SAFETY DATA SHEET  

SP6 RNA Polymerase - 3000U, Part Number 600151

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

1.1 Product identifier

Product name: SP6 RNA Polymerase - 3000U, Part Number 600151
Part No. (Kit) : 600151
Part No. 

- 5X Transcription Buffer 600110-82
- RNA Polymerase Dilution Buffer 600110-83
- SP6 RNA Polymerase 600151-51

1.2 Relevant identified uses of the substance or mixture and uses advised against

<table>
<thead>
<tr>
<th>Identified uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical reagent.</td>
</tr>
<tr>
<td>5X Transcription Buffer 1 ml</td>
</tr>
<tr>
<td>RNA Polymerase Dilution Buffer 1 ml</td>
</tr>
<tr>
<td>SP6 RNA Polymerase 0.06 ml (3000 U 50 U/µl)</td>
</tr>
</tbody>
</table>

1.3 Details of the supplier of the safety data sheet

Agilent Technologies Manufacturing GmbH & Co. KG
Hewlett-Packard-Str. 8
76337 Waldbronn
Germany
0800 603 1000

e-mail address of person responsible for this SDS: pdl-msds_author@agilent.com

1.4 Emergency telephone number

Emergency telephone number (with hours of operation): CHEMTREC®: +(44)-870-8200418

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition: 5X Transcription Buffer Mixture
RNA Polymerase Mixture
Dilution Buffer Mixture
SP6 RNA Polymerase Mixture

Classification according to Regulation (EC) No. 1272/2008 (CLP/GHS)
Not classified.

Ingredients of unknown toxicity

<table>
<thead>
<tr>
<th>Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 10%</td>
</tr>
<tr>
<td>30 - 60%</td>
</tr>
<tr>
<td>30 - 60%</td>
</tr>
</tbody>
</table>

See Section 16 for the full text of the H statements declared above.
See Section 11 for more detailed information on health effects and symptoms.

Date of issue/Date of revision: 18/05/2017
SECTION 2: Hazards identification

2.2 Label elements

Signal word: 5X Transcription Buffer, RNA Polymerase Dilution Buffer, SP6 RNA Polymerase

Hazard statements:
- 5X Transcription Buffer: No known significant effects or critical hazards.
- RNA Polymerase: None known.
- Dilution Buffer: None known.
- SP6 RNA Polymerase: None known.

Precautionary statements

Prevention:
- 5X Transcription Buffer: Not applicable.
- RNA Polymerase: Not applicable.
- Dilution Buffer: Not applicable.
- SP6 RNA Polymerase: Not applicable.

Response:
- 5X Transcription Buffer: Not applicable.
- RNA Polymerase: Not applicable.
- Dilution Buffer: Not applicable.
- SP6 RNA Polymerase: Not applicable.

Storage:
- 5X Transcription Buffer: Not applicable.
- RNA Polymerase: Not applicable.
- Dilution Buffer: Not applicable.
- SP6 RNA Polymerase: Not applicable.

Disposal:
- 5X Transcription Buffer: Not applicable.
- RNA Polymerase: Not applicable.
- Dilution Buffer: Not applicable.
- SP6 RNA Polymerase: Not applicable.

Hazardous ingredients:
- 5X Transcription Buffer: Not applicable.
- RNA Polymerase: Not applicable.
- Dilution Buffer: Not applicable.
- SP6 RNA Polymerase: Not applicable.

Supplemental label elements:
- 5X Transcription Buffer: Safety data sheet available on request.
- RNA Polymerase: Not applicable.
- Dilution Buffer: Not applicable.
- SP6 RNA Polymerase: Not applicable.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles:
- 5X Transcription Buffer: Not applicable.
- RNA Polymerase: Not applicable.
- Dilution Buffer: Not applicable.
- SP6 RNA Polymerase: Not applicable.

Special packaging requirements:
- Tactile warning of danger: Not applicable.

2.3 Other hazards

Other hazards which do not result in classification:
- 5X Transcription Buffer: None known.
- RNA Polymerase: None known.
- Dilution Buffer: None known.
- SP6 RNA Polymerase: None known.

Date of issue/Date of revision: 18/05/2017
**SECTION 3: Composition/information on ingredients**

### 3.1 Substances

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Identifiers</th>
<th>%</th>
<th>Regulation (EC) No. 1272/2008 [CLP]</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5X Transcription Buffer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trometamol</td>
<td>EC: 201-064-4</td>
<td>≤3</td>
<td>Skin Irrit. 2, H315</td>
<td>[1]</td>
</tr>
<tr>
<td></td>
<td>CAS: 77-86-1</td>
<td></td>
<td>Eye Irrit. 2, H319</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3, H335</td>
<td></td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>EC: 231-598-3</td>
<td>≤3</td>
<td>Eye Irrit. 2, H319</td>
<td>[1]</td>
</tr>
<tr>
<td></td>
<td>CAS: 7647-14-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>RNA Polymerase Dilution Buffer</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>EC: 200-289-5</td>
<td>≥50 - ≤75</td>
<td>Not classified.</td>
<td>[2]</td>
</tr>
<tr>
<td></td>
<td>CAS: 56-81-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SP6 RNA Polymerase</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glycerol</td>
<td>EC: 200-289-5</td>
<td>≥50 - ≤75</td>
<td>Not classified.</td>
<td>[2]</td>
</tr>
<tr>
<td></td>
<td>CAS: 56-81-5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

**Type**

- [1] Substance classified with a health or environmental hazard
- [2] Substance with a workplace exposure limit
- [5] Substance of equivalent concern

**SECTION 4: First aid measures**

### 4.1 Description of first aid measures

#### Eye contact

- **5X Transcription Buffer**
  - Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

- **RNA Polymerase Dilution Buffer**
  - Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

- **SP6 RNA Polymerase**
  - Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.

#### Inhalation

- **5X Transcription Buffer**
  - Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

- **RNA Polymerase Dilution Buffer**
  - Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.

- **SP6 RNA Polymerase**
  - Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
SECTION 4: First aid measures

Skin contact:
- 5X Transcription Buffer: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
- RNA Polymerase Dilution Buffer: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
- SP6 RNA Polymerase: Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Ingestion:
- 5X Transcription Buffer: Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
- RNA Polymerase Dilution Buffer: Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
- SP6 RNA Polymerase: Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.

Protection of first-aiders:
- 5X Transcription Buffer: No action shall be taken involving any personal risk or without suitable training.
- RNA Polymerase Dilution Buffer: No action shall be taken involving any personal risk or without suitable training.
- SP6 RNA Polymerase: No action shall be taken involving any personal risk or without suitable training.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact:
- 5X Transcription Buffer: No known significant effects or critical hazards.
- RNA Polymerase Dilution Buffer: No known significant effects or critical hazards.
- SP6 RNA Polymerase: No known significant effects or critical hazards.

Inhalation:
- 5X Transcription Buffer: No known significant effects or critical hazards.
- RNA Polymerase Dilution Buffer: No known significant effects or critical hazards.
- SP6 RNA Polymerase: No known significant effects or critical hazards.

Skin contact:
- 5X Transcription Buffer: No known significant effects or critical hazards.
- RNA Polymerase Dilution Buffer: No known significant effects or critical hazards.
- SP6 RNA Polymerase: No known significant effects or critical hazards.

Ingestion:
- 5X Transcription Buffer: No known significant effects or critical hazards.
- RNA Polymerase Dilution Buffer: No known significant effects or critical hazards.
- SP6 RNA Polymerase: No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact:
- 5X Transcription Buffer: No specific data.
- RNA Polymerase Dilution Buffer: No specific data.
- SP6 RNA Polymerase: No specific data.
SECTION 4: First aid measures

**Inhalation**
- 5X Transcription Buffer: No specific data.
- RNA Polymerase: No specific data.
- Dilution Buffer: No specific data.
- SP6 RNA Polymerase: No specific data.

**Skin contact**
- 5X Transcription Buffer: No specific data.
- RNA Polymerase: No specific data.
- Dilution Buffer: No specific data.
- SP6 RNA Polymerase: No specific data.

**Ingestion**
- 5X Transcription Buffer: No specific data.
- RNA Polymerase: No specific data.
- Dilution Buffer: No specific data.
- SP6 RNA Polymerase: No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

**Notes to physician**
- 5X Transcription Buffer: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- RNA Polymerase: Treatment is not required. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Dilution Buffer: Treatment is not required. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- SP6 RNA Polymerase: Treatment is not required. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

**Specific treatments**
- 5X Transcription Buffer: No specific treatment.
- Dilution Buffer: No specific treatment.
- SP6 RNA Polymerase: No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

**Suitable extinguishing media**
- 5X Transcription Buffer: Use an extinguishing agent suitable for the surrounding fire.
- RNA Polymerase: Use an extinguishing agent suitable for the surrounding fire.
- Dilution Buffer: Use an extinguishing agent suitable for the surrounding fire.
- SP6 RNA Polymerase: Use an extinguishing agent suitable for the surrounding fire.

**Unsuitable extinguishing media**
- 5X Transcription Buffer: None known.
- RNA Polymerase: None known.
- Dilution Buffer: None known.
- SP6 RNA Polymerase: None known.

5.2 Special hazards arising from the substance or mixture

**Hazards from the substance or mixture**
- 5X Transcription Buffer: In a fire or if heated, a pressure increase will occur and the container may burst.
- RNA Polymerase: In a fire or if heated, a pressure increase will occur and the container may burst.
- Dilution Buffer: In a fire or if heated, a pressure increase will occur and the container may burst.
- SP6 RNA Polymerase: In a fire or if heated, a pressure increase will occur and the container may burst.

**Hazardous combustion products**
- 5X Transcription Buffer: Decomposition products may include the following materials:
  - carbon dioxide
  - carbon monoxide
  - nitrogen oxides
  - halogenated compounds
  - metal oxide/oxides
- RNA Polymerase: Decomposition products may include the following materials:
  - carbon dioxide
  - carbon monoxide
- Dilution Buffer: Decomposition products may include the following materials:
  - carbon dioxide
  - carbon monoxide
- SP6 RNA Polymerase: Decomposition products may include the following materials:
  - carbon dioxide
  - carbon monoxide
SECTION 5: Firefighting measures

5.3 Advice for firefighters

Special precautions for fire-fighters

- 5X Transcription Buffer: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- RNA Polymerase Dilution Buffer: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- SP6 RNA Polymerase: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters

- 5X Transcription Buffer: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
- RNA Polymerase Dilution Buffer: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.
- SP6 RNA Polymerase: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

- 5X Transcription Buffer: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
- RNA Polymerase Dilution Buffer: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.
- SP6 RNA Polymerase: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment.

For emergency responders

- 5X Transcription Buffer: If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- RNA Polymerase Dilution Buffer: If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- SP6 RNA Polymerase: If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Date of issue/Date of revision: 18/05/2017
SECTION 6: Accidental release measures

6.2 Environmental precautions

<table>
<thead>
<tr>
<th>Substance</th>
<th>Environmental precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>5X Transcription Buffer</td>
<td>Avoid dispersal of spill material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.</td>
</tr>
<tr>
<td>RNA Polymerase Dilution Buffer</td>
<td>Avoid dispersal of spill material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.</td>
</tr>
<tr>
<td>SP6 RNA Polymerase</td>
<td>Avoid dispersal of spill material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.</td>
</tr>
</tbody>
</table>

6.3 Methods and material for containment and cleaning up

<table>
<thead>
<tr>
<th>Substance</th>
<th>Methods for cleaning up</th>
</tr>
</thead>
<tbody>
<tr>
<td>5X Transcription Buffer</td>
<td>Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.</td>
</tr>
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<td>RNA Polymerase Dilution Buffer</td>
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</tr>
<tr>
<td>SP6 RNA Polymerase</td>
<td>Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.</td>
</tr>
</tbody>
</table>

6.4 Reference to other sections

<table>
<thead>
<tr>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>See Section 1 for emergency contact information.</td>
</tr>
<tr>
<td>See Section 8 for information on appropriate personal protective equipment.</td>
</tr>
<tr>
<td>See Section 13 for additional waste treatment information.</td>
</tr>
</tbody>
</table>

SECTION 7: Handling and storage

7.1 Precautions for safe handling

<table>
<thead>
<tr>
<th>Substance</th>
<th>Protective measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>5X Transcription Buffer</td>
<td>Put on appropriate personal protective equipment (see Section 8).</td>
</tr>
<tr>
<td>RNA Polymerase Dilution Buffer</td>
<td>Put on appropriate personal protective equipment (see Section 8).</td>
</tr>
<tr>
<td>SP6 RNA Polymerase</td>
<td>Put on appropriate personal protective equipment (see Section 8).</td>
</tr>
</tbody>
</table>

Advice on general occupational hygiene

<table>
<thead>
<tr>
<th>Substance</th>
<th>Advice on general occupational hygiene</th>
</tr>
</thead>
<tbody>
<tr>
<td>5X Transcription Buffer</td>
<td>Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.</td>
</tr>
<tr>
<td>RNA Polymerase Dilution Buffer</td>
<td>Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.</td>
</tr>
<tr>
<td>SP6 RNA Polymerase</td>
<td>Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.</td>
</tr>
</tbody>
</table>

Date of issue/Date of revision: 18/05/2017
SECTION 7: Handling and storage

7.2 Conditions for safe storage, including any incompatibilities

**Storage**
- 5X Transcription Buffer: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
- RNA Polymerase Dilution Buffer: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.
- SP6 RNA Polymerase: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

7.3 Specific end use(s)

**Recommendations**
- 5X Transcription Buffer: Industrial applications, Professional applications.
- RNA Polymerase Dilution Buffer: Industrial applications, Professional applications.
- SP6 RNA Polymerase: Industrial applications, Professional applications.

**Industrial sector specific solutions**
- 5X Transcription Buffer: Not applicable.
- RNA Polymerase Dilution Buffer: Not applicable.
- SP6 RNA Polymerase: Not applicable.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

**Occupational exposure limits**

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Exposure limit values</th>
</tr>
</thead>
<tbody>
<tr>
<td>RNA Polymerase Dilution Buffer Glycerol</td>
<td>EH40/2005 WELs (United Kingdom (UK), 12/2011). TWA: 10 mg/m³ 8 hours. Form: Mist</td>
</tr>
<tr>
<td>SP6 RNA Polymerase Glycerol</td>
<td>EH40/2005 WELs (United Kingdom (UK), 12/2011). TWA: 10 mg/m³ 8 hours. Form: Mist</td>
</tr>
</tbody>
</table>
SECTION 8: Exposure controls/personal protection

Recommended monitoring procedures: If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs: No DNELs/DMELs available.

PNECs: No PNECs available

8.2 Exposure controls

Appropriate engineering controls: Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Individual protection measures

Hygiene measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Body protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection: Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Environmental exposure controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
### 9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>5X Transcription Buffer</th>
<th>RNA Polymerase</th>
<th>Dilution Buffer</th>
<th>SP6 RNA Polymerase</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Colour</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Odour</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Odour threshold</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>pH</strong></td>
<td>8</td>
<td>7.7</td>
<td>7.7</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Melting point/freezing point</strong></td>
<td>0°C</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Initial boiling point and boiling range</strong></td>
<td>100°C</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Flammability (solid, gas)</strong></td>
<td>Not applicable.</td>
<td>Not applicable.</td>
<td>Not applicable.</td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Upper/lower flammability or explosive limits</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Vapour pressure</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Vapour density</strong></td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>
### SECTION 9: Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>5X Transcription Buffer</th>
<th>RNA Polymerase Dilution Buffer</th>
<th>SP6 RNA Polymerase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative density</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>Easily soluble in the following materials: cold water and hot water.</td>
<td>Soluble in the following materials: cold water and hot water.</td>
<td>Soluble in the following materials: cold water and hot water.</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>Not available.</td>
<td>Not available.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

9.2 Other information

No additional information.

### SECTION 10: Stability and reactivity

10.1 Reactivity : 5X Transcription Buffer

No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : 5X Transcription Buffer

The product is stable.

10.3 Possibility of hazardous reactions : 5X Transcription Buffer

Under normal conditions of storage and use, hazardous reactions will not occur.

Date of issue/Date of revision : 18/05/2017
SP6 RNA Polymerase - 3000U, Part Number 600151

SECTION 10: Stability and reactivity

10.4 Conditions to avoid

<table>
<thead>
<tr>
<th>Component</th>
<th>Hazardous decomposition products</th>
</tr>
</thead>
<tbody>
<tr>
<td>5X Transcription Buffer</td>
<td>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</td>
</tr>
<tr>
<td>RNA Polymerase Dilution Buffer</td>
<td>May react or be incompatible with oxidising materials.</td>
</tr>
<tr>
<td>SP6 RNA Polymerase</td>
<td>May react or be incompatible with oxidising materials.</td>
</tr>
</tbody>
</table>

10.5 Incompatible materials

<table>
<thead>
<tr>
<th>Component</th>
<th>Incompatible with oxidising materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>5X Transcription Buffer</td>
<td>May react or be incompatible with oxidising materials.</td>
</tr>
<tr>
<td>RNA Polymerase Dilution Buffer</td>
<td>May react or be incompatible with oxidising materials.</td>
</tr>
<tr>
<td>SP6 RNA Polymerase</td>
<td>May react or be incompatible with oxidising materials.</td>
</tr>
</tbody>
</table>

10.6 Hazardous decomposition products

<table>
<thead>
<tr>
<th>Component</th>
<th>Under normal conditions of storage and use, hazardous decomposition products should not be produced.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5X Transcription Buffer</td>
<td></td>
</tr>
<tr>
<td>RNA Polymerase Dilution Buffer</td>
<td></td>
</tr>
<tr>
<td>SP6 RNA Polymerase</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Dose</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>5X Transcription Buffer</td>
<td>Trometamol</td>
<td>Rat</td>
<td>&gt;5000 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LD50 Dermal</td>
<td>Rat</td>
<td>5000 mg/kg</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>LD50 Oral</td>
<td>Rat</td>
<td>3000 mg/kg</td>
<td>-</td>
</tr>
</tbody>
</table>

Irritation/Corrosion

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Score</th>
<th>Exposure</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5X Transcription Buffer</td>
<td>Trometamol Skin - Severe irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>25 Percent 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Skin - Moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 100 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Eyes - Moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>10 milligrams 24 hours 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>Eyes - Moderate irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>10 milligrams 24 hours 500 milligrams</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Skin - Mild irritant</td>
<td>Rabbit</td>
<td>-</td>
<td>24 hours 100 milligrams</td>
<td>-</td>
</tr>
</tbody>
</table>

Sensitiser

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Category</th>
<th>Route of exposure</th>
<th>Target organs</th>
</tr>
</thead>
<tbody>
<tr>
<td>5X Transcription Buffer</td>
<td>Category 3</td>
<td>Not applicable.</td>
<td>Respiratory tract irritation</td>
</tr>
</tbody>
</table>

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

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## SECTION 11: Toxicological information

### Information on likely routes of exposure

<table>
<thead>
<tr>
<th>Route of Exposure</th>
<th>5X Transcription Buffer</th>
<th>RNA Polymerase Dilution Buffer</th>
<th>SP6 RNA Polymerase</th>
</tr>
</thead>
</table>

### Potential acute health effects

<table>
<thead>
<tr>
<th>Route of Exposure</th>
<th>5X Transcription Buffer</th>
<th>RNA Polymerase Dilution Buffer</th>
<th>SP6 RNA Polymerase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
<tr>
<td>Eye contact</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
</tr>
</tbody>
</table>

### Symptoms related to the physical, chemical and toxicological characteristics

<table>
<thead>
<tr>
<th>Route of Exposure</th>
<th>5X Transcription Buffer</th>
<th>RNA Polymerase Dilution Buffer</th>
<th>SP6 RNA Polymerase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>No specific data.</td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>No specific data.</td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>No specific data.</td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
<tr>
<td>Eye contact</td>
<td>No specific data.</td>
<td>No specific data.</td>
<td>No specific data.</td>
</tr>
</tbody>
</table>

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

#### Short term exposure

| Potential immediate effects | Not available. |
| Potential delayed effects | Not available. |

#### Long term exposure

| Potential immediate effects | Not available. |
| Potential delayed effects | Not available. |

### Potential chronic health effects

<table>
<thead>
<tr>
<th>General</th>
<th>5X Transcription Buffer</th>
<th>RNA Polymerase Dilution Buffer</th>
<th>SP6 RNA Polymerase</th>
</tr>
</thead>
<tbody>
<tr>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
<td>No known significant effects or critical hazards.</td>
<td></td>
</tr>
</tbody>
</table>

**Date of issue/Date of revision:** 18/05/2017
SECTION 11: Toxicological information

Carcinogenicity: 5X Transcription Buffer, RNA Polymerase, Dilution Buffer, SP6 RNA Polymerase. No known significant effects or critical hazards.

Mutagenicity: 5X Transcription Buffer, RNA Polymerase, Dilution Buffer, SP6 RNA Polymerase. No known significant effects or critical hazards.

Teratogenicity: 5X Transcription Buffer, RNA Polymerase, Dilution Buffer, SP6 RNA Polymerase. No known significant effects or critical hazards.

Developmental effects: 5X Transcription Buffer, RNA Polymerase, Dilution Buffer, SP6 RNA Polymerase. No known significant effects or critical hazards.

Fertility effects: 5X Transcription Buffer, RNA Polymerase, Dilution Buffer, SP6 RNA Polymerase. No known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>Result</th>
<th>Species</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>5X Transcription Buffer</td>
<td>Acute EC50 &gt;980 mg/l Fresh water</td>
<td>Daphnia</td>
<td>48 hours</td>
</tr>
<tr>
<td>Trometamol</td>
<td>Acute NOEC 520 mg/l Fresh water</td>
<td>Daphnia</td>
<td>48 hours</td>
</tr>
<tr>
<td>Sodium chloride</td>
<td>Acute EC50 2430000 μg/l Fresh water</td>
<td>Algae - Navicula seminulum</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 28.85 mg/dm3 Fresh water</td>
<td>Algae - Pseudokirchneriella subcapitata</td>
<td>72 hours</td>
</tr>
<tr>
<td></td>
<td>Acute EC50 519.6 mg/l Fresh water</td>
<td>Crustaceans - Cypris subglobosa</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute IC50 6.87 g/L Fresh water</td>
<td>Aquatic plants - Lemna minor</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 1.56 g/L Fresh water</td>
<td>Daphnia - Daphnia magna</td>
<td>48 hours</td>
</tr>
<tr>
<td></td>
<td>Acute LC50 1000000 μg/l Fresh water</td>
<td>Fish - Morone saxatilis - Larvae</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic LC10 781 mg/l Fresh water</td>
<td>Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)</td>
<td>3 weeks</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 6 g/L Fresh water</td>
<td>Aquatic plants - Lemna minor</td>
<td>96 hours</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 0.314 g/L Fresh water</td>
<td>Daphnia - Daphnia pulex</td>
<td>21 days</td>
</tr>
<tr>
<td></td>
<td>Chronic NOEC 100 mg/l Fresh water</td>
<td>Fish - Gambusia holbrooki - Adult</td>
<td>8 weeks</td>
</tr>
</tbody>
</table>

12.2 Persistence and degradability

Not available.

12.3 Bioaccumulative potential

<table>
<thead>
<tr>
<th>Product/ingredient name</th>
<th>LogP&lt;sub&gt;ow&lt;/sub&gt;</th>
<th>BCF</th>
<th>Potential</th>
</tr>
</thead>
<tbody>
<tr>
<td>5X Transcription Buffer</td>
<td>-1.56</td>
<td>-</td>
<td>low</td>
</tr>
<tr>
<td>Trometamol</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12.4 Mobility in soil

Soil/water partition coefficient (<sub>K</sub>oc): Not available.

Mobility: Not available.

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SECTION 12: Ecological information

12.5 Results of PBT and vPvB assessment

PBT : Not applicable.

vPvB : Not applicable.

12.6 Other adverse effects : No known significant effects or critical hazards.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Hazardous waste : Within the present knowledge of the supplier, this product is not regarded as hazardous waste, as defined by EU Directive 2008/98/EC.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

14.6 Special precautions for user : Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code : Not available.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Substances of very high concern

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

5X Transcription Buffer : Not applicable.
RNA Polymerase Dilution Buffer : Not applicable.
SP6 RNA Polymerase : Not applicable.

Other EU regulations

Date of issue/Date of revision : 18/05/2017
SECTION 15: Regulatory information

Ozone depleting substances (1005/2009/EU)
Not listed.

Prior Informed Consent (PIC) (649/2012/EU)
Not listed.

Seveso Directive
This product is not controlled under the Seveso Directive.

International regulations
Chemical Weapon Convention List Schedules I, II & III Chemicals
Not listed.

Montreal Protocol (Annexes A, B, C, E)
Not listed.

Stockholm Convention on Persistent Organic Pollutants
Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)
Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals
Not listed.

Inventory list
Australia: Not determined.
Canada: At least one component is not listed in DSL but all such components are listed in NDSL.
China: All components are listed or exempted.
Europe: All components are listed or exempted.
Japan: Japan inventory (ENCS): Not determined.
Japan inventory (ISHL): Not determined.
Malaysia: Not determined.
New Zealand: All components are listed or exempted.
Philippines: Not determined.
Republic of Korea: Not determined.
Taiwan: All components are listed or exempted.
Thailand: Not determined.
Turkey: Not determined.
United States: All components are listed or exempted.
Viet Nam: Not determined.

15.2 Chemical safety assessment
This product contains substances for which Chemical Safety Assessments might still be required.

SECTION 16: Other information

Indicates information that has changed from previously issued version.

Abbreviations and acronyms
ATE = Acute Toxicity Estimate
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DNEL = Derived No Effect Level
EUH statement = CLP-specific Hazard statement
PNEC = Predicted No Effect Concentration
RRN = REACH Registration Number

Date of issue/Date of revision: 18/05/2017
SECTION 16: Other information

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

<table>
<thead>
<tr>
<th>Classification</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not classified.</td>
<td></td>
</tr>
</tbody>
</table>

Full text of abbreviated H statements

5X Transcription Buffer
- H315: Causes skin irritation.
- H319: Causes serious eye irritation.
- H335: May cause respiratory irritation.

Full text of classifications [CLP/GHS]

5X Transcription Buffer
- Eye Irrit. 2, H319: SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
- Skin Irrit. 2, H315: SKIN CORROSION/IRRITATION - Category 2
- STOT SE 3, H335: SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3

Date of issue/Date of revision: 18/05/2017
Date of previous issue: No previous validation.
Version: 1

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