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

- **Product identifier**
- **Trade name:** 2,2',4,4'-Tetrachlorobiphenyl Standard (BZ-47) (1X2 mL)
- **Part number:** RPC-035AS

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.

  - GHS08 health hazard
    Asp. Tox. 1 H304 May be fatal if swallowed and enters airways.

  - GHS09 environment
    Aquatic Acute 1 H400 Very toxic to aquatic life.
    Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.

  - GHS07
    Skin Irrit. 2 H315 Causes skin 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.
Trade name: 2,2',4,4'-Tetrachlorobiphenyl Standard (BZ-47) (1X2 mL)

- Hazard pictograms

![Hazard pictograms](Contd. of page 1)

- Signal word Danger

- Hazard-determining components of labelling:
  2,2,4-trimethylpentane

- Hazard statements
  H225 Highly flammable liquid and vapour.
  H315 Causes skin irritation.
  H336 May cause drowsiness or dizziness.
  H304 May be fatal if swallowed and enters airways.
  H410 Very toxic 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.
  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.
  P273 Avoid release to the environment.
  P280 Wear protective gloves/protective clothing/eye protection/face protection.
  P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
  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.
  P312 Call a POISON CENTER/doctor if you feel unwell.
  P362+P364 Take off 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.
  P391 Collect spillage.
  P403+P233 Store in a well-ventilated place. Keep container tightly closed.
  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.

- Other hazards

- Results of PBT and vPvB assessment

- PBT: Not applicable.
Safety data sheet
according to 1907/2006/EC, Article 31

Trade name: 2,2',4,4'-Tetrachlorobiphenyl Standard (BZ-47) (1X2 mL)

- vPvB: Not applicable.

### 3 Composition/information on ingredients

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

| CAS: 540-84-1 | 2,2,4-trimethylpentane | 99.986% |
| EINECS: 208-759-1 | Flam. Liq. 2, H225; Asp. Tox. 1, H304; Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Skin Irrit. 2, H315; STOT SE 3, H336 |

- **Dangerous components:**
- **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.
- **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.
- **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.
  - 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.
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 storeroms 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:
    The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
  - 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 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.
9 Physical and chemical properties

- **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

### General Information
- **Appearance:** Fluid
- **Colour:** Colourless
- **Odour:** Nearly odourless
- **Odour threshold:** Not determined.
- **pH-value:** Not determined.

#### Change in condition
- **Melting point/freezing point:** -107 °C
- **Initial boiling point and boiling range:** 99 °C
- **Flash point:** -12 °C
- **Flammability (solid, gas):** Not applicable.
- **Ignition temperature:** 410 °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:** 1.1 Vol %
- **Upper:** 6 Vol %

#### Vapour pressure at 20 °C:
- **41.25 hPa**

#### Density at 20 °C:
- **0.692 g/cm³**
- **Relative density**
- **Not determined.**
- **Vapour 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.**
Trade name: 2,2',4,4'-Tetrachlorobiphenyl Standard (BZ-47) (1X2 mL)

| Viscosity:                                      |
| Dynamic:                                | Not determined. |
| Kinematic:                              | Not determined. |

| Solvent content:                                      |
| Organic solvents:                              | 100.0 %         |
| VOC (EC)                                        | 99.99 %         |

| 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: |
| 540-84-1 2,2,4-trimethylpentane               |
| Oral LD50                              | >5,000 mg/kg (rat) |
| Dermal LD50                           | >2,000 mg/kg (rabbit) |
| Inhalative LC50/4 h                    | >33.52 mg/L (rat) |

- 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.
  - 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 May be fatal if swallowed and enters airways.

12 Ecological information

- Toxicity
  - Aquatic toxicity: No further relevant information available.
48.1.26

· 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: Very toxic for 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.
Also poisonous for fish and plankton in water bodies.
Very toxic for 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
| HP  3 | Flammable |
| HP  4 | Irritant - skin irritation and eye damage |
| HP  5 | Specific Target Organ Toxicity (STOT)/Aspiration Toxicity |
| HP 14 | Ecotoxic |
· Uncleaned packaging:
· Recommendation: Disposal must be made according to official regulations.

14 Transport information

· UN-Number
· ADR, IMDG, IATA UN1262
· UN proper shipping name
· ADR 1262 OCTANES mixture, ENVIRONMENTALLY HAZARDOUS
· IMDG OCTANES mixture, MARINE POLLUTANT
· IATA OCTANES mixture

(Contd. on page 8)
### Transport hazard class(es)

- **ADR, IMDG**

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- **IATA**

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- **Packing group**

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### Environmental hazards:

- **Product contains environmentally hazardous substances:**
  - 2,2,4-trimethylpentane
- **Marine pollutant:**
  - Symbol (fish and tree)
- **Special marking (ADR):**
  - Symbol (fish and tree)

### Special precautions for user

- **Warning:** Flammable liquids.
- **Danger code (Kemler):** 33
- **EMS Number:** F-E,S-E
- **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 (Code: E2)
  - **Excepted quantities (EQ):**
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 500 ml

- **IMDG**
  - **Limited quantities (LQ):** 1L (Code: E2)
  - **Excepted quantities (EQ):**
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 500 ml

- **UN "Model Regulation":**
  - UN 1262 OCTANES MIXTURE, 3, II, ENVIRONMENTALLY HAZARDOUS
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
    E1 Hazardous to the Aquatic Environment
    P5c FLAMMABLE LIQUIDS
  - Qualifying quantity (tonnes) for the application of lower-tier requirements 100 t
  - Qualifying quantity (tonnes) for the application of upper-tier requirements 200 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.
  H304 May be fatal if swallowed and enters airways.
  H315 Causes skin irritation.
  H336 May cause drowsiness or dizziness.
  H400 Very toxic to aquatic life.
  H410 Very toxic to aquatic life with long lasting effects.

- Department issuing SDS: Document Control / Regulatory
- Contact: regulatory@ultrasci.com
- 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
  Skin Irrit. 2: Skin corrosion/irritation – Category 2
  STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
  Asp. Tox. 1: Aspiration hazard – 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