - Dispose of contents/container in accordance with local/regional/national/international regulations.

- **National regulations:**
  - **Additional classification according to Decree on Hazardous Materials:**
    - Carcinogenic hazardous material group III (dangerous).

- **Information about limitation of use:**
  - Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation.
  - Exceptions can be made by the authorities in certain cases.

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

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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** 05/03/2017 / -
- **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)
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFPA</td>
<td>National Fire Protection Association (USA)</td>
</tr>
<tr>
<td>HMIS</td>
<td>Hazardous Materials Identification System (USA)</td>
</tr>
<tr>
<td>VOC</td>
<td>Volatile Organic Compounds (USA, EU)</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal concentration, 50 percent</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal dose, 50 percent</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent, Bioaccumulative and Toxic</td>
</tr>
<tr>
<td>vPvB</td>
<td>very Persistent and very Bioaccumulative</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
</tr>
<tr>
<td>REL</td>
<td>Recommended Exposure Limit</td>
</tr>
<tr>
<td>Flam. Liq. 2</td>
<td>Flammable liquids – Category 2</td>
</tr>
<tr>
<td>Carc. 1A</td>
<td>Carcinogenicity – Category 1A</td>
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