03/07/2018

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D5003, D5004</td>
<td>EZ-96 DNA Methylation Kit</td>
</tr>
</tbody>
</table>

Components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>D5001-1</td>
<td>CT Conversion Reagent</td>
</tr>
<tr>
<td>D5001-2</td>
<td>M-Dilution Buffer</td>
</tr>
<tr>
<td>D5001-3</td>
<td>M-Binding Buffer</td>
</tr>
<tr>
<td>D5001-4</td>
<td>M-Wash Buffer</td>
</tr>
<tr>
<td>D5001-5</td>
<td>M-Desulphonation Buffer</td>
</tr>
<tr>
<td>D5001-6</td>
<td>M-Elution Buffer</td>
</tr>
</tbody>
</table>
1 Identification

- **Product identifier**
- **Trade name:** CT Conversion Reagent
- **Article number:** D5001-1, D5003-1, D5001-1-50
- **Application of the substance / the mixture** Laboratory Reagent
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
  Zymo Research Corp.
  17062 Murphy Ave.
  Irvine, CA 92614
  USA
  Phone: 1-949-679-1190 or 1-888-882-9682
  sds@zymoresearch.com
- **Information department:** Product safety department
- **Emergency telephone number:**
  During normal business hours (8 am to 5 pm Pacific Standard Time): +1 (949) 679 1190

2 Hazard(s) identification

- **Classification of the substance or mixture**
  - GHS05 Corrosion
  - Eye Dam. 1  H318  Causes serious eye damage.

  ![Diagram](image)
  - GHS07
  - Acute Tox. 4  H302  Harmful if swallowed.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms** GHS05, GHS07
- **Signal word** Danger

- **Hazard-determining components of labeling:**
  - Sodium metabisulphite

- **Hazard statements**
  - Harmful if swallowed.
  - Causes serious eye damage.

- **Precautionary statements**
  - Wash thoroughly after handling.
  - Do not eat, drink or smoke when using this product.
  - Wear eye protection / face protection.
  - If swallowed: Call a poison center/doctor if you feel unwell.
  - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
  - Continue rinsing.
  - Immediately call a poison center/doctor.

(Contd. on page 2)
Trade name: CT Conversion Reagent

Rinse mouth.
Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**
- **NFPA ratings (scale 0 - 4)**
  - Health = 3
  - Fire = 0
  - Reactivity = 0

- **HMIS-ratings (scale 0 - 4)**
  - Health = *3
  - Fire = 0
  - Reactivity = 0

- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

### 3 Composition/information on ingredients

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

- **Dangerous components:**
  - CAS: 7681-57-4 sodium metabisulphite ≤100%

### 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:** Supply fresh air; consult doctor in case of complaints.
  - **After skin contact:** Generally the product does not irritate the skin.
  - **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
  - **After swallowing:** Do not induce vomiting; immediately call for medical help.
  - **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.

(Contd. on page 3)
5 Fire-fighting measures

- Extinguishing media
  - Suitable extinguishing agents:
    CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
    Use fire fighting measures that suit the environment.
- Advice for firefighters
- Protective equipment: Wear self-contained breathing apparatus for fighting fires involving this material

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
  Wear self-contained breathing apparatus for responding to non- incidental release of this material in which there is the potential for inhalation of vapors, mists or sprays
- Environmental precautions: 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.
- 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.
- Protective Action Criteria for Chemicals

  - PAC-1:
    CAS: 7681-57-4 sodium metabisulphite 15 mg/m³

  - PAC-2:
    CAS: 7681-57-4 sodium metabisulphite 64 mg/m³

  - PAC-3:
    CAS: 7681-57-4 sodium metabisulphite 390 mg/m³

7 Handling and storage

- Handling:
- Precautions for safe handling
  No special precautions are necessary if used correctly. Avoid breathing dust, vapor, mist or gas. Avoid prolonged or repeated exposure. Use only in a chemical fume hood. Open and handle container with care. Keep ignition sources away.
- Information about protection against explosions and fires: No special measures required.
- 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: Do not store together with acids or strong oxidizers
  - Further information about storage conditions: None.
Trade name: CT Conversion Reagent

- Specific end use(s) Laboratory reagent

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.
- Control parameters
  - Components with limit values that require monitoring at the workplace:
    - CAS: 7681-57-4 sodium metabisulphite
      - REL Long-term value: 5 mg/m³
      - TLV Long-term value: 5 mg/m³
  - Additional information: The lists that were valid during the creation were used as basis.
  - Exposure controls
  - Personal protective equipment:
  - General protective and hygienic measures:
    - Keep away from foodstuffs, beverages and feed.
    - Immediately remove all soiled and contaminated clothing.
    - Wash hands before breaks and at the end of work.
    - Avoid contact with the eyes.
  - Breathing equipment: Not required.
  - Protection of hands:
    - The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
    - Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
    - 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. As the product is a preparation of several substances, the resistance of
      the glove material can not be calculated in advance and has therefore to be checked prior to the application.
  - Penetration time of glove material
    - The exact break through 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

- Information on basic physical and chemical properties
  - General Information
  - Appearance:
    - Form: Powder

(Contd. of page 3)
**Trade name:** CT Conversion Reagent

<table>
<thead>
<tr>
<th><strong>Color:</strong></th>
<th>Whitish</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Odor:</strong></td>
<td>Pungent</td>
</tr>
<tr>
<td><strong>Odor threshold:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>pH-value:</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Change in condition</strong></td>
<td>Undetermined.</td>
</tr>
<tr>
<td><strong>Melting point/Melting range:</strong></td>
<td>Undetermined.</td>
</tr>
<tr>
<td><strong>Boiling point/Boiling range:</strong></td>
<td>Undetermined.</td>
</tr>
<tr>
<td><strong>Flash point:</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Flammability (solid, gaseous):</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Ignition temperature:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Decomposition temperature:</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Auto igniting:</strong></td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td><strong>Danger of explosion:</strong></td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td><strong>Explosion limits:</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Lower:</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Upper:</strong></td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Vapor pressure:</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Density at 20 °C (68 °F):</strong></td>
<td>1.2 g/cm³ (10.014 lbs/gal)</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Vapor density</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Solubility in / Miscibility with</strong></td>
<td>Soluble.</td>
</tr>
<tr>
<td><strong>Water:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Partition coefficient (n-octanol/water):</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Viscosity:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Dynamic:</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Kinematic:</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Solvent content:</strong></td>
<td>0.00 %</td>
</tr>
<tr>
<td><strong>VOC content:</strong></td>
<td>0.0 g/l / 0.00 lb/gl</td>
</tr>
<tr>
<td><strong>Other information</strong></td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

### 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** Contact with acids releases toxic gases.
  - **Conditions to avoid** No further relevant information available.
11 Toxicological information

- **Information on toxicological effects**
  - **Acute toxicity:**
  - **Primary irritant effect:**
    - **on the skin:** No irritant effect.
    - **on the eye:** Strong irritant with the danger of severe eye injury.
  - **Sensitization:** No sensitizing effects known.
  - **Additional toxicological information:**
    The product shows the following dangers according to internally approved calculation methods for preparations:
    - Harmful
    - Irritant
  - **Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**
  None of the ingredients is listed.

- **NTP (National Toxicology Program)**
  None of the ingredients is listed.

- **OSHA-Ca (Occupational Safety & Health Administration)**
  None of the ingredients is listed.

12 Ecological information

- **Toxicity**
  - **Aquatic toxicity:** No further relevant information available.
  - **Persistence and degradability** No further relevant information available.
  - **Behavior in environmental systems:**
  - **Bioaccumulative potential** No further relevant information available.
  - **Mobility in soil** No further relevant information available.
  - **Additional ecological information:**
  - **General notes:**
    Water hazard class 1 (Self-assessment): slightly hazardous for water
    Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
  - **Results of PBT and vPvB assessment**
    - **PBT:** Not applicable.
    - **vPvB:** Not applicable.
  - **Other adverse effects** No further relevant information available.
13 Disposal considerations

- Waste treatment methods
  - Recommendation: Dispose of contents in accordance with local/regional/national, and international recommendations.
- Uncleaned packagings:
  - Recommendation: Dispose of container in accordance with local/regional/national and international recommendations.
- Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

- UN-Number
  - DOT, ADN, IMDG, IATA: not regulated
- UN proper shipping name
  - DOT, ADN, IMDG, IATA: not regulated
- Transport hazard class(es)
  - DOT, ADN, IMDG, IATA
  - Class: not regulated
- Packing group
  - DOT, IMDG, IATA: not regulated
- Environmental hazards: Not applicable.
- Special precautions for user: Not applicable.
- Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable.
- UN "Model Regulation": not regulated

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara
  - Section 355 (extremely hazardous substances):
    None of the ingredients is listed.
  - Section 313 (Specific toxic chemical listings):
    None of the ingredients is listed.
  - TSCA (Toxic Substances Control Act):
    All ingredients are listed.
## Trade name: CT Conversion Reagent

### Proposition 65

- **Chemicals known to cause cancer:**
  
  None of the ingredients is listed.

- **Chemicals known to cause reproductive toxicity for females:**
  
  None of the ingredients is listed.

- **Chemicals known to cause reproductive toxicity for males:**
  
  None of the ingredients is listed.

- **Chemicals known to cause developmental toxicity:**
  
  None of the ingredients is listed.

### Carcinogenic categories

- **EPA (Environmental Protection Agency)**
  
  None of the ingredients is listed.

- **TLV (Threshold Limit Value established by ACGIH)**
  
  CAS: 7681-57-4 sodium metabisulphite

- **NIOSH-Ca (National Institute for Occupational Safety and Health)**
  
  None of the ingredients is listed.

### GHS label elements

- **Hazard pictograms** GHS05, GHS07

- **Signal word** Danger

- **Hazard-determining components of labeling:**
  
  sodium metabisulphite

- **Hazard statements**
  
  Harmful if swallowed.
  
  Causes serious eye damage.

- **Precautionary statements**
  
  Wash thoroughly after handling.
  
  Do not eat, drink or smoke when using this product.
  
  Wear eye protection / face protection.
  
  If swallowed: Call a poison center/doctor if you feel unwell.
  
  If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
  
  Continue rinsing.
  
  Immediately call a poison center/doctor.
  
  Rinse mouth.
  
  Dispose of contents/container in accordance with local/regional/national/international regulations.

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

## 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing SDS:**
  
  Zymo Research Corp.
  
  Safety Department

(Contd. of page 7)
Trade name: CT Conversion Reagent

17062 Murphy Ave.
Irvine, CA 92614
USA
Phone: 1-949-679-1190 or 1-888-882-9682
· Contact: sds@zymoresearch.com
· Date of preparation / last revision 03/07/2018 /
· 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
  DOT: US Department of Transportation
  IATA: International Air Transport Association
  ACGIH: American Conference of Governmental Industrial Hygienists
  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)
  NFPA: National Fire Protection Association (USA)
  HMIS: Hazardous Materials Identification System (USA)
  VOC: Volatile Organic Compounds (USA, EU)
  PBT: Persistent, Bioaccumulative and Toxic
  vPvB: very Persistent and very Bioaccumulative
  NIOSH: National Institute for Occupational Safety
  OSHA: Occupational Safety & Health
  TLV: Threshold Limit Value
  PEL: Permissible Exposure Limit
  REL: Recommended Exposure Limit
  Acute Tox. 4: Acute toxicity – Category 4
  Eye Dam. 1: Serious eye damage/eye irritation – Category 1
1 Identification

- **Product identifier**
- **Trade name:** M-Dilution Buffer
- **Article number:** D5001-2, D5002-2, D5005-2, D5006-2
- **Application of the substance / the mixture** Laboratory Reagent
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
  Zymo Research Corp.
  17062 Murphy Ave.
  Irvine, CA 92614
  USA
  Phone: 1-949-679-1190 or 1-888-882-9682
  sds@zymoresearch.com
- **Information department:** Product safety department
- **Emergency telephone number:**
  During normal business hours (8 am to 5 pm Pacific Standard Time): +1 (949) 679 1190

2 Hazard(s) identification

- **Classification of the substance or mixture**
  - GHS05 Corrosion
    - Skin Corr. 1B  H314  Causes severe skin burns and eye damage.
    - Eye Dam. 1  H318  Causes serious eye damage.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms** GHS05
- **Signal word** Danger

- **Hazard-determining components of labeling:**
  - sodium hydroxide

- **Hazard statements**
  - Causes severe skin burns and eye damage.

- **Precautionary statements**
  - Do not breathe mist/vapours/spray.
  - Wash thoroughly after handling.
  - Wear protective gloves/protective clothing/eye protection/face protection.
  - If swallowed: Rinse mouth. Do NOT induce vomiting.
  - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
  - Continue rinsing.
  - Immediately call a poison center/doctor.
  - Specific treatment (see on this label).
  - Wash contaminated clothing before reuse.
  - Store locked up.

(Contd. on page 2)
Trade name: M-Dilution Buffer

Dispose of contents/container in accordance with local/regional/national/international regulations.

· Classification system:
· NFPA ratings (scale 0 - 4)
  - Health = 3
  - Fire = 0
  - Reactivity = 0

· HMIS-ratings (scale 0 - 4)
  - Health = 3
  - Fire = 0
  - Reactivity = 0

· Other hazards
· Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.

3 Composition/information on ingredients

· Chemical characterization: Mixtures
· Description: Mixture of the substances listed below with nonhazardous additions.

· Dangerous components:
  - CAS: 1310-73-2 sodium hydroxide

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. Then consult a doctor.
· After swallowing: Do not induce vomiting; immediately call for medical help.
· 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 Fire-fighting measures

· Extinguishing media
· Suitable extinguishing agents:
  - CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
  - Use fire fighting measures that suit the environment.
6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
  Wear protective equipment. Keep unprotected persons away.
- Environmental precautions:
  Dilute with plenty of water.
  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).
  Use neutralizing agent.
  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.
- Protective Action Criteria for Chemicals

<table>
<thead>
<tr>
<th>PAC-1:</th>
<th>PAC-2:</th>
<th>PAC-3:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 1310-73-2 sodium hydroxide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.5 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CAS: 1310-73-2 sodium hydroxide</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CAS: 1310-73-2 sodium hydroxide</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

7 Handling and storage

- Handling:
  - Precautions for safe handling
    Ensure good ventilation/exhaustion at the workplace.
    Prevent formation of aerosols.
  - Information about protection against explosions and fires: No special measures required.
- Conditions for safe storage, including any incompatibilities
- Storage:
  - Requirements to be met by storerooms and receptacles:
    Store in cool, dry place. Store in well-ventilated location.
Trade name: M-Dilution Buffer

- **Information about storage in one common storage facility:**
  Do not store together with acids, chlorinated solvents, and reactive metals (e.g. aluminum, phosphorous, tin/tin oxides, zinc).
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s)** Laboratory reagent

### 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
  Work under a chemical fume hood when using this product. Ensure eyewash station and safety showers are readily accessible.
- **Components with limit values that require monitoring at the workplace:**
  CAS: 1310-73-2 sodium hydroxide

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEL</td>
<td>2 mg/m³</td>
</tr>
<tr>
<td>REL</td>
<td>2 mg/m³</td>
</tr>
<tr>
<td>TLV</td>
<td>2 mg/m³</td>
</tr>
</tbody>
</table>

- **Additional information:** The lists that were valid during the creation were used as basis.

- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
  Keep away from foodstuffs, beverages and feed.
  Immediately remove all soiled and contaminated clothing.
  Wash hands before breaks and at the end of work.
  Avoid contact with the eyes and skin.
- **Breathing equipment:**
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
- **Protection of hands:**

  ![Protective gloves]

  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
  Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
  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. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
- **Penetration time of glove material**
  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
## 9 Physical and chemical properties

### · Information on basic physical and chemical properties

#### · General Information

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance:</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color:</td>
<td>Clear</td>
</tr>
<tr>
<td>Odor:</td>
<td>Odorless</td>
</tr>
<tr>
<td>Odor threshold:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>pH-value:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Change in condition</td>
<td></td>
</tr>
<tr>
<td>Melting point/Melting range:</td>
<td>Undetermined.</td>
</tr>
<tr>
<td>Boiling point/Boiling range:</td>
<td>Undetermined.</td>
</tr>
<tr>
<td>Flash point:</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flammability (solid, gaseous):</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Ignition temperature:</td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Auto igniting:</td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td>Danger of explosion:</td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td>Explosion limits:</td>
<td></td>
</tr>
<tr>
<td>Lower:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Upper:</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Vapor pressure:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Density:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Relative density:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Vapor density:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Evaporation rate:</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Solubility in / Miscibility with Water:</td>
<td>Fully miscible.</td>
</tr>
<tr>
<td>Partition coefficient (n-octanol/water):</td>
<td>Not determined.</td>
</tr>
<tr>
<td>Viscosity:</td>
<td></td>
</tr>
<tr>
<td>Dynamic:</td>
<td>Not determined.</td>
</tr>
</tbody>
</table>

(Contd. on page 6)
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 that are relevant for classification:
    
    CAS: 1310-73-2 sodium hydroxide
    
    Oral LD50 2,000 mg/kg (rat)
    
    - Primary irritant effect:
    - on the skin: Caustic effect on skin and mucous membranes.
    - on the eye: Strong caustic effect.
    - Sensitization: No sensitizing effects known.
    - Additional toxicological information:
      The product shows the following dangers according to internally approved calculation methods for preparations:
      Corrosive
      Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus
      and stomach.
    
    - Carcinogenic categories
    
    - IARC (International Agency for Research on Cancer)
      None of the ingredients is listed.
    
    - NTP (National Toxicology Program)
      None of the ingredients is listed.
12 Ecological information

- Toxicity
- Aquatic toxicity: No further relevant information available.
- Persistence and degradability: No further relevant information available.
- Behavior in environmental systems:
  - Bioaccumulative potential: No further relevant information available.
  - Mobility in soil: No further relevant information available.
- Additional ecological information:
- General notes:
  Water hazard class 1 (Self-assessment): slightly hazardous for water
  Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
  Must not reach bodies of water or drainage ditch undiluted or unneutralized.
- 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:
  Dispose of contents in accordance with local/regional/national, and international recommendations.
- Uncleaned packagings:
- Recommendation:
  Dispose of container in accordance with local/regional/national and international recommendations.
- Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

- UN-Number
  - DOT, IMDG, IATA: UN1824
- UN proper shipping name
  - DOT
  - IMDG, IATA: Sodium hydroxide solution
  - SODIUM HYDROXIDE SOLUTION
### Trade name: M-Dilution Buffer

(Contd. of page 7)

<table>
<thead>
<tr>
<th><strong>Transport hazard class(es)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DOT</strong></td>
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<tr>
<td><img src="image" alt="Corrosive" /></td>
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<tr>
<td><strong>Class</strong></td>
</tr>
<tr>
<td><strong>Label</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>IMDG, IATA</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
</tr>
<tr>
<td><strong>Label</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Packing group</strong></th>
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</thead>
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<tr>
<td><strong>DOT, IMDG, IATA</strong></td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th><strong>Environmental hazards:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Not applicable.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Special precautions for user</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Warning:</strong> Corrosive substances</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Danger code (Kemler):</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
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</tbody>
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<table>
<thead>
<tr>
<th><strong>EMS Number:</strong></th>
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<tbody>
<tr>
<td>F-A,S-B</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Segregation groups</strong></th>
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<tbody>
<tr>
<td>Alkalis</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Stowage Category</strong></th>
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</thead>
<tbody>
<tr>
<td>A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Segregation Code</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>SG35 Stow &quot;separated from&quot; acids.</td>
</tr>
</tbody>
</table>

### Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

| **Not applicable.** |

### Transport/Additional information:

<table>
<thead>
<tr>
<th><strong>DOT</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quantity limitations</strong></td>
</tr>
<tr>
<td>On passenger aircraft/rail: 1 L</td>
</tr>
<tr>
<td>On cargo aircraft only: 30 L</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>IMDG</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Limited quantities (LQ)</strong></td>
</tr>
<tr>
<td><strong>Excepted quantities (EQ)</strong></td>
</tr>
<tr>
<td>Code: E2</td>
</tr>
<tr>
<td>Maximum net quantity per inner packaging: 30 ml</td>
</tr>
<tr>
<td>Maximum net quantity per outer packaging: 500 ml</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>UN &quot;Model Regulation&quot;:</strong></th>
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</thead>
<tbody>
<tr>
<td>UN 1824 SODIUM HYDROXIDE SOLUTION, 8, II</td>
</tr>
</tbody>
</table>

(Contd. on page 9)
### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - **Sara**
  - **Section 355 (extremely hazardous substances):**
    None of the ingredients is listed.
  - **Section 313 (Specific toxic chemical listings):**
    None of the ingredients is listed.
  - **TSCA (Toxic Substances Control Act):**
    All ingredients are listed.
  - **Proposition 65**
    - **Chemicals known to cause cancer:**
      None of the ingredients is listed.
    - **Chemicals known to cause reproductive toxicity for females:**
      None of the ingredients is listed.
    - **Chemicals known to cause reproductive toxicity for males:**
      None of the ingredients is listed.
    - **Chemicals known to cause developmental toxicity:**
      None of the ingredients is listed.
  - **Carcinogenic categories**
    - **EPA (Environmental Protection Agency)**
      None of the ingredients is listed.
    - **TLV (Threshold Limit Value established by ACGIH)**
      None of the ingredients is listed.
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    None of the ingredients is listed.
  - **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
    - **Hazard pictograms** GHS05
    - **Signal word** Danger
    - **Hazard-determining components of labeling:**
      sodium hydroxide
    - **Hazard statements**
      Causes severe skin burns and eye damage.
    - **Precautionary statements**
      Do not breathe mist/vapours/spray.
      Wash thoroughly after handling.
      Wear protective gloves/protective clothing/eye protection/face protection.
      If swallowed: Rinse mouth. Do NOT induce vomiting.
      If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
      IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Immediately call a poison center/doctor.
Specific treatment (see on this label).
Wash contaminated clothing before reuse.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.
- **Chemical safety assessment**: A Chemical Safety Assessment has not been carried out.

### 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing SDS:**
  Zymo Research Corp.
  Safety Department
  17062 Murphy Ave.
  Irvine, CA 92614
  USA
  Phone: 1-949-679-1190 or 1-888-882-9682
- **Contact**: sds@zymoresearch.com
- **Date of preparation / last revision**: 03/07/2018
- **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
  DOT: US Department of Transportation
  IATA: International Air Transport Association
  AGIH: American Conference of Governmental Industrial Hygienists
  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)
  NFPA: National Fire Protection Association (USA)
  HMIS: Hazardous Materials Identification System (USA)
  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
  NIOSH: National Institute for Occupational Safety
  OSHA: Occupational Safety & Health
  TLV: Threshold Limit Value
  PEL: Permissible Exposure Limit
  REL: Recommended Exposure Limit
  Skin Corr. 1B: Skin corrosion/irritation – Category 1B
  Eye Dam. 1: Serious eye damage/eye irritation – Category 1
1 Identification

- Product identifier
- Trade name: M-Binding Buffer
- Article number: D5001-3, D5002-3, D5005-3, D5006-3, D5040-3
- Application of the substance / the mixture Laboratory Reagent
- Details of the supplier of the safety data sheet
  - Manufacturer/Supplier:
    Zymo Research Corp.
    17062 Murphy Ave.
    Irvine, CA 92614
    USA
    Phone: 1-949-679-1190 or 1-888-882-9682
    sds@zymoresearch.com
  - Information department:
    Integrated Sciences Pty.LTD.,
    54 Gibbes Street, Chatswood NSW 2067,
    Australia
    Phone: 02 9417 7866
    Fax: 02 9417 5066
    tech@integratedsci.com.au
- Emergency telephone number: Toll-Free: 1 800 252 204 (Monday-Friday 8.00 am - 6.00 pm)

2 Hazard(s) identification

- Classification of the substance or mixture
  GHS07
  Acute Tox. 4  H302  Harmful if swallowed.
  Skin Irrit. 2  H315  Causes skin irritation.
  Eye Irrit. 2A  H319  Causes serious eye irritation.
- GHS label elements
- Hazard pictograms
- Signal word Warning
- Hazard-determining components of labeling:
  guanidinium chloride
- Hazard statements
  Harmful if swallowed.
  Causes skin irritation.
  Causes serious eye irritation.
- Precautionary statements
  Wash thoroughly after handling.
  Do not eat, drink or smoke when using this product.
  Wear protective gloves / eye protection / face protection.

(Contd. on page 2)
Trade name: M-Binding Buffer

If swallowed: Call a poison center/doctor if you feel unwell.
If on skin: Wash with plenty of water.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Specific treatment (see on this label).
Rinse mouth.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
Dispose of contents/container in accordance with local/regional/national/international regulations.

- Classification system:
- NFPA ratings (scale 0 - 4)
  
  Health = 2  
  Fire = 0  
  Reactivity = 0  

- HMIS-ratings (scale 0 - 4)
  HEALTH 2  
  FIRE 0  
  REACTIVITY 0

- Other hazards
- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.

3 Composition/information on ingredients

- Chemical characterization: Mixtures
- Description: Mixture of the substances listed below with nonhazardous additions.

- Dangerous components:
  CAS: 50-01-1 guanidinium chloride  ≤60%

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. If symptoms persist, consult a doctor.
- After swallowing: Do not induce vomiting; immediately call for medical help.
Trade name: M-Binding Buffer

- 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 Fire-fighting measures

- Extinguishing media
  - Suitable extinguishing agents:
    CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
  - Advice for firefighters
  - Protective equipment: Wear protective clothing.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures Wear protective clothing.
- Environmental precautions:
  Dilute with plenty of water.
  Do not allow to enter sewers/ surface or ground water.
- Methods and material for containment and cleaning up:
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  Dispose contaminated material as waste according to item 13.
  Ensure adequate ventilation.
- Reference to other sections
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.
- Protective Action Criteria for Chemicals

  - PAC-1:
    CAS: 50-01-1 guanidinium chloride  1.4 mg/m³
  - PAC-2:
    CAS: 50-01-1 guanidinium chloride  16 mg/m³
  - PAC-3:
    CAS: 50-01-1 guanidinium chloride  94 mg/m³

7 Handling and storage

- Handling:
  - Precautions for safe handling
    Ensure good ventilation/exhaustion at the workplace.
    Prevent formation of aerosols.
  - Information about protection against explosions and fires: No special measures required.
Safety Data Sheet
acc. to OSHA HCS

Trade name: M-Binding Buffer

· 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 receptacle tightly sealed.
  · Specific end use(s) Laboratory reagent

(Contd. of page 3)

8 Exposure controls/personal protection

· Additional information about design of technical systems: No further data; see item 7.
· Control parameters
· Components 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 that were valid during the creation were used as basis.

· Exposure controls
· Personal protective equipment:
· General protective and hygienic measures:
  Keep away from foodstuffs, beverages and feed.
  Immediately remove all soiled and contaminated clothing.
  Wash hands before breaks and at the end of work.
  Avoid contact with the eyes and skin.
· Breathing equipment:
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
· Protection of hands:

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. 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. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

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

(Contd. on page 5)
9 Physical and chemical properties

- Information on basic physical and chemical properties
- General Information
- Appearance:
  - Form: Liquid
  - Color: Clear
  - Odor: undistinguishable
  - Odor threshold: Not determined.
- pH-value: Not determined.
- Change in condition
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: Undetermined.
- Flash point: Not applicable.
- Flammability (solid, gaseous): Not applicable.
- Ignition temperature:
  - Decomposition temperature: Not determined.
- Auto igniting: Product is not selfigniting.
- Danger of explosion: Product does not present an explosion hazard.
- Explosion limits:
  - Lower: Not Applicable
  - Upper: Not Applicable
- Vapor pressure: Not determined.
- Density: Not determined.
- Relative density: Not determined.
- Vapor density: Not determined.
- Evaporation rate: Not determined.
- Solubility in / Miscibility with Water: Fully miscible.
- Partition coefficient (n-octanol/water): Not determined.
- Viscosity:
  - Dynamic: Not determined.

(Contd. on page 6)
**Trade name:** M-Binding Buffer

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<tbody>
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<td>· Solvent content:</td>
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</tr>
<tr>
<td>Organic solvents:</td>
<td>0.0 g/l / 0.00 lb/gl</td>
</tr>
<tr>
<td>VOC content:</td>
<td>0.0 %</td>
</tr>
<tr>
<td>Solids content:</td>
<td>30.0 %</td>
</tr>
<tr>
<td>· Other information</td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

**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 that are relevant for classification:**
    - CAS: 50-01-1 guanidinium chloride
    - Oral LD50: 475 mg/kg (rat)

  - **Primary irritant effect:**
    - **on the skin:** Irritant to skin and mucous membranes.
    - **on the eye:** Irritating effect.

- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
  The product shows the following dangers according to internally approved calculation methods for preparations:
  - **Harmful**
  - **Irritant**

- **Carcinogenic categories**

  - **IARC (International Agency for Research on Cancer)**
    - None of the ingredients is listed.

  - **NTP (National Toxicology Program)**
    - None of the ingredients is listed.

  - **OSHA-Ca (Occupational Safety & Health Administration)**
    - None of the ingredients is listed.
12 Ecological information

- Toxicity
- Aquatic toxicity: No further relevant information available.
- Persistence and degradability: No further relevant information available.
- Behavior in environmental systems:
- Bioaccumulative potential: No further relevant information available.
- Mobility in soil: No further relevant information available.
- Additional ecological information:
  - General notes:
    Water hazard class 1 (Self-assessment): slightly hazardous for water
    Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
- Other adverse effects: No further relevant information available.

13 Disposal considerations

- Waste treatment methods
- Recommendation:
  Dispose of contents in accordance with local/regional/national, and international recommendations.
- Uncleaned packagings:
- Recommendation:
  Dispose of container in accordance with local/regional/national and international recommendations.
- Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

- UN-Number
- DOT, ADN, IMDG, IATA: not regulated
- UN proper shipping name
- DOT, ADN, IMDG, IATA: not regulated
- Transport hazard class(es)
- DOT, ADN, IMDG, IATA: not regulated
- Class: not regulated
- Packing group
- DOT, IMDG, IATA: not regulated
- Environmental hazards: Not applicable.
- Special precautions for user: Not applicable.
### Trade name: M-Binding Buffer

- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.
- UN "Model Regulation": not regulated

### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**
  - **Section 355 (extremely hazardous substances):** None of the ingredients is listed.
  - **Section 313 (Specific toxic chemical listings):** None of the ingredients is listed.
  - **TSCA (Toxic Substances Control Act):** All ingredients are listed.
  - **Proposition 65**
    - **Chemicals known to cause cancer:** None of the ingredients is listed.
    - **Chemicals known to cause reproductive toxicity for females:** None of the ingredients is listed.
    - **Chemicals known to cause reproductive toxicity for males:** None of the ingredients is listed.
- **Chemicals known to cause developmental toxicity:** None of the ingredients is listed.

- **Carcinogenic categories**
- **EPA (Environmental Protection Agency)** None of the ingredients is listed.
- **TLV (Threshold Limit Value established by ACGIH)** None of the ingredients is listed.
- **NIOSH-Ca (National Institute for Occupational Safety and Health)** None of the ingredients is listed.
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms** GHS07
  - **Signal word** Warning
  - **Hazard-determining components of labeling:** guanidinium chloride
  - **Hazard statements** Harmful if swallowed. Causes skin irritation. Causes serious eye irritation.
16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing SDS:
Zymo Research Corp.
Safety Department
17062 Murphy Ave.
Irvine, CA 92614
USA
Phone: 1-949-679-1190 or 1-888-882-9682
Contact: sds@zymoresearch.com
Date of preparation / last revision 03/07/2018

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
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
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute Tox. 4: Acute toxicity – Category 4
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
Safety Data Sheet
acc. to OSHA HCS

1 Identification

· Product identifier
  · Trade name: M-Wash Buffer
    · Article number: D5001-4, D5002-4, D5007-4, D5040-4
    · Application of the substance / the mixture Laboratory Reagent

· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier:
    Zymo Research Corp.
    17062 Murphy Ave.
    Irvine, CA 92614
    USA
    Phone: 1-949-679-1190 or 1-888-882-9682
    sds@zymoresearch.com

· Information department:
  Integrated Sciences Pty.LTD.,
  54 Gibbes Street, Chatswood NSW 2067,
  Australia
  Phone: 02 9417 7866
  Fax: 02 9417 5066
  tech@integratedsci.com.au

· Emergency telephone number: Toll-Free: 1 800 252 204 (Monday-Friday 8.00 am - 6.00 pm)

2 Hazard(s) identification

· Classification of the substance or mixture
  The product is not classified according to the Globally Harmonized System (GHS).

· Label elements
  · GHS label elements Void
  · Hazard pictograms Void
  · Signal word Void
  · Hazard statements Void
  · Classification system:
    · NFPA ratings (scale 0 - 4)
      Health = 0
      Fire = 0
      Reactivity = 0

    · HMIS-ratings (scale 0 - 4)
      Health = 0
      Fire = 0
      Reactivity = 0

· Other hazards
  · Results of PBT and vPvB assessment
  · PBT: Not applicable.

(Contd. on page 2)
Trade name: M-Wash Buffer

- vPvB: Not applicable.

3 Composition/information on ingredients

- Chemical characterization: Mixtures
  - Description: Mixture of the substances listed below with nonhazardous additions.
  - Dangerous components: Void

4 First-aid measures

- Description of first aid measures
- General information: No special measures required.
- After inhalation: Supply fresh air; consult doctor in case of complaints.
- After skin contact: Generally the product does not irritate the skin.
- After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.
- After swallowing: Do not induce vomiting; immediately call for medical help.
- 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 Fire-fighting measures

- Extinguishing media
- Suitable extinguishing agents: CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- Advice for firefighters
- Protective equipment: Wear protective clothing.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures: Wear protective clothing.
- Environmental precautions: Dilute with plenty of water.
- Methods and material for containment and cleaning up:
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
- 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.
- Protective Action Criteria for Chemicals
  - PAC-I:
    None of the ingredients is listed.
Trade name: M-Wash Buffer

7 Handling and storage

- Handling:
  - Precautions for safe handling: No special measures required.
  - Information about protection against explosions and fires: No special measures required.
- 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: None.
- Specific end use(s) Laboratory reagent

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.
- Control parameters
- Components 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 that were valid during the creation were used as basis.

- Exposure controls
- Personal protective equipment:
- General protective and hygienic measures:
  The usual precautionary measures for handling chemicals should be followed.
- Breathing equipment: Not required.
- Protection of hands:
  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. 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. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
- Penetration time of glove material
  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

(Contd. of page 2)
### Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form</strong></td>
<td>Liquid</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Clear</td>
</tr>
<tr>
<td><strong>Odor</strong></td>
<td>Odorless</td>
</tr>
<tr>
<td><strong>Odor 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>Undetermined.</td>
</tr>
<tr>
<td>Boiling point/Boiling range</td>
<td>Undetermined.</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Flammability (solid, gaseous)</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Ignition temperature</strong></td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Auto igniting</strong></td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td><strong>Danger of explosion</strong></td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td><strong>Explosion limits</strong></td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Upper</td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Vapor pressure at 20 °C (68 °F)</strong></td>
<td>23 hPa (17.3 mm Hg)</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Vapor 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</strong></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>Fully miscible.</td>
</tr>
<tr>
<td><strong>Partition coefficient (n-octanol/water)</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Viscosity</strong></td>
<td></td>
</tr>
<tr>
<td>Dynamic</td>
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</tr>
<tr>
<td>Kinematic</td>
<td>Not determined.</td>
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<tr>
<td><strong>Solvent content</strong></td>
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</tr>
<tr>
<td>Organic solvents</td>
<td>0.0 %</td>
</tr>
<tr>
<td>VOC content</td>
<td>0.0 g/l / 0.00 lb/gl</td>
</tr>
</tbody>
</table>
Trade name: M-Wash Buffer

**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**:
- **Primary irritant effect**:
  - **on the skin**: No irritant effect.
  - **on the eye**: No irritating effect.
- **Sensitization**: No sensitizing effects known.
- **Additional toxicological information**:
  - The product is not subject to classification according to internally approved calculation methods for preparations:
  - When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.
- **Carcinogenic categories**
  - **IARC (International Agency for Research on Cancer)**
    - None of the ingredients is listed.
  - **NTP (National Toxicology Program)**
    - None of the ingredients is listed.
  - **OSHA-Ca (Occupational Safety & Health Administration)**
    - None of the ingredients is listed.

**12 Ecological information**

- **Toxicity**
- **Aquatic toxicity**: No further relevant information available.
- **Persistence and degradability**: No further relevant information available.
- **Behavior in environmental systems**:
- **Bioaccumulative potential**: No further relevant information available.
- **Mobility in soil**: No further relevant information available.
- **Additional ecological information**:
- **General notes**: Not known to be hazardous to water.
Safety Data Sheet
acc. to OSHA HCS

Printing date 03/07/2018
Reviewed on 11/13/2015

Trade name: M-Wash Buffer

- 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: Smaller quantities can be disposed of with household waste.

- Uncleaned packagings:
  - Recommendation:
    - Dispose of container in accordance with local/regional/national and international recommendations.

- Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN-Number</td>
<td>not regulated</td>
</tr>
<tr>
<td>DOT, ADN, IMDG, IATA</td>
<td>not regulated</td>
</tr>
<tr>
<td>UN proper shipping name</td>
<td>not regulated</td>
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<tr>
<td>DOT, ADN, IMDG, IATA</td>
<td>not regulated</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>not regulated</td>
</tr>
<tr>
<td>DOT, ADN, IMDG, IATA</td>
<td>not regulated</td>
</tr>
<tr>
<td>Class</td>
<td>not regulated</td>
</tr>
<tr>
<td>Packing group</td>
<td>not regulated</td>
</tr>
<tr>
<td>DOT, IMDG, IATA</td>
<td>not regulated</td>
</tr>
<tr>
<td>Environmental hazards</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Special precautions for user</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</td>
<td>Not applicable</td>
</tr>
<tr>
<td>UN &quot;Model Regulation&quot;</td>
<td>not regulated</td>
</tr>
</tbody>
</table>

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara
  - Section 355 (extremely hazardous substances):
    - None of the ingredients is listed.

(Contd. of page 5)
### Trade name: M-Wash Buffer

- **Section 313 (Specific toxic chemical listings):**
  None of the ingredients is listed.

- **TSCA (Toxic Substances Control Act):**
  None of the ingredients is listed.

- **Proposition 65**
  - **Chemicals known to cause cancer:**
    None of the ingredients is listed.
  - **Chemicals known to cause reproductive toxicity for females:**
    None of the ingredients is listed.
  - **Chemicals known to cause reproductive toxicity for males:**
    None of the ingredients is listed.
  - **Chemicals known to cause developmental toxicity:**
    None of the ingredients is listed.

- **Carcinogenic categories**
  - **EPA (Environmental Protection Agency)**
    None of the ingredients is listed.
  - **TLV (Threshold Limit Value established by ACGIH)**
    None of the ingredients is listed.
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    None of the ingredients is listed.

- **GHS label elements** Void
  - **Signal word** Void
  - **Hazard statements** Void
  - **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

### 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing SDS:**
  Zymo Research Corp.
  Safety Department
  17062 Murphy Ave.
  Irvine, CA 92614
  USA
  Phone: 1-949-679-1190 or 1-888-882-9682
- **Contact:** sds@zymoresearch.com
- **Date of preparation / last revision** 03/07/2018
- **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)
Trade name: M-Wash Buffer

IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
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)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit

(Contd. of page 7)
1 Identification

- Product identifier
  - Trade name: M-Desulphonation Buffer
  - Article number: D5001-5, D5002-5, D5040-5
  - Application of the substance / the mixture: Laboratory Reagent
- Details of the supplier of the safety data sheet
- Manufacturer/Supplier:
  Zymo Research Corp.
  17062 Murphy Ave.
  Irvine, CA 92614
  USA
  Phone: 1-949-679-1190 or 1-888-882-9682
  sds@zymoresearch.com
- Information department: Product safety department
- Emergency telephone number:
  During normal business hours (8 am to 5 pm Pacific Standard Time): +1 (949) 679 1190

2 Hazard(s) identification

- Classification of the substance or mixture
  - GHS02 Flame
    - Flam. Liq. 3 H226 Flammable liquid and vapor.
  - GHS07
    - Skin Irrit. 2 H315 Causes skin irritation.
    - Eye Irrit. 2A H319 Causes serious eye irritation.
    - STOT SE 3 H336 May cause drowsiness or dizziness.
- Label elements
  - GHS label elements: The product is classified and labeled according to the Globally Harmonized System (GHS).
  - Hazard pictograms: GHS02, GHS07
  - Signal word: Warning
- Hazard-determining components of labeling:
  - propan-2-ol
  - ethanol
  - sodium hydroxide
- Hazard statements
  - Flammable liquid and vapor.
  - Causes skin irritation.
  - Causes serious eye irritation.
  - May cause drowsiness or dizziness.

(Contd. on page 2)
### Precautionary statements
- Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- Ground/bond container and receiving equipment.
- Use explosion-proof electrical/ventilating/lighting/equipment.
- Use only non-sparking tools.
- Take precautionary measures against static discharge.
- Avoid breathing dust/fume/gas/mist/vapors/spray
- Wash thoroughly after handling.
- Use only outdoors or in a well-ventilated area.
- Wear protective gloves/protective clothing/eye protection/face protection.
- If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Call a poison center/doctor if you feel unwell.
- Specific treatment (see on this label).
- If skin irritation occurs: Get medical advice/attention.
- If eye irritation persists: Get medical advice/attention.
- Take off contaminated clothing and wash it before reuse.
- In case of fire: Use for extinction: CO2, powder or water spray.
- Store in a well-ventilated place. Keep container tightly closed.
- Store in a well-ventilated place. Keep cool.
- Store locked up.
- Dispose of contents/container in accordance with local/regional/national/international regulations.

### Classification system:

#### NFPA ratings (scale 0 - 4)

- Health = 2
- Fire = 3
- Reactivity = 0

#### HMIS-ratings (scale 0 - 4)

- Health = 2
- Fire = 3
- Reactivity = 0

### Other hazards
- Results of PBT and vPvB assessment
  - **PBT**: Not applicable.
  - **vPvB**: Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterization**: Mixtures
- **Description**: Mixture of the substances listed below with nonhazardous additions.
Safety Data Sheet
acc. to OSHA HCS

Printing date 03/07/2018
Reviewed on 11/13/2015

Trade name: M-Desulphonation Buffer

(Contd. of page 2)

- Dangerous components:
  - CAS: 67-63-0 propan-2-ol ≤10%
  - CAS: 64-17-5 ethanol ≤10%
  - CAS: 1310-73-2 sodium hydroxide ≤2.5%

4 First-aid measures

- Description of first aid measures
  - 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. If symptoms persist, consult a doctor.
  - After swallowing: Do not induce vomiting; immediately call for medical help.
  - 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 Fire-fighting measures

- Extinguishing media
  - Suitable extinguishing agents:
    CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
  - Special hazards arising from the substance or mixture
    Products of thermal decomposition of this material would include caustic vapors as well as sodium and sulfur compounds.
  - Advice for firefighters
  - Protective equipment:
    Wear protective clothing, including self-contained breathing apparatus, for fighting fires involving this material.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures
  Wear protective equipment. Keep unprotected persons away.
- Environmental precautions: Dilute with plenty of water.
- Methods and material for containment and cleaning up:
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  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.

(Contd. on page 4)
Trade name: M-Desulphonation Buffer

(Contd. of page 3)

- Protective Action Criteria for Chemicals

- PAC-1:
  - CAS: 67-63-0  propan-2-ol  400 ppm
  - CAS: 64-17-5  ethanol  1,800 ppm
  - CAS: 1310-73-2  sodium hydroxide  0.5 mg/m³

- PAC-2:
  - CAS: 67-63-0  propan-2-ol  2000* ppm
  - CAS: 64-17-5  ethanol  3300* ppm
  - CAS: 1310-73-2  sodium hydroxide  5 mg/m³

- PAC-3:
  - CAS: 67-63-0  propan-2-ol  12000** ppm
  - CAS: 64-17-5  ethanol  15000* ppm
  - CAS: 1310-73-2  sodium hydroxide  50 mg/m³

7 Handling and storage

- Handling:
  - Precautions for safe handling
    Ensure good ventilation/exhaustion at the workplace.
    Prevent formation of aerosols.
  - Information about protection against explosions and fires:
    Keep ignition sources away - Do not smoke.
    Protect against electrostatic charges.

- Conditions for safe storage, including any incompatibilities

- Storage:
  - Requirements to be met by storerooms and receptacles:
    Store in cool, dry place. Store in well-ventilated location.
  - Information about storage in one common storage facility:
    Do not store together with acids, chlorinated solvents, and reactive metals (e.g. aluminum, phosphorous, tin/tin oxides, zinc).

- Further information about storage conditions: Keep receptacle tightly sealed.
- Specific end use(s) Laboratory reagent

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.

- Control parameters
  Work under a chemical fume hood when using this product. Ensure eyewash station and safety showers are readily accessible.
Trade name: M-Desulphonation Buffer

- Components with limit values that require monitoring at the workplace:
  
  **CAS: 67-63-0 propan-2-ol**
  
  | PEL       | Long-term value: 980 mg/m³, 400 ppm |
  | REL       | Short-term value: 1225 mg/m³, 500 ppm |
  | REL       | Long-term value: 980 mg/m³, 400 ppm |
  | TLV       | Short-term value: 984 mg/m³, 400 ppm |
  | TLV       | Long-term value: 492 mg/m³, 200 ppm |
  | BEI       |                                        |

  **CAS: 64-17-5 ethanol**
  
  | PEL       | Long-term value: 1900 mg/m³, 1000 ppm |
  | REL       | Long-term value: 1900 mg/m³, 1000 ppm |
  | TLV       | Short-term value: 1880 mg/m³, 1000 ppm |

  **CAS: 1310-73-2 sodium hydroxide**
  
  | PEL       | Long-term value: 2 mg/m³ |
  | REL       | Ceiling limit value: 2 mg/m³ |
  | TLV       | Ceiling limit value: 2 mg/m³ |

- Ingredients with biological limit values:
  
  **CAS: 67-63-0 propan-2-ol**
  
  | BEI       | 40 mg/L |
  | Medium    | urine   |
  | Time      | end of shift at end of workweek |
  | Parameter | Acetone (background, nonspecific) |

- Additional information: The lists that were valid during the creation were used as basis.

- Exposure controls
  
- Personal protective equipment:
  
- General protective and hygienic measures:
  
  Keep away from foodstuffs, beverages and feed.
  
  Immediately remove all soiled and contaminated clothing.
  
  Wash hands before breaks and at the end of work.
  
  Avoid contact with the eyes and skin.

- Breathing equipment:
  
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

- Protection of hands:
  
  ![Protective gloves](image)

  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
  
  Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.
Trade name: M-Desulphonation Buffer

- 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. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
- Penetration time of glove material
  The exact break through 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

- Information on basic physical and chemical properties
  - General Information
  - Appearance:
    - Form: Liquid
    - Color: Clear
  - Odor: Alcohol-like
  - Odor threshold: Not determined.
  - pH-value: Not determined.
- Change in condition
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: Undetermined.
- Flash point: >25 °C (>77 °F)
- Flammability (solid, gaseous): Not applicable.
- Ignition temperature: 425 °C (797 °F)
- Decomposition temperature: Not determined.
- Auto igniting: Product is not selfigniting.
- Danger of explosion: Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
- Explosion limits:
  - Lower: 2 Vol %
  - Upper: 15 Vol %
- Vapor pressure at 20 °C (68 °F): 59 hPa (44.3 mm Hg)
- Density: Not determined.
- Relative density: Not determined.
- Vapor density: Not determined.

(Contd. on page 7)
Safety Data Sheet
acc. to OSHA HCS

Trade name: M-Desulphonation Buffer

- Evaporation rate: Not determined.
- Solubility in / Miscibility with Water: Fully miscible.
- Partition coefficient (n-octanol/water): Not determined.
- Viscosity:
  - Dynamic: Not determined.
  - Kinematic: Not determined.
- Solvent content:
  - Organic solvents: 58.0 %
  - VOC content: 58.00 %
  - 580.0 g/l / 4.84 lb/gl
- Solids content: 0.9 %
- 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:
- LD/LC50 values that are relevant for classification:
  - CAS: 1310-73-2 sodium hydroxide
  - Oral LD50: 2,000 mg/kg (rat)
- Primary irritant effect:
  - on the skin: Irritant to skin and mucous membranes.
  - on the eye: Irritating effect.
  - Sensitization: No sensitizing effects known.
- Additional toxicological information:
  - The product shows the following dangers according to internally approved calculation methods for preparations: Irritant

(Contd. on page 8)
12 Ecological information

- Toxicity
  - Aquatic toxicity: No further relevant information available.
  - Persistence and degradability: No further relevant information available.
  - Behavior in environmental systems:
  - Bioaccumulative potential: No further relevant information available.
  - Mobility in soil: No further relevant information available.
  - Additional ecological information:
  - General notes: Generally not hazardous for water
  - 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:
    Dispose of contents in accordance with local/regional/national, and international recommendations.

- Uncleaned packagings:
  - Recommendation:
    Dispose of container in accordance with local/regional/national and international recommendations.

- Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

- UN-Number
  - DOT, IMDG, IATA: UN1993

- UN proper shipping name
  - DOT: Flammable liquids, n.o.s. (Isopropanol, Ethanol)
# Safety Data Sheet

**acc. to OSHA HCS**

**Printing date 03/07/2018**

**Reviewed on 11/13/2015**

## Trade name: M-Desulphonation Buffer

<table>
<thead>
<tr>
<th>IMDG</th>
<th>FLAMMABLE LIQUID, N.O.S. (ISOPROPANOL (ISOPROPYL ALCOHOL), ETHANOL (ETHYL ALCOHOL))</th>
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</thead>
<tbody>
<tr>
<td>IATA</td>
<td>FLAMMABLE LIQUID, N.O.S. (ISOPROPANOL (ISOPROPYL ALCOHOL), ETHANOL)</td>
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### Transport hazard class(es)

**DOT**

<table>
<thead>
<tr>
<th>Class</th>
<th>3 Flammable liquids</th>
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</thead>
<tbody>
<tr>
<td>Label</td>
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</table>

**IMDG, IATA**

<table>
<thead>
<tr>
<th>Class</th>
<th>3 Flammable liquids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>3</td>
</tr>
</tbody>
</table>

### Packing group

**DOT, IMDG, IATA**

| III |

### Environmental hazards:

Not applicable.

### Special precautions for user

Warning: Flammable liquids

**Danger code (Kemler):**

| 30 |

**EMS Number:**

F-E,S-E

**Stowage Category**

A

### Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

### Transport/Additional information:

**DOT**

| On passenger aircraft/rail: 60 L |
| On cargo aircraft only: 220 L |

**IMDG**

| Limited quantities (LQ) | 5L |
| Excepted quantities (EQ) | Code: E1 |

Maximum net quantity per inner packaging: 30 ml

Maximum net quantity per outer packaging: 1000 ml
### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Sara**
  - **Section 355 (extremely hazardous substances):**
    - None of the ingredients is listed.
  - **Section 313 (Specific toxic chemical listings):**
    - CAS: 67-63-0 propan-2-ol
  - **TSCA (Toxic Substances Control Act):**
    - All ingredients are listed.
  - **Proposition 65**
  - **Chemicals known to cause cancer:**
    - None of the ingredients is listed.
  - **Chemicals known to cause reproductive toxicity for females:**
    - None of the ingredients is listed.
  - **Chemicals known to cause reproductive toxicity for males:**
    - None of the ingredients is listed.
  - **Chemicals known to cause developmental toxicity:**
    - None of the ingredients is listed.

- **Carcinogenic categories**
  - **EPA (Environmental Protection Agency)**
    - None of the ingredients is listed.
  - **TLV (Threshold Limit Value established by ACGIH)**
    - CAS: 67-63-0 propan-2-ol
    - CAS: 64-17-5 ethanol
  - **NIOSH-Ca (National Institute for Occupational Safety and Health)**
    - None of the ingredients is listed.

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms** GHS02, GHS07
  - **Signal word** Warning
  - **Hazard-determining components of labeling:**
    - propan-2-ol
    - ethanol
    - sodium hydroxide
  - **Hazard statements**
    - Flammable liquid and vapor.
Safety Data Sheet
acc. to OSHA HCS

Printing date 03/07/2018
Reviewed on 11/13/2015

Trade name: M-Desulphonation Buffer

Causes skin irritation.
Causes serious eye irritation.
May cause drowsiness or dizziness.

- Precautionary statements
  Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  Ground/bond container and receiving equipment.
  Use explosion-proof electrical/ventilating/lighting/equipment.
  Use only non-sparking tools.
  Take precautionary measures against static discharge.
  Avoid breathing dust/fume/gas/mist/vapors/spray
  Wash thoroughly after handling.
  Use only outdoors or in a well-ventilated area.
  Wear protective gloves/protective clothing/eye protection/face protection.
  If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
  Continue rinsing.
  Call a poison center/doctor if you feel unwell.
  Specific treatment (see on this label).
  If skin irritation occurs: Get medical advice/attention.
  If eye irritation persists: Get medical advice/attention.
  Take off contaminated clothing and wash it before reuse.
  In case of fire: Use for extinction: CO2, powder or water spray.
  Store in a well-ventilated place. Keep container tightly closed.
  Store in a well-ventilated place. Keep cool.
  Store locked up.
  Dispose of contents/container in accordance with local/regional/national/international regulations.

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

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Department issuing SDS:
  Zymo Research Corp.
  Safety Department
  17062 Murphy Ave.
  Irvine, CA 92614
  USA
  Phone: 1-949-679-1190 or 1-888-882-9682
  Contact: sds@zymoresearch.com

- Date of preparation / last revision 03/07/2018 / -

- 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
  DOT: US Department of Transportation
  IATA: International Air Transport Association
  ACGIH: American Conference of Governmental Industrial Hygienists

(Contd. on page 12)
## Trade name: M-Desulphonation Buffer

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Commercial Chemical Substances</td>
</tr>
<tr>
<td>ELINCS</td>
<td>European List of Notified Chemical Substances</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstracts Service (division of the American Chemical Society)</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Association (USA)</td>
</tr>
<tr>
<td>HMIS</td>
<td>Hazardous Materials Identification System (USA)</td>
</tr>
<tr>
<td>VOC</td>
<td>Volatile Organic Compounds (USA, EU)</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal concentration, 50 percent</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal dose, 50 percent</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent, Bioaccumulative and Toxic</td>
</tr>
<tr>
<td>vPvB</td>
<td>very Persistent and very Bioaccumulative</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
</tr>
<tr>
<td>REL</td>
<td>Recommended Exposure Limit</td>
</tr>
<tr>
<td>BEI</td>
<td>Biological Exposure Limit</td>
</tr>
<tr>
<td>Flam. Liq.</td>
<td>Flammable liquids – Category 3</td>
</tr>
<tr>
<td>Skin Irrit.</td>
<td>Skin corrosion/irritation – Category 2</td>
</tr>
<tr>
<td>Eye Irrit.</td>
<td>Serious eye damage/eye irritation – Category 2A</td>
</tr>
<tr>
<td>STOT SE</td>
<td>Specific target organ toxicity (single exposure) – Category 3</td>
</tr>
</tbody>
</table>
1 Identification

- **Product identifier**
  - Trade name: M-Elution Buffer
  - **Article number:** D5001-6, D5002-6, D5007-6, D5041-6
  - **Application of the substance / the mixture** Laboratory Reagent

- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:**
    Zymo Research Corp.
    17062 Murphy Ave.
    Irvine, CA 92614
    USA
    Phone: 1-949-679-1190 or 1-888-882-9682
    sds@zymoresearch.com

- **Information department:**
  Integrated Sciences Pty.LTD.,
  54 Gibbes Street, Chatswood NSW 2067,
  Australia
  Phone: 02 9417 7866
  Fax: 02 9417 5066
  tech@integratedsci.com.au

- **Emergency telephone number:** Toll-Free: 1 800 252 204 (Monday-Friday 8.00 am - 6.00 pm)

2 Hazard(s) identification

- **Classification of the substance or mixture**
  - The product is not classified according to the Globally Harmonized System (GHS).

- **Label elements**
  - **GHS label elements** Void
  - **Hazard pictograms** Void
  - **Signal word** Void
  - **Hazard statements** Void
  - **Classification system:**
  - **NFPA ratings (scale 0 - 4)**
    - Health = 0
    - Fire = 0
    - Reactivity = 0

- **HMIS-ratings (scale 0 - 4)**
  - HEALTH  U
  - FIRE  U
  - REACTIVITY  O
  - Health = 0
  - Fire = 0
  - Reactivity = 0

- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.

(Contd. on page 2)
# Safety Data Sheet

**Trade name:** M-Elution Buffer

- **vPvB:** Not applicable.

## 3 Composition/information on ingredients

- **Chemical characterization:** Mixtures
- **Description:** Mixture of the substances listed below with nonhazardous additions.
- **Dangerous components:** Void

## 4 First-aid measures

- **Description of first aid measures**
- **General information:** No special measures required.
- **After inhalation:** Supply fresh air; consult doctor in case of complaints.
- **After skin contact:** Generally the product does not irritate the skin.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** Do not induce vomiting; immediately call for medical help.
- **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 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:**
  CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Advice for firefighters**
- **Protective equipment:** Wear protective clothing.

## 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Wear protective clothing.
- **Environmental precautions:**
  Dilute with plenty of water.
  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).
- **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.
Trade name: M-Elution Buffer

<table>
<thead>
<tr>
<th>Protective Action Criteria for Chemicals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PAC-1:</strong></td>
</tr>
<tr>
<td>CAS: 1185-53-1 2-amino-2-(hydroxymethyl)propane-1,3-diolhydrochloride</td>
</tr>
<tr>
<td>CAS: 6381-92-6 Edetate Disodium, Dihydrate</td>
</tr>
<tr>
<td><strong>PAC-2:</strong></td>
</tr>
<tr>
<td>CAS: 1185-53-1 2-amino-2-(hydroxymethyl)propane-1,3-diolhydrochloride</td>
</tr>
<tr>
<td>CAS: 6381-92-6 Edetate Disodium, Dihydrate</td>
</tr>
<tr>
<td><strong>PAC-3:</strong></td>
</tr>
<tr>
<td>CAS: 1185-53-1 2-amino-2-(hydroxymethyl)propane-1,3-diolhydrochloride</td>
</tr>
<tr>
<td>CAS: 6381-92-6 Edetate Disodium, Dihydrate</td>
</tr>
</tbody>
</table>

7 Handling and storage

- **Handling:**
  - **Precautions for safe handling** No special measures required.
  - **Information about protection against explosions and fires:** No special measures required.
- **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:** None.
- **Specific end use(s)** Laboratory reagent

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
- **Components 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 that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
  The usual precautionary measures for handling chemicals should be followed.
- **Breathing equipment:** Not required.
- **Protection of hands:**
  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
  Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
  Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
Trade name: M-Elution Buffer

- **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. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

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

- **Eye protection**: Goggles recommended during refilling.

### 9 Physical and chemical properties

<table>
<thead>
<tr>
<th>Description</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>Color</td>
<td>Clear</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td>Odor threshold</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>Undetermined.</td>
</tr>
<tr>
<td>Boiling point/Boiling range</td>
<td>Undetermined.</td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Flammability (solid, gaseous)</strong></td>
<td>Not applicable.</td>
</tr>
<tr>
<td><strong>Ignition temperature</strong></td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Auto igniting</strong></td>
<td>Product is not selfigniting.</td>
</tr>
<tr>
<td><strong>Danger of explosion</strong></td>
<td>Product does not present an explosion hazard.</td>
</tr>
<tr>
<td><strong>Explosion limits</strong></td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>Upper</td>
<td>Not Applicable</td>
</tr>
<tr>
<td><strong>Vapor pressure</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Density</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Vapor 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</strong></td>
<td>Fully miscible.</td>
</tr>
<tr>
<td><strong>Partition coefficient (n-octanol/water)</strong></td>
<td>Not determined.</td>
</tr>
</tbody>
</table>
Trade name: M-Elution Buffer

- Viscosity:
  Dynamic: Not determined.
  Kinematic: Not determined.

- Solvent content:
  Organic solvents: 0.0 %
  VOC content: 0.0 g/l / 0.00 lb/gl

Solids content: 2.0 %
- 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:
- Primary irritant effect:
  on the skin: No irritant effect.
  on the eye: No irritating effect.
- Sensitization
  No sensitizing effects known.
- Additional toxicological information:
  The product is not subject to classification according to internally approved calculation methods for preparations: When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.
- Carcinogenic categories
  - IARC (International Agency for Research on Cancer)
    None of the ingredients is listed.
  - NTP (National Toxicology Program)
    None of the ingredients is listed.
  - OSHA-Ca (Occupational Safety & Health Administration)
    None of the ingredients is listed.
Trade name: M-Elution Buffer

12 Ecological information

- Toxicity
  - Aquatic toxicity: No further relevant information available.
  - Persistence and degradability: No further relevant information available.
  - Behavior in environmental systems: No further relevant information available.
- Bioaccumulative potential: No further relevant information available.
- Mobility in soil: No further relevant information available.
- Additional ecological information:
  - General notes:
    Water hazard class 1 (Self-assessment): slightly hazardous for water
    Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
  - Results of PBT and vPvB assessment
    - PBT: Not applicable.
    - vPvB: Not applicable.
  - Other adverse effects: No further relevant information available.

13 Disposal considerations

- Waste treatment methods
  - Recommendation: Smaller quantities can be disposed of with household waste.
- Uncleaned packaging:
  - Recommendation:
    Dispose of container in accordance with local/regional/national and international recommendations.
  - Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

- UN-Number
  - DOT, ADN, IMDG, IATA: not regulated
- UN proper shipping name
  - DOT, ADN, IMDG, IATA: not regulated
- Transport hazard class(es)
  - DOT, ADN, IMDG, IATA: not regulated
  - Class: not regulated
- Packing group
  - DOT, IMDG, IATA: not regulated
- Environmental hazards: Not applicable.
- Special precautions for user: Not applicable.
15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara
  - Section 355 (extremely hazardous substances):
    None of the ingredients is listed.
  - Section 313 (Specific toxic chemical listings):
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- TSCA (Toxic Substances Control Act):
  - CAS: 1185-53-1 2-amino-2-(hydroxymethyl)propane-1,3-diolhydrochloride
  - Proposition 65
    - Chemicals known to cause cancer:
      None of the ingredients is listed.
    - Chemicals known to cause reproductive toxicity for females:
      None of the ingredients is listed.
    - Chemicals known to cause reproductive toxicity for males:
      None of the ingredients is listed.
    - Chemicals known to cause developmental toxicity:
      None of the ingredients is listed.
- Carcinogenic categories
- EPA (Environmental Protection Agency)
  None of the ingredients is listed.
- TLV (Threshold Limit Value established by ACGIH)
  None of the ingredients is listed.
- NIOSH-Ca (National Institute for Occupational Safety and Health)
  None of the ingredients is listed.
- GHS label elements Void
  - Hazard pictograms Void
  - Signal word Void
  - Hazard statements Void
  - Chemical safety assessment: A Chemical Safety Assessment has not been carried out.
16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

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