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

- **Product identifier**
  - **Trade name**: Tritiated Toluene, 6004051
  - **Article number**: This MSDS covers Part Number 6004051.
  - **CAS Number**: 108-88-3
  - **EC number**: 203-625-9
  - **Index number**: 601-021-00-3
- **Relevant identified uses of the substance or mixture and uses advised against**
  - Laboratory chemicals.
  - Standards for laboratory equipment.
- **Application of the substance / the preparation**
  - These standards are used to optimize liquid scintillation counter settings and to check long-term stability of the instruments.
- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier**: PerkinElmer
    2200 Warrenville Road
    Downers Grove, IL  60515
  - **Further information obtainable from**: Product safety
    Lilibeth Valero, 630-322-5466
  - **Emergency telephone number**:
    CHEMTREC (within U.S.) 800 424-9300
    CHEMTREC (from outside U.S.) 1(703) 527-3887

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.
- **Label elements**
  - **Labelling according to Regulation (EC) No 1272/2008**
    - The substance is classified and labelled according to the CLP regulation.
  - **Hazard pictograms**: GHS02
  - **Signal word**: Danger
  - **Hazard statements**: H225 Highly flammable liquid and vapour.
  - **Precautionary statements**
    - P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
    - P241 Use explosion-proof electrical/ventilating/lighting/equipment.
    - P280 Wear protective gloves/protective clothing/eye protection/face protection.
    - P240 Ground/bond container and receiving equipment.
    - P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
    - P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

(Contd. on page 2)
3 Composition/information on ingredients

- Chemical characterization: Substances
  - CAS No. Description
    108-88-3 toluene
  - Identification number(s)
    - EC number: 203-625-9
    - Index number: 601-021-00-3
  - Additional information: H3 activity approximately 2.5 * E6 dpm/g.

4 First aid measures

- Description of first aid measures
  - General information:
    Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
  - 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.
  - 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.
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 containers: 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: Not required.
  - 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:
      In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
    - Protection of hands:
      - Protective gloves
        The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
        Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
        - Material of gloves
          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.
Trade name: Tritiated Toluene, 6004051

- **Penetration time of glove material**
  The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

- **Eye protection:**
  Tightly sealed goggles

### 9 Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information on basic physical and chemical properties</strong></td>
<td></td>
</tr>
<tr>
<td><strong>General Information</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Appearance:</strong></td>
<td></td>
</tr>
<tr>
<td>- Form</td>
<td>Liquid</td>
</tr>
<tr>
<td>- Colour</td>
<td>Transparent</td>
</tr>
<tr>
<td><strong>Odour</strong></td>
<td>Strong</td>
</tr>
<tr>
<td><strong>Odour threshold:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>pH-value:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Change in condition</strong></td>
<td></td>
</tr>
<tr>
<td>- Melting point/Melting range:</td>
<td>-95 °C</td>
</tr>
<tr>
<td>- Boiling point/Boiling range:</td>
<td>110 °C</td>
</tr>
<tr>
<td><strong>Flash point:</strong></td>
<td>4 °C</td>
</tr>
<tr>
<td><strong>Flammability (solid, gaseous):</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Ignition temperature:</strong></td>
<td>535 °C</td>
</tr>
<tr>
<td><strong>Decomposition temperature:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Self-igniting:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Danger of explosion:</strong></td>
<td>Product is not explosive.</td>
</tr>
<tr>
<td>- Product is not explosive.</td>
<td>However, formation of explosive air/vapour mixtures are possible.</td>
</tr>
<tr>
<td><strong>Explosion limits:</strong></td>
<td></td>
</tr>
<tr>
<td>- Lower</td>
<td>1.2 Vol %</td>
</tr>
<tr>
<td>- Upper</td>
<td>7 Vol %</td>
</tr>
<tr>
<td><strong>Vapour pressure at 20 °C:</strong></td>
<td>29 hPa</td>
</tr>
<tr>
<td><strong>Density at 20 °C:</strong></td>
<td>0.87 g/cm³</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Vapour density</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Solubility in / Miscibility with water at 15 °C:</strong></td>
<td>0.5 g/l</td>
</tr>
<tr>
<td><strong>Segregation coefficient (n-octanol/water):</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Viscosity:</strong></td>
<td></td>
</tr>
<tr>
<td>- Dynamic</td>
<td>Not determined.</td>
</tr>
<tr>
<td>- Kinematic</td>
<td>Not determined.</td>
</tr>
<tr>
<td>- Organic solvents:</td>
<td>100.0 %</td>
</tr>
</tbody>
</table>
10 Stability and reactivity

- Reactivity
  - 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:
      | 108-88-3 toluene |
      | Oral LD50        | 5000 mg/kg (rat) |
      | Dermal LD50      | 12124 mg/kg (rabbit) |
      | Inhalative LC50/4 h | 5320 mg/l (mouse) |

- Primary irritant effect:
  - on the skin: Irritant to skin and mucous membranes.
  - on the eye: No irritating effect.
  - Sensitization: No sensitizing effects known.

12 Ecological information

- Toxicity
  - Acquatic 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) (Assessment by list): 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
  - ADR, IMDG, IATA: UN1294
- UN proper shipping name
  - ADR: 1294 TOLUENE
  - IMDG, IATA: TOLUENE
- Transport hazard class(es)
  - ADR
    - Class: 3 Flammable liquids.
    - Label: 3
  - IMDG, IATA
    - Class: 3 Flammable liquids.
    - Label: 3
- Packing group
  - ADR, IMDG, IATA: II
- Environmental hazards:
  - Marine pollutant: No
- Special precautions for user
  - Warning: Flammable liquids.
  - Danger code (Kemler): 33
  - EMS Number: F-E,S-D
Trade name: Tritiated Toluene, 6004051

(Contd. of page 6)

- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

- Transport/Additional information:
  NOTE: The radioactivity level for the H3 component of this standard is far below the threshold level specified in US Department of Transportation (DOT), US Federal Air Administration (FAA) and International Air Transportation Administration (IATA) regulations pertaining to Dangerous Goods (UN2910 Radioactive Material), which then classifies this radioactive material as "exempt", and is hereby declared as "Non-Dangerous Goods", for US domestic and international shipping purposes.

- ADR
- Tunnel restriction code: D/E
- UN "Model Regulation": UN1294, TOLUENE, 3, II

15 Regulatory information

- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

Disclaimer
The information provided in this Material Safety Data Sheet is based on our present knowledge, and believed to be correct at the date of publication. However, no representation is made concerning its accuracy and completeness. It is intended as guidance only, and is not to be considered a warranty or quality specification. All materials may present unknown hazards, and should be used with caution. Although certain hazards are described, we cannot guarantee that these are the only hazards which exist. PerkinElmer shall not be held liable for any damage resulting from handling or from contact with the product.

- * Data compared to the previous version altered.