1 Identification

- Product identifier
- Trade name: DEF
- Part number: PST-300
- CAS Number: 78-48-8
- EC number: 201-120-8
- 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 Australia Pty Ltd
  679 Springvale Road
  Mulgrave
  Victoria 3170, Australia
- Further information obtainable from:
  Telephone: 1800 802 402
e-mail: pdl-msds_author@agilent.com
- Emergency telephone number: CHEMTREC®: +(61) - 290372994

2 Hazard(s) Identification

- Classification of the substance or mixture
  [skull and crossbones]
  Acute Tox. 3 H301 Toxic if swallowed.
  Acute Tox. 2 H310 Fatal in contact with skin.
  Acute Tox. 3 H331 Toxic if inhaled.

- Label elements
- GHS label elements
  The substance is classified and labelled according to the Globally Harmonised System (GHS).
- Hazard pictograms
  [GHS06]

- Signal word Danger

- Hazard-determining components of labelling:
  S,S,S-tributylphosphorotrithioate

- Hazard statements
  Toxic if swallowed.
  Fatal in contact with skin.
  Toxic if inhaled.

- Precautionary statements
  If medical advice is needed, have product container or label at hand.

(Contd. on page 2)
**Safety Data Sheet**  
according to WHS Regulations

**Trade name:** DEF

- Keep out of reach of children.
- Read label before use.
- Avoid breathing dust/fume/gas/mist/vapours/spray.
- Do not get in eyes, on skin, or on clothing.
- Wash thoroughly after handling.
- Do not eat, drink or smoke when using this product.
- Use only outdoors or in a well-ventilated area.
- Wear protective gloves / protective clothing.
- IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
- Rinse mouth.
- IF ON SKIN: Gently wash with plenty of soap and water.
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- Call a POISON CENTER/doctor.
- Specific measures (see on this label).
- Remove/Take off immediately all contaminated clothing.
- Wash contaminated clothing before reuse.
- Store in a well-ventilated place. Keep container tightly closed.
- Store locked up.
- Dispose of contents/container in accordance with local/regional/national/international regulations.

**3 Composition and Information on Ingredients**

- **Chemical characterisation:** Substances
- **CAS No. Description**
  - 78-48-8 S,S,S-tributylphosphorotrithioate
- **Identification number(s)**
  - EC number: 201-120-8

**4 First Aid Measures**

- **Description of first aid measures**
- **General information:**
  - Immediately remove any clothing soiled by the product.
  - Remove breathing equipment only after contaminated clothing have been completely removed.
  - In case of irregular breathing or respiratory arrest provide artificial respiration.
- **After inhalation:**
  - Supply fresh air or oxygen; call for doctor.
  - 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:**
  - Do not induce vomiting; call for medical help immediately.
- **Information for doctor:**
  - **Most important symptoms and effects, both acute and delayed** No further relevant information available.

(Contd. of page 3)
Trade name: DEF

- Indication of any immediate medical attention and special treatment needed
  No further relevant information available.

5 Fire Fighting Measures

- Extinguishing media
  - Suitable extinguishing agents: Use fire extinguishing methods suitable to surrounding conditions.
  - Special hazards arising from the substance or mixture: No further relevant information available.
- Advice for firefighters
  - Protective equipment: Mouth respiratory protective device.

6 Accidental Release Measures

- Personal precautions, protective equipment and emergency procedures: Not required.
- 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:
  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
    Thorough dedusting.
    Ensure good ventilation/exhaustion at the workplace.
    Open and handle receptacle with care.
  - Information about fire - and explosion protection: Keep respiratory protective device available.
- Conditions for safe storage, including any incompatibilities
- Storage:
  - Requirements to be met by storerooms and receptacles: No special requirements.
  - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions: Keep container tightly sealed.
  - Specific end use(s): No further relevant information available.

8 Exposure controls and 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: Not required.
- Additional information: The lists valid during the making were used as basis.
48.1.26

· 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.
· 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
  The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and
  varies from manufacturer to manufacturer.
· Penetration time of glove material
  For normal use: nitrile rubber: 1 hour
  For direct contact with the chemical: butyl rubber: > 4 hours
· Eye protection: Not required.

9 Physical and Chemical Properties

· Information on basic physical and chemical properties
· General Information
· Appearance:
  Form: Solid
  Colour: Not determined.
· Odour: Characteristic
· Odour threshold: Not determined.
· pH-value: Not applicable.
· Change in condition
  Melting point/freezing point: Undetermined.
  Initial boiling point and boiling range: 150 °C
· Flash point: Not applicable.
· Flammability (solid, gas): Product is not flammable.
· Decomposition temperature: Not determined.
· Auto-ignition temperature: Not determined.
· Explosive properties: Product does not present an explosion hazard.
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 relevant for classification**:
      - **ATE (Acute Toxicity Estimates)**
        - Oral LD50 150 mg/kg (rat)
        - Dermal LD50 97 mg/kg (rabbit)
        - Inhalative LC50/4 h 0.5 mg/L
      - **78-48-8 S,S,S-tributylphosphorotrithioate**
        - Oral LD50 150 mg/kg (rat)
        - Dermal LD50 97 mg/kg (rabbit)
    - **Primary irritant effect**:
    - **Skin corrosion/irritation**: No irritant effect.

(Contd. of page 4)
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 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.
  - **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.

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

14 Transport information

- **UN-Number**
  - **ADG, IMDG, IATA** UN2811
- **UN proper shipping name**
  - **ADG** 2811 TOXIC SOLID, ORGANIC, N.O.S. (S,S,S-tributylphosphorotrithioate), ENVIRONMENTALLY HAZARDOUS
  - **IMDG, IATA** TOXIC SOLID, ORGANIC, N.O.S. (S,S,S-tributylphosphorotrithioate)
- **Transport hazard class(es)**
  - **ADG**
    - **Class** 6.1 Toxic substances.
<table>
<thead>
<tr>
<th><strong>Label</strong></th>
<th>6.1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IMDG, IATA</strong></td>
<td></td>
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<tr>
<td><strong>Class</strong></td>
<td>6.1 Toxic substances.</td>
</tr>
<tr>
<td><strong>Label</strong></td>
<td>6.1</td>
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<tr>
<td><strong>Packing group</strong></td>
<td>II</td>
</tr>
<tr>
<td><strong>ADG, IMDG, IATA</strong></td>
<td></td>
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<tr>
<td><strong>Environmental hazards:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Special marking (ADG):</strong></td>
<td>Symbol (fish and tree)</td>
</tr>
<tr>
<td><strong>Special precautions for user</strong></td>
<td>Warning: Toxic substances.</td>
</tr>
<tr>
<td><strong>Danger code (Kemler):</strong></td>
<td>60</td>
</tr>
<tr>
<td><strong>EMS Number:</strong></td>
<td>F-A,S-A</td>
</tr>
<tr>
<td><strong>Stowage Category</strong></td>
<td>B</td>
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</table>

**Transport in bulk according to Annex II of Marpol and the IBC Code**
Not applicable.

**Transport/Additional information:**

<table>
<thead>
<tr>
<th><strong>ADG</strong></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Limited quantities (LQ)</strong></td>
<td>500 g</td>
</tr>
<tr>
<td><strong>Excepted quantities (EQ)</strong></td>
<td>Code: E4</td>
</tr>
<tr>
<td><strong>Transport category</strong></td>
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<tr>
<td><strong>Tunnel restriction code</strong></td>
<td>D/E</td>
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<tr>
<td><strong>IMDG</strong></td>
<td></td>
</tr>
<tr>
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<td>500 g</td>
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<tr>
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<td>Code: E4</td>
</tr>
<tr>
<td><strong>UN &quot;Model Regulation&quot;:</strong></td>
<td>UN 2811 TOXIC SOLID, ORGANIC, N.O.S. (S,S,S-TRIBUTYLPHOSPHOROTRITHIOATE), 6.1, II, ENVIRONMENTALLY HAZARDOUS</td>
</tr>
</tbody>
</table>

**15 Regulatory information**

<table>
<thead>
<tr>
<th><strong>Safety, health and environmental regulations/legislation specific for the substance or mixture</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Australian Inventory of Chemical Substances</strong></td>
<td>Substance is listed.</td>
</tr>
<tr>
<td><strong>Standard for the Uniform Scheduling of Medicines and Poisons</strong></td>
<td>Substance is not listed.</td>
</tr>
</tbody>
</table>
Safety Data Sheet
according to WHS Regulations

Trade name: DEF

- Directive 2012/18/EU
- Named dangerous substances - ANNEX I Substance is not listed.
- Seveso category
  H2  ACUTE TOXIC
  E1  Hazardous to the Aquatic Environment
- Qualifying quantity (tonnes) for the application of lower-tier requirements 50 t
- Qualifying quantity (tonnes) for the application of upper-tier requirements 200 t
- 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
- 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
  EINECS: European Inventory of Existing Commercial 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
  Acute Tox. 3: Acute toxicity – Category 3
  Acute Tox. 2: Acute toxicity – Category 2