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

- **Product identifier**
- **Trade name:** Disinfection Byproducts Standard (1X1 mL)
- **Part number:** HCM-548-1

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.

- **GHS07**
  Eye Irrit. 2 H319 Causes serious eye irritation.
  STOT SE 3 H336 May cause drowsiness or dizziness.

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

- **Hazard pictograms**

- **GHS02**
- **GHS07**

- **Signal word** Danger

- **Hazard-determining components of labelling:**
  - acetone

- **Hazard statements**
  - H225 Highly flammable liquid and vapour.
  - H319 Causes serious eye irritation.
  - H336 May cause drowsiness or dizziness.

(Contd. on page 2)
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.
- **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.
- **P261**: Avoid breathing dust/fume/gas/mist/vapours/spray.
- **P264**: Wash thoroughly after handling.
- **P271**: Use only outdoors or in a well-ventilated area.
- **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.
- **P304+P340**: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- **P305+P351+P338**: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- **P312**: Call a POISON CENTER/doctor if you feel unwell.
- **P337+P313**: IF EYES IRITATION persists: Get medical advice/attention.
- **P370+P378**: IN CASE OF FIRE: Use for extinguishment: CO2, powder or water spray.
- **P403+P233**: Store in a well-ventilated place. Keep container tightly closed.
- **P405**: Store in a cool place.
- **P501**: Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards:

- **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:

<table>
<thead>
<tr>
<th>CAS:</th>
<th>EINECS:</th>
<th>Chemical</th>
<th>Pictograms</th>
<th>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-64-1</td>
<td>200-662-2</td>
<td>acetone</td>
<td>Fl. Liq. 2, H225; Eye Irrit. 2, H319; STOT SE 3, H336</td>
<td>98.9888%</td>
</tr>
<tr>
<td>76-06-2</td>
<td>200-930-9</td>
<td>trichloronitromethane</td>
<td>Acute Tox. 3, H311; Acute Tox. 2, H330; Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Acute Tox. 4, H302; Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335</td>
<td>0.126%</td>
</tr>
<tr>
<td>3252-43-5</td>
<td>221-843-2</td>
<td>dibromoacetanitride</td>
<td>Fl. Liq. 3, H226; Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 2, H330; Carc. 2, H351; Aquatic Acute 1, H400; Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335; Aquatic Chronic 4, H413</td>
<td>0.126%</td>
</tr>
<tr>
<td>513-88-2</td>
<td>208-175-7</td>
<td>1,1-dichloroacetone</td>
<td>Fl. Liq. 3, H226; Acute Tox. 3, H301; Eye Irrit. 2, H319; STOT SE 3, H335</td>
<td>0.126%</td>
</tr>
</tbody>
</table>
Trade name: Disinfection Byproducts Standard (1X1 mL)

| CAS: 545-06-2 | trichloroacetonitrile | Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331; Aquatic Chronic 2, H411 | 0.126% |
| EINECS: 208-885-7 |

| CAS: 302-17-0 | chloral hydrate | Flam. Liq. 3, H226; Acute Tox. 3, H301; Skin Irrit. 2, H315; Eye Irrit. 2, H319 | 0.126% |
| EINECS: 206-117-5 |

**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.
  - **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 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 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.
7 Handling and storage

- Handling:
- Precautions for safe handling
  Ensure good ventilation/exhaustion at the workplace.
  Prevent formation of aerosols.
- 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:
  67-64-1 acetone
  WEL Short-term value: 3620 mg/m³, 1500 ppm
  Long-term value: 1210 mg/m³, 500 ppm

  76-06-2 trichloronitromethane
  WEL Short-term value: 2.1 mg/m³, 0.3 ppm
  Long-term value: 0.68 mg/m³, 0.1 ppm

  3252-43-5 dibromoacetonitrile
  WEL Long-term value: 5 mg/m³
  as CN; 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.
  Avoid contact with the eyes.
  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

## Physical and chemical properties

### Information on basic physical and chemical properties
#### General Information
- **Appearance:** Fluid
- **Colour:** Colourless
- **Odour:** Characteristic
- **Odour threshold:** Not determined.

#### pH-value:
- Not determined.

#### Change in condition
- **Melting point/freezing point:** -94.7 °C
- **Initial boiling point and boiling range:** 55.8-56.6 °C

#### Flash point:
- -17 °C

#### Flammability (solid, gas):
- Not applicable.

#### Ignition temperature:
- 465 °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:** 2.6 Vol %
- **Upper:** 13 Vol %

#### Vapour pressure at 20 °C:
- 245.3 hPa

#### Density at 20 °C:
- **Relative density:** Not determined.
- **Vapour density:** Not determined.
### 48.1.26

- **Evaporation rate**
  - Not determined.

- **Solubility in / Miscibility with water**
  - Not miscible or difficult to mix.

- **Partition coefficient: n-octanol/water**
  - Not determined.

- **Viscosity**
  - Dynamic at 20 °C: 32 mPas
  - Kinematic: Not determined.

- **Solvent content**
  - Organic solvents: 99.0 %
  - VOC (EC): 98.99 %

- **Solids content**
  - 0.1 %

- **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**
    - Based on available data, the classification criteria are not met.

- **LD/LC50 values relevant for classification**

<table>
<thead>
<tr>
<th>ATE (Acute Toxicity Estimates)</th>
<th>Oral (LD50)</th>
<th>Dermal (LD50)</th>
<th>Inhalative (LC50/4 h)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>55,835 mg/kg</td>
<td>101,718 mg/kg</td>
<td>183 mg/L</td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalative</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **67-64-1 acetone**
  - Oral (LD50): 5,800 mg/kg (rat)
  - Dermal (LD50): 20,000 mg/kg (rabbit)

- **76-06-2 trichloronitromethane**
  - Oral (LD50): 250 mg/kg (rat)

- **3252-43-5 dibromoacetonitrile**
  - Oral (LD50): 245 mg/kg (rat)

- **513-88-2 1,1-dichloroacetone**
  - Oral (LD50): 250 mg/kg (mouse)

(Contd. of page 7)
545-06-2 trichloroacetonitrile

<table>
<thead>
<tr>
<th></th>
<th>Oral</th>
<th>Dermal</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50</td>
<td>250 mg/kg (rat)</td>
<td>900 mg/kg (rabbit)</td>
</tr>
</tbody>
</table>

302-17-0 chloral hydrate

<table>
<thead>
<tr>
<th></th>
<th>Oral</th>
<th>Dermal</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50</td>
<td>479 mg/kg (rat)</td>
<td>3,030 mg/kg (rat)</td>
</tr>
</tbody>
</table>

- **Primary irritant effect:**
  - **Skin corrosion/irritation** Based on available data, the classification criteria are not met.
  - **Serious eye damage/irritation** Causes serious eye irritation.
  - **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** May cause drowsiness or dizziness.
  - **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.
  - **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.

- **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**
  - HP 3 Flammable
  - HP 4 Irritant - skin irritation and eye damage
  - HP 5 Specific Target Organ Toxicity (STOT)/Aspiration Toxicity
### 14 Transport information

- **Not Regulated, De minimus Quantities**
- **UN-Number**
  - ADR, IMDG, IATA: UN1090
- **UN proper shipping name**
  - ADR: 1090 ACETONE solution
  - IMDG: ACETONE 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
- **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
- **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
Safety data sheet
according to 1907/2006/EC, Article 31

Trade name: Disinfection Byproducts Standard (1X1 mL)

· UN "Model Regulation"; UN 1090 ACETONE SOLUTION, 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

· Regulation (EU) No 649/2012
  76-06-2 trichloronitromethane
  Annex I Part 1
  Annex I Part 2

· 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.
  H226 Flammable liquid and vapour.
  H301 Toxic if swallowed.
  H302 Harmful if swallowed.
  H311 Toxic in contact with skin.
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.
  H330 Fatal if inhaled.
  H331 Toxic if inhaled.
  H335 May cause respiratory irritation.
  H336 May cause drowsiness or dizziness.
  H351 Suspected of causing cancer.
  H400 Very toxic to aquatic life.
  H410 Very toxic to aquatic life with long lasting effects.
  H411 Toxic to aquatic life with long lasting effects.
  H413 May cause long lasting harmful effects to aquatic life.

· 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

(Contd. on page 10)
vPvB: very Persistent and very Bioaccumulative
Flam. Liq. 2: Flammable liquids – Category 2
Flam. Liq. 3: Flammable liquids – Category 3
Acute Tox. 4: Acute toxicity – Category 4
Acute Tox. 3: Acute toxicity – Category 3
Acute Tox. 2: Acute toxicity – Category 2
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
Carc. 2: Carcinogenicity – Category 2
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1
Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2
Aquatic Chronic 4: Hazardous to the aquatic environment - long-term aquatic hazard – Category 4