### Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

<table>
<thead>
<tr>
<th>1.1 Product Code:</th>
<th>10009199</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2 Relevant identified uses of the substance or mixture and uses advised against:</td>
<td></td>
</tr>
<tr>
<td>Relevant identified uses:</td>
<td>For research use only, not for human or veterinary use.</td>
</tr>
<tr>
<td>1.3 Details of the Supplier of the Safety Data Sheet:</td>
<td></td>
</tr>
<tr>
<td>Company Name:</td>
<td>Cayman Chemical Company</td>
</tr>
<tr>
<td>Web site address:</td>
<td><a href="http://www.caymanchem.com">www.caymanchem.com</a></td>
</tr>
<tr>
<td>Information:</td>
<td>+1 (734)971-3335</td>
</tr>
<tr>
<td>1.4 Emergency telephone number:</td>
<td></td>
</tr>
<tr>
<td>Emergency Contact:</td>
<td>CHEMTREC Within USA and Canada: +1 (800)424-9300</td>
</tr>
<tr>
<td></td>
<td>CHEMTREC Outside USA and Canada: +1 (703)527-3887</td>
</tr>
</tbody>
</table>

### Section 2. Hazards Identification

#### 2.1 Classification of the Substance or Mixture:

2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]:

- Skin Corrosion/Irritation, Category 2
- Serious Eye Damage/Eye Irritation, Category 2A
- Target Organ Systemic Toxicity (single exposure), Category 3

2.1.2 Classification according to Directive 1999/45/EC:

- Xi: Irritant
- Risk Phrases: R36/37/38
- For full text of R-phrases: see SECTION 15.

#### 2.2 Label Elements:

2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:

- **GHS Signal Word:** Warning
- **GHS Hazard Phrases:**
  - H315: Causes skin irritation.
  - H319: Causes serious eye irritation.
  - H335: May cause respiratory irritation.
- **GHS Precaution Phrases:**
  - P264: Wash {hands} thoroughly after handling.
  - P280: Wear {protective gloves/protective clothing/eye protection/face protection}.
  - P362+364: Take off contaminated clothing and wash it before reuse.
  - P361+372: Wear dust mask/ respirator.
  - P312: Avoid breathing {dust/fume/gas/mist/vapours/spray}.

- **GHS Response Phrases:**
  - P302+352: IF ON SKIN: Wash with plenty of soap and water.
  - P333: If skin irritation occurs, get medical advice/attention.
  - P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
  - P312: Call a {POISON CENTER/doctor/...} if you feel unwell.
GHS Storage and Disposal Phrases:
Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.2.2 Labeling according to Directive 1999/45/EC:

Xi

2.3 Adverse Human Health
Causes skin irritation.

Effects and Symptoms:
Causes serious eye irritation.

Material may be irritating to the mucous membranes and upper respiratory tract.
May be harmful by inhalation, ingestion, or skin absorption.
May cause respiratory irritation.
To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>CAS # / RTECS #</th>
<th>Hazardous Components (Chemical Name) / REACH Registration No.</th>
<th>Concentration</th>
<th>EC No./ EC Index No.</th>
<th>Risk Phrases / GHS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>504-17-6 CQ7700000</td>
<td>4,6-Dihydroxy-2-mercaptopirimidine</td>
<td>100.0 %</td>
<td>207-985-8 NA</td>
<td>Xi; R36/37/38 Skin Corr. 2: H315 Eye Damage 2A: H319 TOST (SE) 3: H335 H336</td>
</tr>
</tbody>
</table>

Section 4. First Aid Measures

4.1 Description of First Aid
No data available.

Measures:

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.

In Case of Skin Contact: Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

In Case of Eye Contact: Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes examined and tested by medical personnel.

In Case of Ingestion: Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.

4.2 Important Symptoms and Effects, Both Acute and Delayed:
Inhalation may cause inflammation of the upper respiratory system.
Inhalation may cause headache, nausea, and vomiting.
Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Media: Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray. Use water spray to cool fire-exposed containers.

Unsuitable Extinguishing Media: A solid water stream may be inefficient.

5.2 Flammable Properties and Hazards:
- Flash Pt: No data.
- Explosive Limits: LEL: No data. UEL: No data.
- Autoignition Pt: No data.

5.3 Fire Fighting Instructions: As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

6.1 Protective Precautions, Protective Equipment and Emergency Procedures: Avoid raising and breathing dust, and provide adequate ventilation. As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).

6.2 Environmental Precautions: Take steps to avoid release into the environment, if safe to do so.

6.3 Methods and Material for Containment and Cleaning Up:
- Contain spill and collect, as appropriate.
- Transfer to a chemical waste container for disposal in accordance with local regulations.

Section 7. Handling and Storage

7.1 Precautions To Be Taken in Handling: Avoid breathing dust/fume/gas/mist/vapours/spray.
- Avoid prolonged or repeated exposure.

7.2 Precautions To Be Taken in Storing:
- Keep container tightly closed.
- Store in accordance with information listed on the product insert.
- Avoid excessive heat and light.

Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Partial Chemical Name</th>
<th>Britain EH40</th>
<th>France VL</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>504-17-6</td>
<td>4,6-Dihydroxy-2-mercaptopyrimidine</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Partial Chemical Name</th>
<th>OSHA TWA</th>
<th>ACGIH TWA</th>
<th>Other Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>504-17-6</td>
<td>4,6-Dihydroxy-2-mercaptopyrimidine</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
</tbody>
</table>

8.2 Exposure Controls:

8.2.1 Engineering Controls (Ventilation etc.): Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

8.2.2 Personal protection equipment:
- Eye Protection: Safety glasses
- Protective Gloves: Compatible chemical-resistant gloves
- Other Protective Clothing: Lab coat
- Respiratory Equipment: NIOSH approved respirator, as conditions warrant.
- (Specify Type):
- Work/Hygienic/Maintenance: Do not take internally.
**Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.**

**Wash thoroughly after handling.**

---

### Section 9. Physical and Chemical Properties

#### 9.1 Information on Basic Physical and Chemical Properties

- **Physical States:**
  - [ ] Gas
  - [ ] Liquid
  - [X] Solid

- **Appearance and Odor:** A powder

- **Melting Point:** No data.

- **Boiling Point:** No data.

- **Flash Pt:** No data.

- **Evaporation Rate:** No data.

- **Explosive Limits:**
  - LEL: No data.
  - UEL: No data.

- **Vapor Pressure (vs. Air or mm Hg):** No data.

- **Vapor Density (vs. Air = 1):** No data.

- **Specific Gravity (Water = 1):** No data.

- **Solubility in Water:** No data.

- **Autoignition Pt:** No data.

#### 9.2 Other Information

- **Percent Volatile:** No data.

---

### Section 10. Stability and Reactivity

#### 10.1 Reactivity:

No data available.

#### 10.2 Stability:

- Unstable [ ]
- Stable [X]

#### 10.3 Stability Note(s):

Stable if stored in accordance with information listed on the product insert.

#### 10.4 Conditions To Avoid:

- air sensitive
- excessive heat and light

#### 10.5 Incompatibility - Materials To Avoid:

- strong oxidizing agents

#### 10.6 Hazardous

- Decomposition Or
  - carbon dioxide
  - carbon monoxide
  - nitrogen oxides
  - sulfur oxides

Multi-region format
Section 11. Toxicological Information

11.1 Information on Toxicological Effects: The toxicological effects of this product have not been thoroughly studied.

- 2-Thiobarbituric Acid - Toxicity Data: Oral LD50 (rat): >5 g/kg; Intraperitoneal LD50 (mouse): 600 mg/kg;

Chronic Toxicological Effects: Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.

2-Thiobarbituric Acid RTECS Number: CQ7700000

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment. Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

13.1 Waste Disposal Method: Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):

- DOT Proper Shipping Name: Aviation regulated solid, n.o.s.(2-Thiobarbituric acid)
- DOT Hazard Class: 9 CLASS 9
- UN/NA Number: 3335 Packing Group: III

14.1 LAND TRANSPORT (European ADR/RID):

- ADR/RID Shipping Name: Aviation regulated solid, n.o.s.(2-Thiobarbituric acid)
- UN Number: 3335 Packing Group: III
- Hazard Class: 9 - CLASS 9

14.3 AIR TRANSPORT (ICAO/IATA):

- ICAO/IATA Shipping Name: Aviation regulated solid, n.o.s.(2-Thiobarbituric acid)
- UN Number: 3335 Packing Group: III
- Hazard Class: 9 - CLASS 9 IATA Classification: 9

Additional Transport Information: Transport in accordance with local, state, and federal regulations.

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>S. 302 (EHS)</th>
<th>S. 304 RQ</th>
<th>S. 313 (TRI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>504-17-6</td>
<td>4,6-Dihydroxy-2-mercaptopurimidine</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Other US EPA or State Lists

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>Other US EPA or State Lists</th>
</tr>
</thead>
</table>
European Community Hazard Symbol codes:

Xi

European Community Risk and Safety Phrases:

R36/37/38  Irritating to eyes, respiratory system and skin.
S24/25  Avoid contact with skin and eyes.
S36/37/39  Wear suitable protective clothing, gloves and eye/face protection.

Regulatory Information

Statement: This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and European Directive 67/548/EEC as amended.

Section 16. Other Information

Revision Date: 04/14/2014

Additional Information About This Product: No data available.

Company Policy or Disclaimer:

DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.
TBA Acetic Acid
SAFETY DATA SHEET

1.1 Product Code: 10009200

Product Name: TBA Acetic Acid

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

Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet:

Company Name: Cayman Chemical Company
1180 E. Ellsworth Rd.
Ann Arbor, MI 48108

Web site address: www.caymanchem.com

Information: Cayman Chemical Company +1 (734)971-3335

1.4 Emergency telephone number:

Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300
CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

2.1 Classification of the Substance or Mixture:

2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]:

- Flammable Liquids, Category 3
- Skin Corrosion/Irritation, Category 1A

2.1.2 Classification according to Directive 1999/45/EC:

- C: Corrosive
- Risk Phrases: R10, R35

For full text of R- phrases: see SECTION 15.

2.2 Label Elements:

2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:

GHS Signal Word: Danger

GHS Hazard Phrases:

- H226: Flammable liquid and vapor.
- H314: Causes severe skin burns and eye damage.

GHS Precaution Phrases:

- P210: Keep away from {heat/sparks/open flames/hot surfaces}. - No smoking.
- P280: Wear {protective gloves/protective clothing/eye protection/face protection}.
- P260: Do not breathe {dust/fume/gas/mist/vapours/spray}.
- P264: Wash {hands} thoroughly after handling.

GHS Response Phrases:

- P303+361+353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
- P363: Wash contaminated clothing before reuse.
- P305+315+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P301+330+331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P310: Immediately call a {POISON CENTER/doctor/...}.

GHS Storage and Disposal Phrases:
2.2.2 Labeling according to Directive 1999/45/EC:

C

2.3 Adverse Human Health Causes severe skin burns and eye damage. Effects and Symptoms: Harmful by inhalation.
- Lachrymator.
- Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract, eyes, and skin.
- May be fatal if swallowed.
- May cause respiratory system irritation.
- To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>CAS # / RTECS #</th>
<th>Hazardous Components (Chemical Name)/REACH Registration No.</th>
<th>Concentration</th>
<th>EC No./EC Index No.</th>
<th>Risk Phrases/GHS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-19-7 AF1225000</td>
<td>Acetic acid</td>
<td>100.0 %</td>
<td>200-580-7 607-002-00-6</td>
<td>C;Xi; R10-35 Flam. Liq. 3: H226 Skin Corr. 1A: H314</td>
</tr>
</tbody>
</table>

Section 4. First Aid Measures

4.1 Description of First Aid Measures:

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.

In Case of Skin Contact: Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

In Case of Eye Contact: Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes examined and tested by medical personnel.

In Case of Ingestion: Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.

4.2 Important Symptoms and Effects, Both Acute and Delayed:
- Exposure can cause: burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.
- Exposure may cause black skin.
- Exposure may cause sensitization.
- Eye contact may result in severe eye damage and loss of sight.
- Ingestion may cause: Sore throat, vomiting, and diarrhea.
- Inhalation may result in spasm, inflammation, and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema.
- May cause perforation of the esophagus.
- Repeated or prolonged exposure may cause chronic inflammation of the nose, throat, and bronchial tubes.
- Repeated or prolonged exposure may cause erosion of exposed front teeth.
- Skin contact may result in redness, pain and burns.
Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Media: Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.

Use water spray to cool fire-exposed containers.

Unsuitable Extinguishing Media: A solid water stream may be inefficient.

5.2 Flammable Properties and Hazards:

Can release vapors that form explosive mixtures at temperatures at or above the flash point.

Container explosion may occur under fire conditions.

Emits toxic and corrosive fumes under fire conditions.

Sensitive to static discharge.

Vapors can travel to source of ignition and flash back.

Flash Pt: 40.00 C Method Used: Closed Cup

Explosive Limits: LEL: 4.0% UEL: 16.0%

Autoignition Pt: 427.00 C

5.3 Fire Fighting Instructions: As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

6.1 Protective Precautions, Protective Equipment and Emergency Procedures: Avoid breathing vapors and provide adequate ventilation.

As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).

6.2 Environmental Precautions: Take steps to avoid release into the environment, if safe to do so.

6.3 Methods and Material For Containment and Cleaning Up: Contain spill and collect, as appropriate.

Transfer to a chemical waste container for disposal in accordance with local regulations.

Section 7. Handling and Storage

7.1 Precautions To Be Taken in Handling: Avoid breathing dust/fume/gas/mist/vapours/spray.

Avoid prolonged or repeated exposure.

Keep away from sources of ignition.

Prevent the build up of electrostatic charge.

7.2 Precautions To Be Taken in Storing: Keep away from heat, sparks and flame.

Keep container tightly closed.

Store in accordance with information listed on the product insert.

Other Precautions: Moisture sensitive.

Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Partial Chemical Name</th>
<th>Britain EH40</th>
<th>France VL</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-19-7</td>
<td>Acetic acid</td>
<td>No data.</td>
<td>STEL: 25 mg/m3 (10 ppm)</td>
<td>TWA: 25 mg/m3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Partial Chemical Name</th>
<th>OSHA TWA</th>
<th>ACGIH TWA</th>
<th>Other Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-19-7</td>
<td>Acetic acid</td>
<td>PEL: 10 ppm</td>
<td>TLV: 10 ppm</td>
<td>STEL: 15 ppm</td>
</tr>
</tbody>
</table>
8.2 Exposure Controls:

8.2.1 Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

8.2.2 Personal protection equipment:
- Eye Protection: Safety glasses
- Protective Gloves: Compatible chemical-resistant gloves
- Other Protective Clothing: Lab coat
- Respiratory Equipment: NIOSH approved respirator, as conditions warrant.

Work/Hygienic/Maintenance Practices: Do not take internally. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Wash thoroughly after handling.

Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

- Physical States: [ ] Gas [ X ] Liquid [ ] Solid
- Appearance and Odor: Solution
- pH: 2.4
- Melting Point: 16.60°C
- Boiling Point: 118.00°C
- Flash Pt: 40.00°C Method Used: Closed Cup
- Evaporation Rate: No data.
- Explosive Limits: LEL: 4.0% UEL: 16.0%
- Vapor Pressure (vs. Air or mm Hg): 11 MM_HG at 20.0°C
- Vapor Density (vs. Air = 1): 2.1
- Specific Gravity (Water = 1): 1.05
- Solubility in Water: No data.
- Autoignition Pt: 427.00°C

9.2 Other Information
- Percent Volatile: No data.

Section 10. Stability and Reactivity

10.1 Reactivity: No data available.
10.2 Stability: Unstable [ ] Stable [ X ]
10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.
10.4 Conditions To Avoid: heat, flames and sparks freezing
10.5 Incompatibility - Materials To Avoid: acids alcohols amines carbonates ethylene glycol hydroxides metals oxides oxidizing agents
perchloric acid
permanganates
peroxides
phosphates
phosphorous trichloride
sodium peroxide
strong caustics

carbon dioxide
carbon monoxide
reacts with metals to form hydrogen chloride gas

Section 11. Toxicological Information

11.1 Information on Toxicological Effects: The toxicological effects of this product have not been thoroughly studied.

Acetic Acid - Toxicity Data: Oral LD50 (rat): 3,310 mg/kg; Skin LD50 (rabbit): 1.06 mL/kg; Inhalation LC50 (mouse): 5620 ppm (1h);
Acetic Acid - Irritation Data: Skin (human): 50 mg (24H) mild; Skin (rabbit): 525 mg severe; Skin (rabbit): 50 mg (24H) mild; Eye (rabbit): 5 mg (30s) mild;

Acetic acid - Investigated as a mutagen, reproductive effector, and tumorigen. Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.
Acetic acid RTECS Number: AF1225000

Carcinogenicity:
NTP? No IARC Monographs? No OSHA Regulated? No

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment. Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

13.1 Waste Disposal Method: Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):
DOT Proper Shipping Name: Acetic acid, glacial
DOT Hazard Class: 8 (3) CORROSIVE, FLAMMABLE LIQUID
UN/NA Number: 2789 Packing Group: II

14.1 LAND TRANSPORT (European ADR/RID):
ADR/RID Shipping Name: Acetic acid, glacial
UN Number: 2789 Packing Group: II
Hazard Class: 8 (3) - CORROSIVE, FLAMMABLE LIQUID

14.3 AIR TRANSPORT (ICAO/IATA):
ICAO/IATA Shipping Name: Acetic acid, glacial
UN Number: 2789 Packing Group: II
Hazard Class: 8 (3) - CORROSIVE, FLAMMABLE LIQUID
IATA Classification: 8 (3)
Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>S. 302 (EHS)</th>
<th>S. 304 RQ</th>
<th>S. 313 (TRI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-19-7</td>
<td>Acetic acid</td>
<td>No</td>
<td>Yes 5000 LB</td>
<td>No</td>
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<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>Other US EPA or State Lists</th>
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</thead>
<tbody>
<tr>
<td>64-19-7</td>
<td>Acetic acid</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory; CA PROP.65: No</td>
</tr>
</tbody>
</table>

European Community Hazard Symbol codes:

- C

European Community Risk and Safety Phrases:

- R10 Flammable.
- R35 Causes severe burns.
- S23 Do not breathe vapour.
- S24/25 Avoid contact with skin and eyes.
- S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
- S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible.)

Regulatory Information Statement:

This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and European Directive 67/548/EEC as amended.

Section 16. Other Information

Revision Date: 04/14/2014

Additional Information About This Product: No data available.

Company Policy or Disclaimer:

DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.
TBA Sodium Hydroxide

SAFETY DATA SHEET

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Code: 10009201
   Product Name: TBA Sodium Hydroxide

1.2 Relevant identified uses of the substance or mixture and uses advised against:
   Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet:
   Company Name: Cayman Chemical Company
   1180 E. Ellsworth Rd.
   Ann Arbor, MI 48108
   Web site address: www.caymanchem.com
   Information: +1 (734)971-3335

1.4 Emergency telephone number:
   Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300
   CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

2.1 Classification of the Substance or Mixture:

2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]:
   Skin Corrosion/Irritation, Category 1A

2.1.2 Classification according to Directive 1999/45/EC:
   C: Corrosive
   Risk Phrases: R35
   For full text of R-phrases: see SECTION 15.

2.2 Label Elements:

2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:

   GHS Signal Word: Danger
   GHS Hazard Phrases:
   H314: Causes severe skin burns and eye damage.

   GHS Precaution Phrases:
   P260: Do not breathe {dust/fume/gas/mist/vapours/spray}.
   P264: Wash {hands} thoroughly after handling.
   P280: Wear {protective gloves/protective clothing/eye protection/face protection}.

   GHS Response Phrases:
   P303+361+353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
   P363: Wash contaminated clothing before reuse.
   P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
   P301+330+331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
   P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
   P310: Immediately call a {POISON CENTER/doctor/...}.

   GHS Storage and Disposal Phrases:
   Please refer to Section 7 for Storage and Section 13 for Disposal information.
2.2.2 Labeling according to Directive 1999/45/EC:

2.3 Adverse Human Health: Causes severe skin burns and eye damage.

Effects and Symptoms: Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract, eyes, and skin.
May be harmful by inhalation, ingestion, or skin absorption.
To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>CAS # / RTECS #</th>
<th>Hazardous Components (Chemical Name)/REACH Registration No.</th>
<th>Concentration</th>
<th>EC No./EC Index No.</th>
<th>Risk Phrases/GHS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1310-73-2 WB4900000</td>
<td>Sodium hydroxide</td>
<td>10.0 -50.0 %</td>
<td>215-185-5 011-002-00-6</td>
<td>C; Xi; R35 Skin Corr. 1A: H314</td>
</tr>
<tr>
<td>7732-18-5 ZC0110000</td>
<td>Water</td>
<td>50.0 -90.0 %</td>
<td>231-791-2 NA</td>
<td>No phrases apply. No data available.</td>
</tr>
</tbody>
</table>

Section 4. First Aid Measures

4.1 Description of First Aid Measures:

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.

In Case of Skin Contact: Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

In Case of Eye Contact: Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes examined and tested by medical personnel.

In Case of Ingestion: Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.

4.2 Important Symptoms and Effects, Both Acute and Delayed: Eye contact may result in severe eye damage and loss of sight.
Inhalation may result in spasm, inflammation, and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema.
Inhalation may cause coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.
Ingestion may cause damage to the mouth, throat, and esophagus.
Skin contact may result in redness, pain and burns.
Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Media: Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray. Use water spray to cool fire-exposed containers.

Unsuitable Extinguishing Media: A solid water stream may be inefficient.

5.2 Flammable Properties and Hazards: No data available.

Flash Pt: No data.
Explosive Limits: LEL: No data. UEL: No data.
Autoignition Pt: No data.

5.3 Fire Fighting Instructions: As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

6.1 Protective Precautions, Protective Equipment and Emergency Procedures: Avoid breathing vapors and provide adequate ventilation. As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).

6.2 Environmental Precautions: Take steps to avoid release into the environment, if safe to do so.

6.3 Methods and Material For Containment and Cleaning Up: Contain spill and collect, as appropriate. Transfer to a chemical waste container for disposal in accordance with local regulations.

Section 7. Handling and Storage

7.1 Precautions To Be Taken in Handling: Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid prolonged or repeated exposure.

7.2 Precautions To Be Taken in Storing: Keep container tightly closed. Store in accordance with information listed on the product insert.

Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Partial Chemical Name</th>
<th>Britain EH40</th>
<th>France VL</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1310-73-2</td>
<td>Sodium hydroxide</td>
<td>STEL: 2 mg/m³</td>
<td>TWA: 2 mg/m³</td>
<td>No data.</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Partial Chemical Name</th>
<th>OSHA TWA</th>
<th>ACGIH TWA</th>
<th>Other Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1310-73-2</td>
<td>Sodium hydroxide</td>
<td>PEL: 2 mg/m³</td>
<td>CEIL: 2 mg/m³</td>
<td>No data.</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
</tbody>
</table>
8.2 Exposure Controls:

8.2.1 Engineering Controls: Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

8.2.2 Personal protection equipment:
- **Eye Protection:** Safety glasses
- **Protective Gloves:** Compatible chemical-resistant gloves
- **Other Protective Clothing:** Lab coat
- **Respiratory Equipment:** NIOSH approved respirator, as conditions warrant.
- **Work/Hygienic/Maintenance Practices:** Do not take internally. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Wash thoroughly after handling.

---

### Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties
- **Physical States:** [ ] Gas [ X ] Liquid [ ] Solid
- **Appearance and Odor:** Solution
- **Melting Point:** No data.
- **Boiling Point:** No data.
- **Flash Pt:** No data.
- **Evaporation Rate:** No data.
- **Explosive Limits:** LEL: No data. UEL: No data.
- **Vapor Pressure (vs. Air or mm Hg):** No data.
- **Vapor Density (vs. Air = 1):** No data.
- **Specific Gravity (Water = 1):** No data.
- **Solubility in Water:** No data.
- **Autoignition Pt:** No data.

9.2 Other Information
- **Percent Volatile:** No data.

---

### Section 10. Stability and Reactivity

10.1 Reactivity: No data available.

10.2 Stability: Unstable [ ] Stable [ X ]

10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.

10.4 Conditions To Avoid: No data available.

10.5 Incompatibility - Materials To Avoid:
- acids
- flammable materials
- metals
- nitromethane
- organic materials
- strong oxidizing agents

10.6 Hazardous Decomposition Or Byproducts:
- sodium oxides
Section 11. Toxicological Information

11.1 Information on Toxicological Effects:
The toxicological effects of this product have not been thoroughly studied.

Sodium hydroxide - Toxicity Data: Oral LDLo (rabbit): 500 mg/kg; Irritation Data: Eyes (rabbit): 50 µg (24h) severe; Skin (rabbit) 500mg (24h) severe;

Chronic Toxicological Effects: Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information. Sodium hydroxide RTECS Number: WB4900000

Carcinogenicity: NTP? No  IARC Monographs? No  OSHA Regulated? No

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment. Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

13.1 Waste Disposal Method: Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):
DOT Proper Shipping Name: Sodium hydroxide solution
DOT Hazard Class: 8 CORROSIVE
UN/NA Number: 1824 Packing Group: II

14.1 LAND TRANSPORT (European ADR/RID):
ADR/RID Shipping Name: Sodium hydroxide solution
UN Number: 1824 Packing Group: II
Hazard Class: 8 - CORROSIVE

14.3 AIR TRANSPORT (ICAO/IATA):
ICAO/IATA Shipping Name: Sodium hydroxide solution
UN Number: 1824 Packing Group: II
Hazard Class: 8 - CORROSIVE IATA Classification: 8

Additional Transport Information: Transport in accordance with local, state, and federal regulations.

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>S. 302 (EHS)</th>
<th>S. 304 RQ</th>
<th>S. 313 (TRI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1310-73-2</td>
<td>Sodium hydroxide</td>
<td>No</td>
<td>Yes 1000 LB</td>
<td>No</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>Other US EPA or State Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>1310-73-2</td>
<td>Sodium hydroxide</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory; CA PROP.65: No</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory; CA PROP.65: No</td>
</tr>
</tbody>
</table>
European Community Hazard Symbol codes:

C

European Community Risk and Safety Phrases:

R35 Causes severe burns.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S24/25 Avoid contact with skin and eyes.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible.)

Regulatory Information

Statement: This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and European Directive 67/548/EEC as amended.

Section 16. Other Information

Revision Date: 04/14/2014
Additional Information About This Product: No data available.
Company Policy or Disclaimer: DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.
Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Code: 10009202  
Product Name: TBA Malondialdehyde Standard

1.2 Relevant identified uses of the substance or mixture and uses advised against:  
Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet:  
Company Name: Cayman Chemical Company  
1180 E. Ellsworth Rd.  
Ann Arbor, MI 48108  
WEB site address: www.caymanchem.com  
Information: +1 (734)971-3335

1.4 Emergency telephone number:  
Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300  
CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

2.1 Classification of the Substance or Mixture:  
2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]:  
2.1.2 Classification according to Directive 1999/45/EC:  
   Risk Phrases:  
   For full text of R-phrases: see SECTION 15.

2.2 Label Elements:  
2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:  
   GHS Signal Word:  
   GHS Hazard Phrases:  
   Based on evaluation of currently available data this substance or mixture is not classifiable according to GHS.  
   GHS Precaution Phrases:  
   No phrases apply.  
   GHS Response Phrases:  
   No phrases apply.  
   GHS Storage and Disposal Phrases:  
   Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.2.2 Labeling according to Directive 1999/45/EC:  
2.3 Adverse Human Health: Material may be irritating to the mucous membranes and upper respiratory tract.  
   Effects and Symptoms: May be harmful by inhalation, ingestion, or skin absorption.  
   May cause eye, skin, or respiratory system irritation.  
   To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>CAS # / RTECS #</th>
<th>Hazardous Components (Chemical Name)/REACH Registration No.</th>
<th>Concentration</th>
<th>EC No./EC Index No.</th>
<th>Risk Phrases/GHS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>102-52-3</td>
<td>Malonaldehyde bis(dimethylacetal)</td>
<td>0.009 %</td>
<td>203-037-2 NA</td>
<td>No phrases apply. Flam. Liq. 3: H226</td>
</tr>
<tr>
<td>ZC0110000</td>
<td>Water</td>
<td>99.991 %</td>
<td>231-791-2 NA</td>
<td>No phrases apply. No data available.</td>
</tr>
</tbody>
</table>
Section 4. First Aid Measures

4.1 Description of First Aid Measures:

<table>
<thead>
<tr>
<th>Description</th>
<th>Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Case of Inhalation</td>
<td>Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.</td>
</tr>
<tr>
<td>In Case of Skin Contact</td>
<td>Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.</td>
</tr>
<tr>
<td>In Case of Eye Contact</td>
<td>Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes examined and tested by medical personnel.</td>
</tr>
<tr>
<td>In Case of Ingestion</td>
<td>Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.</td>
</tr>
</tbody>
</table>

Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Media:

- Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.
- Use water spray to cool fire-exposed containers.

Unsuitable Extinguishing Media:

- A solid water stream may be inefficient.

5.2 Flammable Properties and Hazards:

- Flash Pt: No data.
- Explosive Limits: LEL: No data. UEL: No data.
- Autoignition Pt: No data.

5.3 Fire Fighting Instructions:

- As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

6.1 Protective Precautions, Protective Equipment and Emergency Procedures:

- Avoid breathing vapors and provide adequate ventilation.
- As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).

6.2 Environmental Precautions:

- Take steps to avoid release into the environment, if safe to do so.

6.3 Methods and Material for Containment and Cleaning Up:

- Contain spill and collect, as appropriate.
- Transfer to a chemical waste container for disposal in accordance with local regulations.

Section 7. Handling and Storage

7.1 Precautions To Be Taken in Handling:

- Avoid breathing dust/fume/gas/mist/vapours/spray.
- Avoid prolonged or repeated exposure.

7.2 Precautions To Be Taken in Storing:

- Keep container tightly closed.
- Store in accordance with information listed on the product insert.

Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

<table>
<thead>
<tr>
<th>Partial Chemical Name</th>
<th>Britain EH40</th>
<th>France VL</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>102-52-3 Malonaldehyde bis(dimethylacetal)</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
<tr>
<td>7732-18-5 Water</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET
TBA Malondialdehyde Standard

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Partial Chemical Name</th>
<th>OSHA TWA</th>
<th>ACGIH TWA</th>
<th>Other Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>102-52-3</td>
<td>Malonaldehyde bis(dimethylacetal)</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
</tbody>
</table>

8.2 Exposure Controls:

8.2.1 Engineering Controls
(Ventilation etc.): Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

8.2.2 Personal protection equipment:

Eye Protection: Safety glasses
Protective Gloves: Compatible chemical-resistant gloves
Other Protective Clothing: Lab coat
Respiratory Equipment NIOSH approved respirator, as conditions warrant.
(Specify Type):

Work/Hygienic/Maintenance Practices: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
Wash thoroughly after handling.

Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Physical States: [ ] Gas [X] Liquid [ ] Solid
Appearance and Odor: Solution
Melting Point: No data.
Boiling Point: No data.
Flash Pt: No data.
Evaporation Rate: No data.
Explosive Limits: LEL: No data. UEL: No data.
Vapor Pressure (vs. Air or mm Hg): No data.
Vapor Density (vs. Air = 1): No data.
Specific Gravity (Water = 1): No data.
Solubility in Water: No data.
Autoignition Pt: No data.

9.2 Other Information

Percent Volatile: No data.

Section 10. Stability and Reactivity

10.1 Reactivity: No data available.
10.2 Stability: Unstable [ ] Stable [X]
10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.
Polymerization: Will occur [ ] Will not occur [X]
10.4 Conditions To Avoid: No data available.
10.5 Incompatibility - Materials To Avoid: No data available.
10.6 Hazardous Decomposition Or Byproducts: No data available.
SAFETY DATA SHEET
TBA Malondialdehyde Standard

Section 11. Toxicological Information

11.1 Information on Toxicological Effects:
The toxicological effects of this product have not been thoroughly studied.

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

Section 12. Ecological Information

12.1 Toxicity:
Avoid release into the environment.
Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

13.1 Waste Disposal Method:
Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):
DOT Proper Shipping Name: Not dangerous goods.
DOT Hazard Class:
UN/NA Number:

14.1 LAND TRANSPORT (European ADR/RID):
ADR/RID Shipping Name: Not dangerous goods.
UN Number:
Hazard Class:

14.3 AIR TRANSPORT (ICAO/IATA):
ICAO/IATA Shipping Name: Not dangerous goods.
Additional Transport Information: Transport in accordance with local, state, and federal regulations.

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>S. 302 (EHS)</th>
<th>S. 304 RQ</th>
<th>S. 313 (TRI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>102-52-3</td>
<td>Malonaldehyde bis(dimethylacetal)</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>Other US EPA or State Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>102-52-3</td>
<td>Malonaldehyde bis(dimethylacetal)</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory; CA PROP.65: No</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory; CA PROP.65: No</td>
</tr>
</tbody>
</table>
European Community Hazard Symbol codes:

European Community Risk and Safety Phrases:
S24/25 Avoid contact with skin and eyes.
S37/39 Wear suitable gloves and eye/face protection.

Regulatory Information Statement: This SDS was prepared in accordance with Regulation (EC) No. 1272/2008 and European Directive 67/548/EEC as amended.

Additional Information About This Product: No data available.

Company Policy or Disclaimer: DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.
SAFETY DATA SHEET
TBA SDS Solution

Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Code: 10009203
Product Name: TBA SDS Solution

1.2 Relevant identified uses of the substance or mixture and uses advised against:
Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet:
Company Name: Cayman Chemical Company
1180 E. Ellsworth Rd.
Ann Arbor, MI 48108
Web site address: www.caymanchem.com
Information: Cayman Chemical Company +1 (734)971-3335

1.4 Emergency telephone number:
Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300
CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

2.1 Classification of the Substance or Mixture:
2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]:
Acute Toxicity: Oral, Category 3
Skin Corrosion/Irritation, Category 2
Serious Eye Damage/Eye Irritation, Category 2A

2.1.2 Classification according to Directive 1999/45/EC:
Xi: Irritant
Risk Phrases: R36/38
For full text of R-phrases: see SECTION 15.

2.2 Label Elements:
2.2.1 Labeling according to Regulation (EC) No 1272/2008 [CLP]:

GHS Signal Word: Danger
GHS Hazard Phrases:
H301: Toxic if swallowed.
H315: Causes skin irritation.
H319: Causes serious eye irritation.

GHS Precaution Phrases:
P264: Wash {hands} thoroughly after handling.
P280: Wear {protective gloves/protective clothing/eye protection/face protection}.
P362+364: Take off contaminated clothing and wash it before reuse.

GHS Response Phrases:
P301+310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P330: Rinse mouth.
P302+352: IF ON SKIN: Wash with plenty of soap and water.
P332+313: If skin irritation occurs, get medical advice/attention.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+313: If eye irritation persists, get medical advice/attention.

GHS Storage and Disposal Phrases:
2.2.2 Labeling according to Directive 1999/45/EC:

Xi

2.3 Adverse Human Health: Causes skin irritation.

Effects and Symptoms: Causes serious eye irritation. Material may be irritating to the mucous membranes and upper respiratory tract. May be harmful by inhalation or skin absorption. May cause respiratory system irritation. Toxid if swallowed. To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>CAS # / RTECS #</th>
<th>Hazardous Components (Chemical Name)/ REACH Registration No.</th>
<th>Concentration</th>
<th>EC No./ EC Index No.</th>
<th>Risk Phrases/ GHS Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>151-21-3 WT1050000</td>
<td>Sodium Dodecyl Sulfate</td>
<td>1.0 -15.0 %</td>
<td>205-788-1 NA</td>
<td>Xi; R36/38 Acute Tox.(O) 4: H302 Skin Corr. 2: H315 Eye Damage 2A: H319</td>
</tr>
<tr>
<td>7732-18-5 ZC0110000</td>
<td>Water</td>
<td>85.0 -99.0 %</td>
<td>231-791-2 NA</td>
<td>No phrases apply. No data available.</td>
</tr>
</tbody>
</table>

Section 4. First Aid Measures

4.1 Description of First Aid: No data available.

Measures:
- **In Case of Inhalation:** Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.
- **In Case of Skin Contact:** Immediately wash skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.
- **In Case of Eye Contact:** Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Have eyes examined and tested by medical personnel.
- **In Case of Ingestion:** Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.

4.2 Important Symptoms and Effects, Both Acute and Delayed: Chronic skin exposure may cause redness, drying, cracking, and dermatitis. Exposure may cause sensitization.
Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Media: Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray. Use water spray to cool fire-exposed containers.

Unsuitable Extinguishing Media: A solid water stream may be inefficient.

5.2 Flammable Properties and Hazards: No data available.

Flash Pt: No data.

Explosive Limits: LEL: No data. UEL: No data.

Autoignition Pt: No data.

5.3 Fire Fighting Instructions: As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

6.1 Protective Precautions, Protective Equipment, and Emergency Procedures: Avoid breathing vapors and provide adequate ventilation. As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).

6.2 Environmental Precautions: Take steps to avoid release into the environment, if safe to do so.

6.3 Methods and Material For Containment and Cleaning Up: Contain spill and collect, as appropriate. Transfer to a chemical waste container for disposal in accordance with local regulations.

Section 7. Handling and Storage

7.1 Precautions To Be Taken in Handling: Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid prolonged or repeated exposure.

7.2 Precautions To Be Taken in Storing: Keep container tightly closed. Store in accordance with information listed on the product insert.

Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Partial Chemical Name</th>
<th>Britain EH40</th>
<th>France VL</th>
<th>Europe</th>
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</thead>
<tbody>
<tr>
<td>151-21-3</td>
<td>Sodium Dodecyl Sulfate</td>
<td>No data.</td>
<td>No data.</td>
<td>No data.</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>No data.</td>
<td>No data.</td>
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</table>

<table>
<thead>
<tr>
<th>OSHA TWA</th>
<th>ACGIH TWA</th>
<th>Other Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>151-21-3</td>
<td>Sodium Dodecyl Sulfate</td>
<td>No data.</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>No data.</td>
</tr>
</tbody>
</table>
8.2 Exposure Controls:

8.2.1 Engineering Controls  Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

8.2.2 Personal protection equipment:
- **Eye Protection:** Safety glasses
- **Protective Gloves:** Compatible chemical-resistant gloves
- **Other Protective Clothing:** Lab coat

Respiratory Equipment: NIOSH approved respirator, as conditions warrant.

Work/Hygienic/Maintenance Practices: Do not take internally.

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

Wash thoroughly after handling.

---

### Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

- **Physical States:** [ ] Gas  [ X ] Liquid  [ ] Solid
- **Appearance and Odor:** Solution
- **Melting Point:** No data.
- **Boiling Point:** No data.
- **Flash Pt:** No data.
- **Evaporation Rate:** No data.

- **Explosive Limits:**
  - LEL: No data.
  - UEL: No data.

- **Vapor Pressure (vs. Air or mm Hg):** No data.
- **Vapor Density (vs. Air = 1):** No data.
- **Specific Gravity (Water = 1):** No data.
- **Solubility in Water:** No data.
- **Autoignition Pt:** No data.

9.2 Other Information

- **Percent Volatile:** No data.

---

### Section 10. Stability and Reactivity

10.1 Reactivity: No data available.

10.2 Stability: Unstable [ ]  Stable [ X ]

10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.

- **Polymerization:**
  - Will occur [ ]  Will not occur [ X ]

10.4 Conditions To Avoid: No data available.

10.5 Incompatibility - oxidizing agents

10.6 Hazardous Decomposition Or Material To Avoid:

- **Carbon Dioxide**
- **Carbon Monoxide**
- **Sulfur Oxides**
Section 11. Toxicological Information

11.1 Information on Toxicological Effects:
The toxicological effects of this product have not been thoroughly studied.

Carcinogenicity: NTP? No  IARC Monographs? No  OSHA Regulated? No

Section 12. Ecological Information

12.1 Toxicity:
Avoid release into the environment.
Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

13.1 Waste Disposal Method:
Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):
DOT Proper Shipping Name: Not dangerous goods.
DOT Hazard Class:
UN/NA Number:

14.1 LAND TRANSPORT (European ADR/RID):
ADR/RID Shipping Name: Not dangerous goods.
UN Number:
Hazard Class:

14.3 AIR TRANSPORT (ICAO/IATA):
ICAO/IATA Shipping Name: Not dangerous goods.
Additional Transport Information:
Transport in accordance with local, state, and federal regulations.

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>S. 302 (EHS)</th>
<th>S. 304 RQ</th>
<th>S. 313 (TRI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>151-21-3</td>
<td>Sodium Dodecyl Sulfate</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>Other US EPA or State Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>151-21-3</td>
<td>Sodium Dodecyl Sulfate</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory; CA PROP.65: No</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: Inventory; CA PROP.65: No</td>
</tr>
</tbody>
</table>

Multi-region format
European Community Hazard Symbol codes:

Xi

European Community Risk and Safety Phrases:

R36/38 Irritating to eyes and skin.
S24/25 Avoid contact with skin and eyes.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

Regulatory Information

Statement: This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and European Directive 67/548/EEC as amended.

Section 16. Other Information

Revision Date: 04/14/2014
Additional Information About This Product: No data available.
Company Policy or Disclaimer: DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.