1 Identification

- **Product identifier**
- **Trade name**: Custom Standard
- **Part number**: CUS-8256
- **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. 2 H351 Suspected of causing cancer.
  - **GHS07**
    - Eye Irrit. 2A H319 Causes serious eye irritation.
    - STOT SE 3 H335 May cause respiratory irritation.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms**
  - **GHS02**
  - **GHS07**
  - **GHS08**

- **Signal word**: Danger
- **Hazard-determining components of labeling**: tetrahydrofuran
- **Hazard statements**: Highly flammable liquid and vapor.
Safety Data Sheet
acc. to OSHA HCS

Trade name: Custom Standard

Causes serious eye irritation.
Suspected of causing cancer.
May cause respiratory irritation.

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

· Classification system:
  · NFPA ratings (scale 0 - 4)
    Health = 1
    Fire = 3
    Reactivity = 0
  · HMIS-ratings (scale 0 - 4)
    Health = *1
    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:
  109-99-9 tetrahydrofuran 99.762%
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. If symptoms persist, 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.
- **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:** 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**
  **PAC-1:**
<table>
<thead>
<tr>
<th>Compound</th>
<th>Threshold Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>109-99-9 tetrahydrofuran</td>
<td>100 ppm</td>
</tr>
<tr>
<td>111-76-2 2-butoxyethanol</td>
<td>60 ppm</td>
</tr>
<tr>
<td>108-10-1 4-methylpentan-2-one</td>
<td>75 ppm</td>
</tr>
<tr>
<td>108-88-3 toluene</td>
<td>67 ppm</td>
</tr>
<tr>
<td>108-93-0 cyclohexanol</td>
<td>150 ppm</td>
</tr>
</tbody>
</table>

  **PAC-2:**
<table>
<thead>
<tr>
<th>Compound</th>
<th>Threshold Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>109-99-9 tetrahydrofuran</td>
<td>500 ppm</td>
</tr>
<tr>
<td>111-76-2 2-butoxyethanol</td>
<td>120 ppm</td>
</tr>
<tr>
<td>108-10-1 4-methylpentan-2-one</td>
<td>500 ppm</td>
</tr>
<tr>
<td>108-88-3 toluene</td>
<td>560 ppm</td>
</tr>
</tbody>
</table>
Trade name: Custom Standard

### Handling and storage

- **Handling:**
  - **Precautions for safe handling** No special precautions are necessary if used correctly.
  - **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.
  - **Specific end use(s)** No further relevant information available.

### 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:**
    - **109-99-9 tetrahydrofuran**
      - **PEL** Long-term value: 590 mg/m³, 200 ppm
      - **REL** Short-term value: 735 mg/m³, 250 ppm
        - Long-term value: 590 mg/m³, 200 ppm
      - **TLV** Short-term value: 295 mg/m³, 100 ppm
        - Long-term value: 147 mg/m³, 50 ppm
        - Skin

- **Ingredients with biological limit values:**
  - **109-99-9 tetrahydrofuran**
    - **BEI** 2 mg/L
      - Medium: urine
      - Time: end of shift
      - Parameter: Tetrahydrofuran

- **Additional information:** The lists that were valid during the creation were used as basis.
Safety Data Sheet
acc. to OSHA HCS

Printing date 06/19/2017
Version Number 1
Reviewed on 06/19/2017

Trade name: Custom Standard

· 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.
    Avoid contact with the eyes.
    Avoid contact with the eyes and skin.
  · 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 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: Liquid
      Color: Colorless
    · Odor:
      Ether-like
    · Odor threshold:
      Not determined.
  · pH-value:
    Not determined.
  · Change in condition:
    Melting point/Melting range: -108.5 °C (-163 °F)
    Boiling point/Boiling range: 65.5 °C (150 °F)
  · Flash point:
    -21 °C (-6 °F)
  · Flammability (solid, gaseous):
    Not applicable.
  · Ignition temperature:
    230 °C (446 °F)
  · Decomposition temperature:
    Not determined.
Trade name: Custom Standard

- 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: 1.5 Vol %
  - Upper: 12 Vol %
- Vapor pressure at 20 °C (68 °F): 150 hPa (113 mm Hg)
- Density at 20 °C (68 °F): 0.88995 g/cm³ (7.427 lbs/gal)
- Relative density: Not determined.
- Vapor density: Not determined.
- Evaporation rate: Not determined.
- Solubility in / Miscibility with Water: Not miscible or difficult to mix.
- Partition coefficient (n-octanol/water): Not determined.
- Viscosity:
  - Dynamic: Not determined.
  - Kinematic: Not determined.
- Solvent content:
  - Organic solvents: 100.0 %
  - VOC content: 100.0 %
  - 889.7 g/l / 7.42 lb/gl
- Other information: No further relevant information available.

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 Estimate)
      - Oral LD50 2506 mg/kg (rat)
    - 109-99-9 tetrahydrofuran
      - Oral LD50 2500 mg/kg (rat)
- Primary irritant effect:
  - on the skin: No irritant effect.
  - on the eye: Irritating effect.
Safety Data Sheet
acc. to OSHA HCS

Trade name: Custom Standard

- Sensitization: No sensitizing effects known.
- Additional toxicological information:
  The product shows the following dangers according to internally approved calculation methods for preparations:
  Irritant
- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    | Substance            | Carcinogenicity |
    |----------------------|-----------------|
    | 2-butoxyethanol      | 3               |
    | 4-methylpentan-2-one | 2B              |
    | toluene              | 3               |
  - 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:
  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.

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. (Tetrahydrofuran)
- IMDG, IATA: FLAMMABLE LIQUID, N.O.S. (TETRAHYDROFURAN)
<table>
<thead>
<tr>
<th><strong>Transport hazard class(es)</strong></th>
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</thead>
<tbody>
<tr>
<td>DOT</td>
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<table>
<thead>
<tr>
<th><strong>IMDG, IATA</strong></th>
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</thead>
<tbody>
<tr>
<td>DOT, IMDG, IATA</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Class</strong></th>
<th>3 Flammable liquids</th>
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<tbody>
<tr>
<td><strong>Label</strong></td>
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<table>
<thead>
<tr>
<th><strong>Packing group</strong></th>
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<table>
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<tr>
<th><strong>Emission Category</strong></th>
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<tbody>
<tr>
<td>Class</td>
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</tr>
<tr>
<td>IMDG, IATA</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Environmental hazards:</strong></th>
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</thead>
<tbody>
<tr>
<td>Not applicable.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Special precautions for user</strong></th>
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</thead>
<tbody>
<tr>
<td>Warning: Flammable liquids</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>EMS Number:</strong></th>
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<table>
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<th><strong>Stowage Category</strong></th>
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<tbody>
<tr>
<td>B</td>
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<table>
<thead>
<tr>
<th><strong>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Transport/Additional information:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DOT</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Quantity limitations</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>On passenger aircraft/rail: 5 L</td>
</tr>
<tr>
<td>On cargo aircraft only: 60 L</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>IMDG</strong></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Limited quantities (LQ)</strong></th>
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</thead>
<tbody>
<tr>
<td>1L</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Excepted quantities (EQ)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Code: E2</td>
</tr>
<tr>
<td>Maximum net quantity per inner packaging: 30 ml</td>
</tr>
<tr>
<td>Maximum net quantity per outer packaging: 500 ml</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>UN &quot;Model Regulation&quot;:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>UN 1993 FLAMMABLE LIQUIDS, N.O.S. (TETRAHYDROFURAN), 3, II</td>
</tr>
</tbody>
</table>

### 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):**
  - 111-76-2 2-butoxyethanol
Trade name: Custom Standard

108-10-1 4-methylpentan-2-one
108-88-3 toluene
108-93-0 cyclohexanol

· TSCA (Toxic Substances Control Act):
  All ingredients are listed.

· Proposition 65
  · Chemicals known to cause cancer:
    108-10-1 4-methylpentan-2-one
  
  · 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:
    108-10-1 4-methylpentan-2-one
    108-88-3 toluene

· Carcinogenic categories

  · EPA (Environmental Protection Agency)
    109-99-9 tetrahydrofuran SC
    111-76-2 2-butoxyethanol NL
    108-10-1 4-methylpentan-2-one I
    108-88-3 toluene II

  · TLV (Threshold Limit Value established by ACGIH)
    109-99-9 tetrahydrofuran A3
    111-76-2 2-butoxyethanol A3
    108-88-3 toluene A4

· 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  GHS07  GHS08

· Signal word Danger

· Hazard-determining components of labeling:
  tetrahydrofuran

· Hazard statements
  Highly flammable liquid and vapor.
  Causes serious eye irritation.
  Suspected of causing cancer.
  May cause respiratory irritation.

· Precautionary statements
  Obtain special instructions before use.
  Do not handle until all safety precautions have been read and understood.
Trade name: Custom Standard

Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/fume/gas/mist/vapors/spray
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
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.
IF exposed or concerned: Get medical advice/attention.
Call a POISON CENTER/doctor if you feel unwell.
If eye irritation persists: Get medical advice/attention.
In case of fire: Use for extinction: CO2, powder or water spray.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
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.

· Date of preparation / last revision 06/19/2017 / -

· 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)
  NFPA: National Fire Protection Association (USA)
  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
  Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
  Carc. 2: Carcinogenicity – Category 2
  STOT SE 3: Specific target organ toxicity (single exposure) – Category 3