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

- Product identifier
- Trade name: Haloacetic Acid Standard (1X1 mL)
- Part number: PHM-580-1
- Relevant identified uses of the substance or mixture and uses advised against
  Reagents and Standards for Analytical Chemical Laboratory Use

Details of the supplier of the safety data sheet
- Manufacturer/Supplier:
  Agilent Technologies Manufacturing GmbH & Co. KG
  Hewlett-Packard-Str.8
  76337 Waldbronn
  Germany

  Further information obtainable from:
  Telephone: 0800 603 1000
  pdl-msds_author@agilent.com
  Emergency telephone number: CHEMTREC®: +(44)-870-8200418

2 Hazards identification

- Classification of the substance or mixture
  - Classification according to Regulation (EC) No 1272/2008

  GHS02 flame
  Flam. Liq. 2  H225  Highly flammable liquid and vapour.

  GHS06 skull and crossbones
  Acute Tox. 3  H311  Toxic in contact with skin.

  GHS07
  Skin Irrit. 2  H315  Causes skin irritation.
  Aquatic Chronic 3  H412  Harmful to aquatic life with long lasting effects.

- Label elements
  - Labelling according to Regulation (EC) No 1272/2008
    The product is classified and labelled according to the CLP regulation.

- Hazard pictograms
  GHS02  GHS06

- Signal word Danger
- Hazard-determining components of labelling:
  tert-butyl methyl ether
3 Composition/information on ingredients

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

<table>
<thead>
<tr>
<th>CAS: 1634-04-4</th>
<th>tert-butyl methyl ether</th>
<th>98.378%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 79-11-8</td>
<td>chloroacetic acid</td>
<td>0.2703%</td>
</tr>
</tbody>
</table>

### Additional information:
Contains bromoacetic acid. May produce an allergic reaction.

### Other hazards
- **Results of PBT and vPvB assessment**
  - **PBT:** Not applicable.
  - **vPvB:** Not applicable.
4 First aid measures

- **Description of first aid measures**
  - **General information:** Immediately remove any clothing soiled by the product. In case of irregular breathing or respiratory arrest provide artificial respiration.
  - **After inhalation:** 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:** No further relevant information available.

5 Firefighting measures

- **Extinguishing media**
  - Suitable extinguishing agents: CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
  - For safety reasons unsuitable extinguishing agents: Water with full jet

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
  - Wear protective equipment. Keep unprotected persons away.

- **Environmental precautions:**
  - Do not allow product to reach sewage system or any water course.
  - Inform respective authorities in case of seepage into water course or sewage system.
  - 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.
7 Handling and storage

- **Handling:**
  - Precautions for safe handling: No special precautions are necessary if used correctly.
- **Information about fire - and explosion protection:**
  - 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 container 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 facilities**: No further data; see item 7.
- **Control parameters**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Short-term value</th>
<th>Long-term value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1634-04-4 tert-butyl methyl ether</td>
<td>367 mg/m³, 100 ppm</td>
<td>183.5 mg/m³, 50 ppm</td>
</tr>
<tr>
<td>79-11-8 chloroacetic acid</td>
<td></td>
<td>1.2 mg/m³, 0.3 ppm</td>
</tr>
</tbody>
</table>

- **Additional information**: The lists valid during the making 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.
  - Avoid contact with the skin.
  - Avoid contact with the eyes and skin.
- **Respiratory protection**:
  - 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.

(Contd. on page 5)
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.

Material of gloves
For normal use: nitrile rubber, 11-13 mil thickness
For direct contact with the chemical: butyl rubber, 12-15 mil thickness

Penetration time of glove material
For normal use: nitrile rubber: 1 hour
For direct contact with the chemical: butyl rubber: > 4 hours

Eye protection:

Tightly sealed goggles

9 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
  - Appearance:
    - Form: Fluid
    - Colour: Colourless
  - Odour: Characteristic
  - Odour threshold: Not determined.
- pH-value: Not determined.
- Change in condition
  - Melting point/freezing point: Undetermined.
  - Initial boiling point and boiling range: 55.2 °C
- Flash point: 0 °C
- Flammability (solid, gas): Not applicable.
- Ignition temperature: 374 °C
- Decomposition temperature: Not determined.
- Auto-ignition temperature: Product is not self-igniting.
- Explosive properties: Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
  - Explosion limits:
    - Lower: 1.6 Vol %
    - Upper: 8.4 Vol %
  - Vapour pressure at 20 °C: 279 hPa
  - Density at 20 °C: 0.7579 g/cm³
  - Relative density: Not determined.
  - Vapour density: Not determined.
Trade name: Haloacetic Acid Standard (1X1 mL)

- **Evaporation rate**: Not determined.
- **Solubility in / Miscibility with water at 25 °C**: 51 g/l
- **Partition coefficient: n-octanol/water**: Not determined.
- **Viscosity**:
  - Dynamic at 20 °C: 0.27 mPas
  - Kinematic: Not determined.
- **Solvent content**:
  - Organic solvents: 98.4 %
  - VOC (EC): 98.38 %
- **Solids content**: 0.0 %
- **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**
  - Toxic in contact with skin.

### LD/LC50 values relevant for classification:

#### ATE (Acute Toxicity Estimates)

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50</th>
<th>LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>11,158 mg/kg (rat)</td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>960 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Inhalative</td>
<td>62.8 mg/L</td>
<td></td>
</tr>
</tbody>
</table>

- **1634-04-4 tert-butyl methyl ether**
  - Oral LD50 4,000 mg/kg (rat)
  - Dermal LD50 1,000 mg/kg (rabbit)
  - Inhalative LC50/4 h 23,576 mg/L (rat)

- **79-11-8 chloroacetic acid**
  - Oral LD50 76 mg/kg (rat)
  - Dermal LD50 305 mg/kg (rat)
  - Inhalative LC50/4 h 0.18 mg/L (rat)
Trade name: Haloacetic Acid Standard (1X1 mL)

### 48.1.26

79-43-6 dichloroacetic acid

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50</th>
<th>79-08-3 bromoacetic acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50</td>
<td>799 mg/kg (rabbit)</td>
</tr>
<tr>
<td>Dermal</td>
<td>LD50</td>
<td>79-08-3 bromoacetic acid</td>
</tr>
</tbody>
</table>

- **Primary irritant effect:**
- **Skin corrosion/irritation**
  - Causes skin irritation.
- **Serious eye damage/irritation**
  - Based on available data, the classification criteria are not met.
- **Respiratory or skin sensitisation**
  - Based on available data, the classification criteria are not met.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
  - Based on available data, the classification criteria are not met.
- **Germ cell mutagenicity**
  - 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**
  - Based on available data, the classification criteria are not met.
- **STOT-repeated exposure**
  - Based on available data, the classification criteria are not met.
- **Aspiration hazard**
  - Based on available data, the classification criteria are not met.

### 12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability**
  - No further relevant information available.
- **Behaviour in environmental systems:**
- **Bioaccumulative potential**
  - No further relevant information available.
- **Mobility in soil**
  - No further relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Harmful to fish
- **Additional ecological information:**
- **General notes:**
  - Water hazard class 1 (German Regulation) (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.
  - Harmful to aquatic organisms
- **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 together with household garbage. Do not allow product to reach sewage system.

(Contd. on page 8)
## 14 Transport information

| · Class | 3 Flammable liquids. |
| · Label | 3 |
| · UN-Number | UN2350 |
| · ADR, IMDG, IATA | BUTYL METHYL ETHER |
| · ADR proper shipping name | 2350 BUTYL METHYL ETHER |
| · IMDG, IATA | BUTYL METHYL ETHER |
| · Transport hazard class(es) | Flammable |
| · Packing group | II |
| · Transport in bulk according to Annex II of Marpol and the IBC Code | Not applicable. |
| · Special precautions for user | Warning: Flammable liquids. |
| · Danger code (Kemler): | 33 |
| · EMS Number: | F-E,S-D |
| · Stowage Category | B |
| · Stowage Category | B |
| · Transport/Additional information: | |
| · ADR | 1L |
| · Limited quantities (LQ) | Code: E2 |
| · Excepted quantities (EQ) | Maximum net quantity per inner packaging: 30 ml |
| · Transport category | Maximum net quantity per outer packaging: 500 ml |
| · Tunnel restriction code | 2 |
| · Tunnel restriction code | D/E |

* (Contd. on page 9)
Trade name: Haloacetic Acid Standard (1X1 mL)

- 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 2350 BUTYL METHYL ETHER, 3, II

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
  - Directive 2012/18/EU
  - Named dangerous substances - ANNEX I None of the ingredients is listed.
  - Seveso category P5c FLAMMABLE LIQUIDS
  - Qualifying quantity (tonnes) for the application of lower-tier requirements 5,000 t
  - Qualifying quantity (tonnes) for the application of upper-tier requirements 50,000 t
  - REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3
  - 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.

- Relevant phrases
  - H225 Highly flammable liquid and vapour.
  - H301 Toxic if swallowed.
  - H311 Toxic in contact with skin.
  - H314 Causes severe skin burns and eye damage.
  - H315 Causes skin irritation.
  - H317 May cause an allergic skin reaction.
  - H318 Causes serious eye damage.
  - H331 Toxic if inhaled.
  - H400 Very toxic to aquatic life.
  - H410 Very toxic to aquatic life with long lasting effects.

- 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
  - IATA: International Air Transport Association
  - GHS: Globally Harmonised System of Classification and Labelling of Chemicals
  - 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)
  - 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
  - Flam. Liq. 2: Flammable liquids – Category 2
  - Acute Tox. 3: Acute toxicity – Category 3
  - Skin Corr. 1A: Skin corrosion/irritation – Category 1A
  - Skin Corr. 1B: Skin corrosion/irritation – Category 1B
Trade name: Haloacetic Acid Standard (1X1 mL)

- Skin Irrit. 2: Skin corrosion/irritation – Category 2
- Eye Dam. 1: Serious eye damage/eye irritation – Category 1
- Skin Sens. 1: Skin sensitisation – Category 1
- Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
- Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1
- Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3

* Data compared to the previous version altered.