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

- **Product identifier**

- **Trade name:** Haloacetic Acid Standard (1X1 mL)

- **Part number:** PHM-570-1

- **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

(Contd. on page 2)
Trade name: Haloacetic Acid Standard (1X1 mL)

chloroacetic acid
bromoacetic acid
dichloroacetic acid

· Hazard statements
H225 Highly flammable liquid and vapour.
H311 Toxic in contact with skin.
H315 Causes skin irritation.
H412 Harmful to aquatic life with long lasting effects.

· Precautionary statements
P101 If medical advice is needed, have product container or label at hand.
P102 Keep out of reach of children.
P103 Read label before use.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P264 Wash thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P312 Call a POISON CENTER/doctor if you feel unwell.
P321 Specific treatment (see on this label).
P361+P364 Take off immediately all contaminated clothing and wash it before reuse.
P332+P313 If skin irritation occurs: Get medical advice/attention.
P370+P378 In case of fire: Use for extinction: CO2, powder or water spray.
P403+P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

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

· Other hazards

· Results of PBT and vPvB assessment
· PBT: Not applicable.
· vPvB: Not applicable.

3 Composition/information on ingredients

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

· Dangerous components:

| CAS: 1634-04-4 | tert-butyl methyl ether | 98.378% |
| CAS: 79-11-8 | chloroacetic acid | 0.2703% |

(Contd. on page 3)
Trade name: Haloacetic Acid Standard (1X1 mL)  

<table>
<thead>
<tr>
<th>CAS: 79-43-6</th>
<th>dichloroacetic acid</th>
<th>Acute Tox. 3; H311; Skin Corr. 1A, H314; Aquatic Acute 1, H400</th>
<th>0.2703%</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS: 201-207-0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS: 76-03-9</th>
<th>trichloroacetic acid</th>
<th>Skin Corr. 1A, H314; Aquatic Acute 1, H400; Aquatic Chronic 1, H410</th>
<th>0.2703%</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS: 200-927-2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS: 79-08-3</th>
<th>bromoacetic acid</th>
<th>Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331; Skin Corr. 1A, H314; Aquatic Acute 1, H400; Skin Sens. 1, H317</th>
<th>0.2703%</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS: 201-175-8</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Additional information: For the wording of the listed hazard phrases refer to section 16.

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:
- 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 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
- 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 product to reach sewage system or any water course.
- 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**
  - **Ingredients with limit values that require monitoring at the workplace:**
    | 1634-04-4 tert-butyl methyl ether |
    |---------------------------------|
    | WEL Short-term value: 367 mg/m³, 100 ppm |
    | Long-term value: 183.5 mg/m³, 50 ppm |
    | 79-11-8 chloroacetic acid |
    | WEL Long-term value: 1.2 mg/m³, 0.3 ppm |
    | Sk |
  - **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.
    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 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.
Protection of hands:
Although not recommended for constant contact with the chemicals or for clean up, nitrile gloves 11-13mil thickness are recommended for normal use. The breakthrough time is 1hr. For cleaning a spill where there is direct contact of the chemical, butyl rubber gloves are recommended 12-15mil 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:
  - 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 selfigniting.

- 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: 0.75629 g/cm³
  - Relative density: Not determined.
  - Vapour density: Not determined.
### 48.1.26
- **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**: 1.1%
- **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/LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>11,158 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal</td>
<td>960 mg/kg</td>
</tr>
<tr>
<td>Inhalative</td>
<td>62.8 mg/L</td>
</tr>
</tbody>
</table>

**1634-04-4 tert-butyl methyl ether**

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50/LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>4,000 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal</td>
<td>1,000 mg/kg (rabbit)</td>
</tr>
<tr>
<td>Inhalative</td>
<td>23,576 mg/L (rat)</td>
</tr>
</tbody>
</table>

**79-11-8 chloroacetic acid**

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50/LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>76 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal</td>
<td>305 mg/kg (rat)</td>
</tr>
<tr>
<td>Inhalative</td>
<td>0.18 mg/L (rat)</td>
</tr>
</tbody>
</table>
79-43-6 dichloroacetic acid

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>2,820 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal</td>
<td>799 mg/kg (rabbit)</td>
</tr>
</tbody>
</table>

76-03-9 trichloroacetic acid

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>3,320 mg/kg (rat)</td>
</tr>
</tbody>
</table>

79-08-3 bromoacetic acid

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>50 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal</td>
<td>59.9 mg/kg (rabbit)</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 (carcinogenity, mutagenicity and toxicity for reproduction)**
  - **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
  - **Carcinogenicity** 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.
- **Ecotoxic effects:**
  - **Remark:** Harmful to fish
- **Additional ecological information:**
- **General notes:**
  Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water
  Do not allow product to reach ground water, water course or sewage system.
  Danger to drinking water if even small quantities leak into the ground.
  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.
### European waste catalogue

<table>
<thead>
<tr>
<th>HP 3</th>
<th>Flammable</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP 4</td>
<td>Irritant - skin irritation and eye damage</td>
</tr>
<tr>
<td>HP 6</td>
<td>Acute Toxicity</td>
</tr>
<tr>
<td>HP 14</td>
<td>Ecotoxic</td>
</tr>
</tbody>
</table>

### Uncleaned packaging:
- **Recommendation:** Disposal must be made according to official regulations.

### 14 Transport information

- **Not Regulated, De minimus Quantities**
- **UN-Number**
  - ADR, IMDG, IATA: UN2350
- **UN proper shipping name**
  - ADR: 2350 BUTYL METHYL ETHER solution
  - IMDG, IATA: BUTYL METHYL ETHER solution
- **Transport hazard class(es)**
  - **ADR, IMDG, IATA**
  - **Class:** 3 Flammable liquids.
  - **Label:** 3
- **Packing group**
  - **ADR, IMDG, IATA:** II
- **Environmental hazards:** Not applicable.
- **Special precautions for user** Warning: Flammable liquids.
- **Danger code (Kemler):** 33
- **EMS Number:** F-E,S-D
- **Stowage Category** B
- **Stowage Code** SW2 Clear of living quarters.
- **Transport in bulk according to Annex II of Marpol and the IBC Code** Not applicable.
- **Transport/Additional information:**
  - **ADR**
    - **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
  - **Transport category** 2

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

<table>
<thead>
<tr>
<th>· Tunnel restriction code</th>
<th>D/E</th>
</tr>
</thead>
<tbody>
<tr>
<td>· IMDG</td>
<td></td>
</tr>
<tr>
<td>· Limited quantities (LQ)</td>
<td>1L</td>
</tr>
<tr>
<td>· Exempted quantities (EQ)</td>
<td>Code: E2</td>
</tr>
<tr>
<td></td>
<td>Maximum net quantity per inner packaging: 30 ml</td>
</tr>
<tr>
<td></td>
<td>Maximum net quantity per outer packaging: 500 ml</td>
</tr>
<tr>
<td>· UN &quot;Model Regulation&quot;:</td>
<td>UN 2350 BUTYL METHYL ETHER SOLUTION, 3, II</td>
</tr>
</tbody>
</table>

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
<table>
<thead>
<tr>
<th>Hazard Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin Corr. 1B</td>
<td>Skin corrosion/irritation – Category 1B</td>
</tr>
<tr>
<td>Skin Irrit. 2</td>
<td>Skin corrosion/irritation – Category 2</td>
</tr>
<tr>
<td>Eye Dam. 1</td>
<td>Serious eye damage/eye irritation – Category 1</td>
</tr>
<tr>
<td>Skin Sens. 1</td>
<td>Skin sensitisation – Category 1</td>
</tr>
<tr>
<td>Aquatic Acute 1</td>
<td>Hazardous to the aquatic environment - acute aquatic hazard – Category 1</td>
</tr>
<tr>
<td>Aquatic Chronic 1</td>
<td>Hazardous to the aquatic environment - long-term aquatic hazard – Category 1</td>
</tr>
<tr>
<td>Aquatic Chronic 3</td>
<td>Hazardous to the aquatic environment - long-term aquatic hazard – Category 3</td>
</tr>
</tbody>
</table>