

MATERIAL SAFETY DATA SHEET

Thiobarbituric Acid

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

Printed: 06/22/2010
Revision: 06/17/2010
Supersedes Revision: 05/15/2009
Date Created: 11/02/2006

1. Product and Company Identification

Product Code: 10009199
Product Name: Thiobarbituric Acid
Manufacturer Information
Company Name: Cayman Chemical Company
Emergency Contact: Cayman Chemical Company (800)364-9897
Information: Cayman Chemical Company (734)971-3335

2. Hazards Identification

Emergency Overview: Stench.
Avoid contact and inhalation.

Route(s) of Entry: Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? Yes Other: Injection

Health Hazards (Acute and Chronic): Material may be irritating to the mucous membranes and upper respiratory tract.
May be harmful by inhalation, ingestion, or skin absorption.
May cause eye, skin, or respiratory system irritation.
The toxicological properties of this product have not been fully evaluated.

LD 50 / LC 50: Please refer to Section 11.

Signs and Symptoms Of Exposure: Inhalation may cause inflammation of the upper respiratory system.
Inhalation may cause headache, nausea, and vomiting.

3. Composition/Information on Ingredients

Hazardous Components (Chemical Name)	CAS #	Concentration	EC#	RTECS #
1. 4,6-Dihydroxy-2-mercaptopyrimidine	504-17-6	100.0 %	207-985-8	CQ7700000

4. First Aid Measures

Emergency and First Aid Procedures: If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.
If swallowed, 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.
In case of contact with eyes, hold eyelids apart and flush eyes with plenty of water for at least 20 minutes. Have eyes examined and tested by medical personnel.
In case of skin contact, immediately wash skin with soap and plenty of water for at least 20 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

5. Fire Fighting Measures

Flash Pt: No data.

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

Special Fire Fighting Procedures: 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.

Unusual Fire and Explosion Hazards: Emits toxic fumes under fire conditions.

Hazardous Combustion Products: No data available.

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.

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6. Accidental Release Measures

Steps To Be Taken In Case Material Is Released Or Spilled: Avoid release into the environment.
 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).
 Transfer to a proper chemical waste container for disposal.

7. Handling and Storage

Hazard Label Information: Avoid contact with skin and eyes. Do not reuse this container. Use with adequate ventilation.
 Wash thoroughly after handling

Precautions To Be Taken in Handling: Avoid breathing (dust, vapor, mist, gas).
 Avoid prolonged or repeated exposure.

Precautions To Be Taken in Storing: Keep tightly closed.
 Store at correct temperature.

Other Precautions: Avoid excessive heat and light.

8. Exposure Controls/Personal Protection

Hazardous Components (Chemical Name)	CAS #	OSHA PEL	ACGIH TLV	Other Limits
1. 4,6-Dihydroxy-2-mercaptopyrimidine	504-17-6	No data.	No data.	No data.

Protective Equipment Summary - Hazard Label Information: Compatible chemical-resistant gloves Eye wash station in work area Lab coat Safety glasses Safety shower in work area Vent Hood

Respiratory Equipment (Specify Type): NIOSH approved respirator, as conditions warrant.

Eye Protection: Safety glasses

Protective Gloves: Compatible chemical-resistant gloves

Other Protective Clothing: Lab coat

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

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.

9. Physical and Chemical Properties

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

Melting Point: No data.

Boiling Point: No data.

Autoignition Pt: No data.

Flash Pt: No data.

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

Specific Gravity (Water = 1): No data.

Bulk density: No data.

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

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

Evaporation Rate (vs Butyl Acetate=1): No data.

Solubility in Water: No data.

Percent Volatile: No data.

Heat Value: No data.

Particle Size: No data.

Corrosion Rate: No data.

pH: No data.

Appearance and Odor: No data available.

10. Stability and Reactivity

Stability: Unstable [] Stable [X]

Conditions To Avoid - Instability: air sensitive
excessive heat and light

Incompatibility - Materials To Avoid: strong oxidizing agents

Hazardous Decomposition Or Byproducts: carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides

Possibility of Hazardous Reactions: Will occur [] Will not occur [X]

Conditions To Avoid - Hazardous Reactions: No data available.

11. Toxicological Information

: 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/Other Information: No data available.

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

12. Ecological Information

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

13. Disposal Considerations

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

14. Transport Information

LAND TRANSPORT (US DOT)
DOT Proper Shipping Name Not dangerous goods.

LAND TRANSPORT (European ADR/RID)
ADR/RID Shipping Name Not dangerous goods.

AIR TRANSPORT (ICAO/IATA)
ICAO/IATA Shipping Name Not dangerous goods.

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

15. Regulatory Information

European Community Hazard Symbol codes
No data available.

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

US EPA SARA Title III

Hazardous Components (Chemical Name)	CAS #	Sec.302 (EHS)	Sec.304 RQ	Sec.313 (TRI)	Sec.110
1. 4,6-Dihydroxy-2-mercaptopyrimidine	504-17-6	No	No	No	No

US EPA CAA, CWA, TSCA

Hazardous Components (Chemical Name)	CAS #	EPA CAA	EPA CWA NPDES	EPA TSCA	HPV/LPV
1. 4,6-Dihydroxy-2-mercaptopyrimidine	504-17-6	HAP, ODC ()	No	Inventory	

16. Other Information

Company Policy or Disclaimer

For research use only, not for human or veterinary clinical use.

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.

N.A.=Not available, N.P.=Not applicable, N.D.=Not determined, N.E.=Not established, N.R.=Not required

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TBA Acetic Acid

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

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Supersedes Revision: 05/15/2009
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1. Product and Company Identification

Product Code: 10009200
Product Name: TBA Acetic Acid
Manufacturer Information
Company Name: Cayman Chemical Company
Emergency Contact: Cayman Chemical Company (800)364-9897
Information: Cayman Chemical Company (734)971-3335

2. Hazards Identification

Emergency Overview: Corrosive.
Flammable.
Avoid contact and inhalation.
Target Organ(s): eyes, kidney, respiratory system, skin, and teeth.

Route(s) of Entry: Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? Yes Other: Injection

Health Hazards (Acute and Chronic): Causes severe burns.
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.
The toxicological properties of this product have not been fully evaluated.

LD 50 / LC 50: Please refer to Section 11.

Signs and Symptoms Of Exposure: 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.

3. Composition/Information on Ingredients

Hazardous Components (Chemical Name)	CAS #	Concentration	EC#	RTECS #
1. Acetic acid	64-19-7	100.0 %	200-580-7	AF1225000

4. First Aid Measures

Emergency and First Aid Procedures: If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.
If swallowed, 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.
In case of contact with eyes, hold eyelids apart and flush eyes with plenty of water for at least 20 minutes. Have eyes examined and tested by medical personnel.
In case of skin contact, immediately wash skin with soap and plenty of water for at least 20 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing

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before reuse.

5. Fire Fighting Measures

Flash Pt: 40.00 C Method Used: Closed Cup

Explosive Limits: LEL: 4% UEL: 16%

Autoignition Pt: 427.00 C

Special Fire Fighting Procedures: 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.

Unusual Fire and Explosion 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.

Hazardous Combustion Products: hydrogen gas

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.

6. Accidental Release Measures

Steps To Be Taken In Case Material Is Released Or Spilled: Avoid release into the environment.
 Avoid breathing vapors and provide adequate ventilation.
 Remove all sources of ignition.
 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).
 Absorb spill with inert material (e.g. dry sand or earth), then place in a proper chemical waste container.

7. Handling and Storage

Hazard Label Information: Avoid contact with skin and eyes. Do not reuse this container. Use with adequate ventilation.
 Wash thoroughly after handling

Precautions To Be Taken in Handling: Avoid breathing (dust, vapor, mist, gas).
 Avoid prolonged or repeated exposure.
 Keep away from sources of ignition.
 Prevent the build up of electrostatic charge.

Precautions To Be Taken in Storing: Keep away from heat, sparks and flame.
 Keep tightly closed.
 Store at correct temperature.

Other Precautions: Moisture sensitive.

8. Exposure Controls/Personal Protection

Hazardous Components (Chemical Name)	CAS #	OSHA PEL	ACGIH TWA	Other Limits
1. Acetic acid	64-19-7	PEL: 10 ppm	TLV: 10 ppm STEL: 15 ppm	No data.

Protective Equipment Summary - Hazard Label Information: Compatible chemical-resistant gloves Eye wash station in work area Lab coat Safety glasses Safety shower in work area Vent Hood

Respiratory Equipment (Specify Type): NIOSH approved respirator, as conditions warrant.

Eye Protection: Safety glasses

Protective Gloves: Compatible chemical-resistant gloves

Other Protective Clothing: Lab coat

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

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.

9. Physical and Chemical Properties

Physical States:	[] Gas [X] Liquid [] Solid
Melting Point:	16.60 C
Boiling Point:	118.00 C
Autoignition Pt:	427.00 C
Flash Pt:	40.00 C Method Used: Closed Cup
Explosive Limits:	LEL: 4% UEL: 16%
Specific Gravity (Water = 1):	1.05
Bulk density:	No data.
Vapor Pressure (vs. Air or mm Hg):	11 MM_HG at 20.0 C
Vapor Density (vs. Air = 1):	2.1
Evaporation Rate (vs Butyl Acetate=1):	No data.
Solubility in Water:	No data.
Percent Volatile:	No data.
Heat Value:	No data.
Particle Size:	No data.
Corrosion Rate:	No data.
pH:	2.4
Appearance and Odor:	No data available.

10. Stability and Reactivity

Stability:	Unstable [] Stable [X]
Conditions To Avoid - Instability:	heat, flames and sparks freezing
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
Hazardous Decomposition Or Byproducts:	carbon dioxide carbon monoxide reacts with metals to form hydrogen chloride gas
Possibility of Hazardous Reactions:	Will occur [] Will not occur [X]
Conditions To Avoid - Hazardous Reactions:	No data available.

11. Toxicological Information

:	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);

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Chronic Toxicological Effects: Investigated as a mutagen and reproductive effector.
 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/Other Information: No data available.

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

12. Ecological Information

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

13. Disposal Considerations

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

14. Transport Information

LAND TRANSPORT (US DOT)

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

LAND TRANSPORT (European ADR/RID)

ADR/RID Shipping Name: Acetic acid, glacial
UN Number: 2789
Packing Group: II

AIR TRANSPORT (ICAO/IATA)

ICAO/IATA Shipping Name: Acetic acid, glacial
UN Number: 2789
Packing Group: II
IATA Classification: 8 (3)

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

15. Regulatory Information

European Community Hazard Symbol codes: C: Corrosive

European Community Risk and Safety Phrases

- R10 - Flammable.
- R35 - Causes severe burns.
- S23 - Do not breathe vapour.
- S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible.)

US EPA SARA Title III

Hazardous Components (Chemical Name)	CAS #	Sec.302 (EHS)	Sec.304 RQ	Sec.313 (TRI)	Sec.110
1. Acetic acid	64-19-7	No	Yes 5000 LB	No	No

US EPA CAA, CWA, TSCA

Hazardous Components (Chemical Name)	CAS #	EPA CAA	EPA CWA NPDES	EPA TSCA	HPV/LPV
1. Acetic acid	64-19-7	HAP, ODC ()	No	Inventory	

16. Other Information

Company Policy or Disclaimer

For research use only, not for human or veterinary clinical use.
 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.

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TBA Sodium Hydroxide

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

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Supersedes Revision: 05/15/2009
Date Created: 11/02/2006

1. Product and Company Identification

Product Code: 10009201
Product Name: TBA Sodium Hydroxide
Manufacturer Information
Company Name: Cayman Chemical Company
Emergency Contact: Cayman Chemical Company (800)364-9897
Information: Cayman Chemical Company (734)971-3335

2. Hazards Identification

Emergency Overview: Corrosive.
Avoid contact and inhalation.
Target Organ(s): Eyes, respiratory system, and skin.

Route(s) of Entry: Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? Yes Other: Injection

Health Hazards (Acute and Chronic): Causes severe burns.
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.
The toxicological properties of this product have not been fully evaluated.

Signs and Symptoms Of Exposure: 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.

3. Composition/Information on Ingredients

Hazardous Components (Chemical Name)	CAS #	Concentration	EC#	RTECS #
1. Sodium hydroxide	1310-73-2	10.0 -50.0 %	215-185-5	WB4900000
2. Water	7732-18-5	50.0 -90.0 %	231-791-2	ZC0110000

4. First Aid Measures

Emergency and First Aid Procedures: If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.
If swallowed, 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.
In case of contact with eyes, hold eyelids apart and flush eyes with plenty of water for at least 20 minutes. Have eyes examined and tested by medical personnel.
In case of skin contact, immediately wash skin with soap and plenty of water for at least 20 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

5. Fire Fighting Measures

Flash Pt: No data.
Explosive Limits: LEL: No data. UEL: No data.
Special Fire Fighting Procedures: 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.

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Percent Volatile: No data.
Heat Value: No data.
Particle Size: No data.
Corrosion Rate: No data.
pH: No data.
Appearance and Odor: No data available.

10. Stability and Reactivity

Stability: Unstable [] Stable [X]
Conditions To Avoid - Instability: No data available.
Incompatibility - Materials To Avoid: acids
flammable materials
metals
nitromethane
organic materials
strong oxidizing agents
Hazardous Decomposition Or Byproducts: sodium
sodium oxides
Possibility of Hazardous Reactions: Will occur [] Will not occur [X]
Conditions To Avoid - Hazardous Reactions: No data available.

11. Toxicological Information

: The toxicological effects of this product have not been thoroughly studied.

Chronic Toxicological Effects: Sodium hydroxide - Toxicity Data: Oral LDLo (rabbit): 500 mg/kg; Irritation Data: Eyes (rabbit): 50 µg (24h) severe; Skin (rabbit) 500mg (24h) severe;
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/Other Information: No data available.
Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

12. Ecological Information

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

13. Disposal Considerations

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

14. Transport Information

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

LAND TRANSPORT (European ADR/RID)
ADR/RID Shipping Name Sodium hydroxide solution
UN Number: 1824
Packing Group: II

AIR TRANSPORT (ICAO/IATA)
ICAO/IATA Shipping Name Sodium hydroxide solution

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TBA Sodium Hydroxide

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UN Number: 1824
Packing Group: II
IATA Classification: 8
Additional Transport Information: Transport in accordance with local, state, and federal regulations.

15. Regulatory Information

European Community Hazard Symbol codes C: Corrosive

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.)

US EPA SARA Title III

Hazardous Components (Chemical Name)	CAS #	Sec.302 (EHS)	Sec.304 RQ	Sec.313 (TRI)	Sec.110
1. Sodium hydroxide	1310-73-2	No	Yes 1000 LB	No	No
2. Water	7732-18-5	No	No	No	No

US EPA CAA, CWA, TSCA

Hazardous Components (Chemical Name)	CAS #	EPA CAA	EPA CWA NPDES	EPA TSCA	HPV/LPV
1. Sodium hydroxide	1310-73-2	HAP, ODC ()	No	Inventory	
2. Water	7732-18-5	HAP, ODC ()	No	Inventory	

16. Other Information

Company Policy or Disclaimer

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N.A.=Not available, N.P.=Not applicable, N.D.=Not determined, N.E.=Not established, N.R.=Not required

MATERIAL SAFETY DATA SHEET

TBA Malondialdehyde Standard

Page: 1

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

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Date Created: 11/02/2006

1. Product and Company Identification

Product Code: 10009202
Product Name: TBA Malondialdehyde Standard
Manufacturer Information
Company Name: Cayman Chemical Company
Emergency Contact: Cayman Chemical Company (800)364-9897
Information: Cayman Chemical Company (734)971-3335

2. Hazards Identification

Emergency Overview: Avoid contact and inhalation.
Route(s) of Entry: Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? Yes Other: Injection
Health Hazards (Acute and Chronic): Material may be irritating to the mucous membranes and upper respiratory tract.
May be harmful by inhalation, ingestion, or skin absorption.
May cause eye, skin, or respiratory system irritation.
The toxicological properties of this product have not been fully evaluated.
Signs and Symptoms Of Exposure: No data available.

3. Composition/Information on Ingredients

Hazardous Components (Chemical Name)	CAS #	Concentration	EC#	RTECS #
1. Malonaldehyde bis(dimethylacetal)	102-52-3	0.009 %	203-037-2	NA
2. Water	7732-18-5	99.991 %	231-791-2	ZC0110000

4. First Aid Measures

Emergency and First Aid Procedures: If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.
If swallowed, 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.
In case of contact with eyes, hold eyelids apart and flush eyes with plenty of water for at least 20 minutes. Have eyes examined and tested by medical personnel.
In case of skin contact, immediately wash skin with soap and plenty of water for at least 20 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

5. Fire Fighting Measures

Flash Pt: No data.
Explosive Limits: LEL: No data. UEL: No data.
Special Fire Fighting Procedures: 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.
Unusual Fire and Explosion Hazards: No data available.
Hazardous Combustion Products: No data available.
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.

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TBA Malondialdehyde Standard

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6. Accidental Release Measures

Steps To Be Taken In Case Material Is Released Or Spilled: Avoid release into the environment.
 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).
 Absorb spill with inert material (e.g. dry sand or earth), then place in a proper chemical waste container.

7. Handling and Storage

Hazard Label Information: Avoid contact with skin and eyes. Do not reuse this container. Use with adequate ventilation.
 Wash thoroughly after handling

Precautions To Be Taken in Handling: Avoid breathing (dust, vapor, mist, gas).
 Avoid prolonged or repeated exposure.

Precautions To Be Taken in Storing: Keep tightly closed.
 Store at correct temperature.

8. Exposure Controls/Personal Protection

Hazardous Components (Chemical Name)	CAS #	OSHA PEL	ACGIH TLV	Other Limits
1. Malonaldehyde bis(dimethylacetal)	102-52-3	No data.	No data.	No data.
2. Water	7732-18-5	No data.	No data.	No data.

Protective Equipment Summary - Hazard Label Information: Compatible chemical-resistant gloves Eye wash station in work area Lab coat Safety glasses Safety shower in work area Vent Hood

Respiratory Equipment (Specify Type): NIOSH approved respirator, as conditions warrant.

Eye Protection: Safety glasses

Protective Gloves: Compatible chemical-resistant gloves

Other Protective Clothing: Lab coat

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

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.

9. Physical and Chemical Properties

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

Melting Point: No data.

Boiling Point: No data.

Autoignition Pt: No data.

Flash Pt: No data.

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

Specific Gravity (Water = 1): No data.

Bulk density: No data.

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

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

Evaporation Rate (vs Butyl Acetate=1): No data.

Solubility in Water: No data.

Percent Volatile: No data.

Heat Value: No data.

Particle Size: No data.

Corrosion Rate: No data.

pH: No data.

MATERIAL SAFETY DATA SHEET
TBA Malondialdehyde Standard

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 Supercedes Revision: 05/15/2009

Appearance and Odor: No data available.

10. Stability and Reactivity

Stability: Unstable [] Stable [X]
Conditions To Avoid - Instability: No data available.
Incompatibility - Materials To Avoid: No data available.
Hazardous Decomposition Or Byproducts: No data available.
Possibility of Hazardous Reactions: Will occur [] Will not occur [X]
Conditions To Avoid - Hazardous Reactions: No data available.

11. Toxicological Information

: The toxicological effects of this product have not been thoroughly studied.
Carcinogenicity/Other Information: No data available.
Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

12. Ecological Information

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

13. Disposal Considerations

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

14. Transport Information

LAND TRANSPORT (US DOT)
DOT Proper Shipping Name Not dangerous goods.
LAND TRANSPORT (European ADR/RID)
ADR/RID Shipping Name Not dangerous goods.
AIR TRANSPORT (ICAO/IATA)
ICAO/IATA Shipping Name Not dangerous goods.
Additional Transport Information: Transport in accordance with local, state, and federal regulations.

15. Regulatory Information

European Community Hazard Symbol codes
 No data available.
European Community Risk and Safety Phrases
 S24/25 - Avoid contact with skin and eyes.
 S37/39 - Wear suitable gloves and eye/face protection.

US EPA SARA Title III

Hazardous Components (Chemical Name)	CAS #	Sec.302 (EHS)	Sec.304 RQ	Sec.313 (TRI)	Sec.110
1. Malonaldehyde bis(dimethylacetal)	102-52-3	No	No	No	No
2. Water	7732-18-5	No	No	No	No

US EPA CAA, CWA, TSCA

Hazardous Components (Chemical Name)	CAS #	EPA CAA	EPA CWA NPDES	EPA TSCA	HPV/LPV
1. Malonaldehyde bis(dimethylacetal)	102-52-3	HAP, ODC ()	No	Inventory	
2. Water	7732-18-5	HAP, ODC ()	No	Inventory	

16. Other Information

Company Policy or Disclaimer

For research use only, not for human or veterinary clinical use.
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.

N.A.=Not available, N.P.=Not applicable, N.D.=Not determined, N.E.=Not established, N.R.=Not required

MATERIAL SAFETY DATA SHEET

TBA SDS Solution

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

Printed: 06/18/2010
Revision: 06/15/2010
Supercedes Revision: 05/15/2009
Date Created: 11/02/2006

1. Product and Company Identification

Product Code: 10009203
Product Name: TBA SDS Solution
Manufacturer Information
Company Name: Cayman Chemical Company
Emergency Contact: Cayman Chemical Company (800)364-9897
Information: Cayman Chemical Company (734)971-3335

2. Hazards Identification

Emergency Overview: Avoid contact and inhalation.
Target Organ(s): Lungs.

Route(s) of Entry: Inhalation? Yes Skin? Yes Eyes? Yes Ingestion? Yes Other: Injection

Health Hazards (Acute and Chronic): Material may be irritating to the mucous membranes and upper respiratory tract.
May be harmful by inhalation, ingestion, or skin absorption.
May cause eye, skin, or respiratory system irritation.
The toxicological properties of this product have not been fully evaluated.

Signs and Symptoms Of Exposure: Chronic skin exposure may cause redness, drying, cracking, and dermatitis.
Exposure may cause sensitization.

3. Composition/Information on Ingredients

Hazardous Components (Chemical Name)	CAS #	Concentration	EC#	RTECS #
1. Sodium Dodecyl Sulfate	151-21-3	1.0 -15.0 %	205-788-1	WT1050000
2. Water	7732-18-5	85.0 -99.0 %	231-791-2	ZC0110000

4. First Aid Measures

Emergency and First Aid Procedures: If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.
If swallowed, 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.
In case of contact with eyes, hold eyelids apart and flush eyes with plenty of water for at least 20 minutes. Have eyes examined and tested by medical personnel.
In case of skin contact, immediately wash skin with soap and plenty of water for at least 20 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

5. Fire Fighting Measures

Flash Pt: No data.

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

Special Fire Fighting Procedures: 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.

Unusual Fire and Explosion Hazards: No data available.

Hazardous Combustion Products: No data available.

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.

MATERIAL SAFETY DATA SHEET

TBA SDS Solution

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Supercedes Revision: 05/15/2009

6. Accidental Release Measures

Steps To Be Taken In Case Material Is Released Or Spilled: Avoid release into the environment.
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).
Absorb spill with inert material (e.g. dry sand or earth), then place in a proper chemical waste container.

7. Handling and Storage

Hazard Label Information: Avoid contact with skin and eyes. Do not reuse this container. Use with adequate ventilation.
Wash thoroughly after handling

Precautions To Be Taken in Handling: Avoid breathing (dust, vapor, mist, gas).
Avoid prolonged or repeated exposure.

Precautions To Be Taken in Storing: Keep tightly closed.
Store at correct temperature.

8. Exposure Controls/Personal Protection

Hazardous Components (Chemical Name)	CAS #	OSHA PEL	ACGIH TLV	Other Limits
1. Sodium Dodecyl Sulfate	151-21-3	No data.	No data.	No data.
2. Water	7732-18-5	No data.	No data.	No data.

Protective Equipment Summary - Hazard Label Information: Compatible chemical-resistant gloves Eye wash station in work area Lab coat Safety glasses Safety shower in work area Vent Hood

Respiratory Equipment (Specify Type): NIOSH approved respirator, as conditions warrant.

Eye Protection: Safety glasses

Protective Gloves: Compatible chemical-resistant gloves

Other Protective Clothing: Lab coat

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

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.

9. Physical and Chemical Properties

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

Melting Point: No data.

Boiling Point: No data.

Autoignition Pt: No data.

Flash Pt: No data.

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

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

Evaporation Rate (vs Butyl Acetate=1): No data.

Solubility in Water: No data.

Percent Volatile: No data.

Heat Value: No data.

Particle Size: No data.

Corrosion Rate: No data.

pH: No data.

MATERIAL SAFETY DATA SHEET

TBA SDS Solution

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Appearance and Odor: No data available.

10. Stability and Reactivity

Stability: Unstable [] Stable [X]
Conditions To Avoid - Instability: No data available.
Incompatibility - Materials To Avoid: oxidizing agents
Hazardous Decomposition Or Byproducts: carbon dioxide
 carbon monoxide
 sulfur oxides
Possibility of Hazardous Reactions: Will occur [] Will not occur [X]
Conditions To Avoid - Hazardous Reactions: No data available.

11. Toxicological Information

: The toxicological effects of this product have not been thoroughly studied.
Carcinogenicity/Other Information: No data available.
Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

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US EPA SARA Title III

Hazardous Components (Chemical Name)	CAS #	Sec.302 (EHS)	Sec.304 RQ	Sec.313 (TRI)	Sec.110
1. Sodium Dodecyl Sulfate	151-21-3	No	No	No	No
2. Water	7732-18-5	No	No	No	No

US EPA CAA, CWA, TSCA

Hazardous Components (Chemical Name)	CAS #	EPA CAA	EPA CWA NPDES	EPA TSCA	HPV/LPV
1. Sodium Dodecyl Sulfate	151-21-3	HAP, ODC ()	No	Inventory	
2. Water	7732-18-5	HAP, ODC ()	No	Inventory	

16. Other Information

Company Policy or Disclaimer

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