1 Identification

- Product identifier
- Trade name: Custom Standard (100 mL)
- Part number: CUS-24099
- Application of the substance / the mixture: Reagents and Standards for Analytical Chemical Laboratory Use
- Details of the supplier of the safety data sheet
  - Manufacturer/Supplier: Agilent Technologies, Inc.
    5301 Stevens Creek Blvd.
    Santa Clara, CA  95051  USA
  - Information department:
    Telephone: 800-227-9770
e-mail: pdl-msds_author@agilent.com
  - Emergency telephone number: CHEMTREC®: 1-800-424-9300

2 Hazard(s) identification

- Classification of the substance or mixture

  - GHS02 Flame
    Flam. Liq. 2  H225  Highly flammable liquid and vapor.

  - GHS08 Health hazard
    Care. 1A  H350  May cause cancer.

  - GHS07
    Eye Irrit. 2A  H319  Causes serious eye 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:
  - ethanol
- Hazard statements
  - Highly flammable liquid and vapor.
  - Causes serious eye irritation.
  - May cause cancer.

(Contd. on page 2)
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.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wash thoroughly after handling.
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 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.
In case of fire: Use for extinction: CO2, powder or water spray.
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)

<table>
<thead>
<tr>
<th>Health</th>
<th>Fire</th>
<th>Reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

HMIS-ratings (scale 0 - 4)

<table>
<thead>
<tr>
<th>HEALTH</th>
<th>FIRE</th>
<th>REACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>*2</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

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
General information: Immediately remove any clothing soiled by the product.
After inhalation: Supply fresh air; consult doctor in case of complaints.
Trade name: Custom Standard (100 mL)

- **After skin contact:** Immediately rinse with water.
- **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

<table>
<thead>
<tr>
<th>PAC</th>
<th>Compound</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAC-1</td>
<td>64-17-5</td>
<td>1,800 ppm</td>
</tr>
<tr>
<td>PAC-2</td>
<td>64-17-5</td>
<td>3300* ppm</td>
</tr>
<tr>
<td>PAC-3</td>
<td>64-17-5</td>
<td>15000* ppm</td>
</tr>
</tbody>
</table>

### 7 Handling and storage

- **Handling:**
  - Precautions for safe handling
    - Ensure good ventilation/exhaustion at the workplace.
    - Open and handle receptacle with care.
  - Information about protection against explosions and fires:
    - Keep ignition sources away - Do not smoke.
Trade name: Custom Standard (100 mL)

- 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:**
  - 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.

**64-17-5 ethanol**

<table>
<thead>
<tr>
<th></th>
<th>Long-term value</th>
<th>Short-term value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL</td>
<td>1900 mg/m³, 1000 ppm</td>
<td>1880 mg/m³, 1000 ppm</td>
</tr>
<tr>
<td>REL</td>
<td>1900 mg/m³, 1000 ppm</td>
<td></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.
    - Immediately remove all soiled and contaminated clothing.
    - Wash hands before breaks and at the end of work.
    - Store protective clothing separately.
    - Avoid contact with the eyes.
    - Avoid contact with the eyes and skin.

- **Breathing equipment:**
  - When used as intended with Agilent instruments, the use of the product under normal laboratory conditions and with standard practices does not result in significant airborne exposures and therefore respiratory protection is not needed.
  - Under an emergency condition where a respirator is deemed necessary, use a NIOSH or equivalent approved device/equipment with appropriate organic or acid gas cartridge.

- **Protection of hands:**
  - Although not recommended for constant contact with the chemicals or for clean-up, nitrile gloves 11-13 mil thickness are recommended for normal use. The breakthrough time is 1 hr. For cleaning a spill where there is direct contact of the chemical, butyl rubber gloves are recommended 12-15 mil thickness with breakthrough times exceeding 4 hrs. Supplier recommendations should be followed.

(Contd. on page 5)
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 (-174.1 °F)
  - Boiling point/Boiling range: Undetermined.

- Flash point: 13 °C (55.4 °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 (33.8 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.
Trade name: Custom Standard (100 mL)

- **Viscosity:**
  - Dynamic: Not determined.
  - Kinematic: Not determined.

- **Solvent content:**
  - Organic solvents: 100.0 %
  - VOC content: 100.00 %
  - 1,000.0 g/l / 8.35 lb/gal

- **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:**

<table>
<thead>
<tr>
<th>Compound</th>
<th>Oral LD50</th>
<th>Inhalative LC50/4 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5 ethanol</td>
<td>&gt;5,000 mg/kg (rat)</td>
<td>20,000 mg/L (rat)</td>
</tr>
</tbody>
</table>

- **Primary irritant effect:**
  - **on the skin:** No irritant effect.
  - **on the eye:** Irritating effect.
  - **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)**
    - 64-17-5 ethanol | I
  - **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: UN1170
- **UN proper shipping name**
  - DOT: Ethanol mixture
  - IMDG: ETHANOL (ETHYL ALCOHOL) mixture
  - IATA: ETHANOL mixture
- **Transport hazard class(es)**
  - DOT, 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
Trade name: Custom Standard (100 mL)

- Danger code (Kemler): 33
- EMS Number: F-E,S-D
- Stowage Category: A

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

- Transport/Additional information:
  - DOT
  - Quantity limitations:
    - On passenger aircraft/rail: 5 L
    - On cargo aircraft only: 60 L
  - IMDG
  - Limited quantities (LQ): 1L
  - Excepted quantities (EQ): Code: E2
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 500 ml

- UN "Model Regulation": UN 1170 ETHANOL (ETHYL ALCOHOL) MIXTURE, 3, 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.
    - Section 313 (Specific toxic chemical listings):
      None of the ingredients is listed.
    - TSCA (Toxic Substances Control Act):
      64-17-5 ethanol
    - 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
Trade name: Custom Standard (100 mL)

- NIOSH-Ca (National Institute for Occupational Safety and Health)
  None of the ingredients is listed.

- National regulations:

- 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.

16 Other information

The information contained in this document is based on Agilent's state of knowledge at the time of preparation.
No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

- Department issuing SDS: Document Control / Regulatory
- Contact: regulatory@ultrasci.com
- Date of preparation / last revision 04/11/2019 / 1
- 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
  Flam. Liq. 2: Flammable liquids – Category 2
  Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
  Carc. 1A: Carcinogenicity – Category 1A
  * Data compared to the previous version altered.