

Safety Data Sheet SIB1989.0 Date of issue: 12/31/2014 Version: 1.0

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

#### **Product identifier**

Product form : Substance Physical state : Liquid

Substance name : t-BUTYLTRIMETHOXYSILANE

Product code · SIB1989 0 Formula : C7H18O3Si

: TRIMETHOXYSILYL-t-BUTANE Synonyms : ORGANOMETHOXYSILANE Chemical family

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

: Chemical intermediate Use of the substance/mixture

For research use only

#### Details of the supplier of the safety data sheet

#### **GELEST, INC.**

11 East Steel Road Morrisville, PA 19067

USA

T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST

info@gelest.com - www.gelest.com

#### **Emergency telephone number**

**Emergency number** : CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

### **SECTION 2: Hazards identification**

#### Classification of the substance or mixture

#### Classification (GHS-US)

Flam. Liq. 3 H226 Skin Irrit. 2 H315 Eve Irrit, 2A H319

Full text of H-phrases: see section 16

#### 2.2. Label elements

## **GHS-US** labeling

Hazard pictograms (GHS-US)





GHS02

GHS07

Signal word (GHS-US) : Warning

Hazard statements (GHS-US) H226 - Flammable liquid and vapor

H315 - Causes skin irritation H319 - Causes serious eye irritation

: P280 - Wear eye protection, protective gloves, protective clothing Precautionary statements (GHS-US)

P210 - Keep away from heat, open flames, sparks. - No smoking

P233 - Keep container tightly closed

P264 - Wash hands thoroughly after handling

P240 - Ground/bond container and receiving equipment P241 - Use explosion-proof electrical equipment

P242 - Use only non-sparking tools

P243 - Take precautionary measures against static discharge

P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse

skin with water/shower

P332+P313 - If skin irritation occurs: Get medical advice/attention

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove

contact lenses, if present and easy to do. Continue rinsing P337+P313 - If eye irritation persists: Get medical advice/attention P362 - Take off contaminated clothing and wash before reuse

P370+P378 - In case of fire: Use water spray, foam, carbon dioxide, dry chemical to extinguish

P403+P235 - Keep in a cool place

P501 - Dispose of contents/container to licensed waste disposal facility.

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#### 2.3. Other hazards

No additional information available

#### **Unknown acute toxicity (GHS-US)**

No data available

#### SECTION 3: Composition/information on ingredients

#### **Substance**

: Mono-constituent Substance type

: t-BUTYLTRIMETHOXYSILANE Name

CAS No : 18395-29-4

Name	Product identifier	%	Classification (GHS-US)
t-Butyltrimethoxysilane	(CAS No) 18395-29-4	> 95	Flam. Liq. 3, H226 Skin Irrit. 2, H315 Eye Irrit. 2A, H319
Methanol	(CAS No) 67-56-1		Flam. Liq. 2, H225 Acute Tox. 3 (Oral), H301 Acute Tox. 3 (Dermal), H311 Acute Tox. 3 (Inhalation:vapour), H331 Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT SE 1, H370 STOT SE 3, H336

#### **Mixture**

Not applicable

## **SECTION 4: First aid measures**

#### **Description of first aid measures**

First-aid measures general

- Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.
- First-aid measures after inhalation
- Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.
- First-aid measures after skin contact
  - Wash with plenty of soap and water.
- First-aid measures after eye contact
- Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.
- First-aid measures after ingestion
- : Never give anything by mouth to an unconscious person. Get medical advice/attention.

#### Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation

May cause irritation to the respiratory tract. Overexposure may cause: Coughing. Headache. Nausea

Symptoms/injuries after skin contact

Causes skin irritation.

Symptoms/injuries after eye contact

: Causes serious eye irritation.

Symptoms/injuries after ingestion

Oral toxicity is associated with methanol, the solvent and a hydrolysis product which causes

nausea, vomiting, headache, visual effects including blindness.

Chronic symptoms

On contact with water this compound liberates methanol which is known to have a chronic effect on the central nervous system. Methanol may effect the central nervous system resulting in persistent or recurring headaches or impaired vision.

## Indication of any immediate medical attention and special treatment needed

NOTE TO PHYSICIAN: This product reacts with water in the acid contents of the stomach to form methanol. The combination of visual disturbances, metabolic acidosis and formic acid in urine is evidence of methanol poisoning. The therapeutic intravenous administration of ethanol (10 mls/hour) allows methanol to be preferentially oxidized and reduces production of methanol metabolites. Acidosis must be treated with intravenous administration of sodium bicarbonate and methanol elimination may be increased by hemodialysis, as indicated. Treatment should be based on blood methanol levels and acid-base balance.

## **SECTION 5: Firefighting measures**

#### **Extinguishing media**

Suitable extinguishing media : Water spray. Foam. Carbon dioxide. Dry chemical.

#### Special hazards arising from the substance or mixture

Fire hazard

: Flammable liquid and vapor. Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

: May form flammable/explosive vapor-air mixture. Explosion hazard

## Advice for firefighters

Firefighting instructions : Use water spray to cool exposed surfaces. Exercise caution when fighting any chemical fire.

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Protection during firefighting

: Do not enter fire area without proper protective equipment, including respiratory protection. Avoid all eye and skin contact and do not breathe vapor and mist.

#### SECTION 6: Accidental release measures

#### Personal precautions, protective equipment and emergency procedures

General measures : Remove ignition sources. Use special care to avoid static electric charges.

#### 6.1.1. For non-emergency personnel

Emergency procedures : Evacuate unnecessary personnel.

#### 6.1.2. For emergency responders

: Equip cleanup crew with proper protection. Protective equipment

#### **Environmental precautions** 6.2.

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

## Methods and material for containment and cleaning up

Methods for cleaning up : Clean up any spills as soon as possible, using an absorbent material to collect it. Sweep or

shovel spills into appropriate container for disposal. Use only non-sparking tools.

#### Reference to other sections

See Heading 8. Exposure controls and personal protection.

#### **SECTION 7: Handling and storage**

#### Precautions for safe handling

Additional hazards when processed

: Keep away from heat, open flames, sparks. - No smoking. Handle empty containers with care

because residual vapors are flammable.

Precautions for safe handling

: Avoid all eye and skin contact and do not breathe vapor and mist. Provide good ventilation in process area to prevent accumulation of vapors. Containers and transfer lines require grounding during use. Take precautionary measures against static discharge. Use only non-

sparking tools.

Hygiene measures

Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse.

#### Conditions for safe storage, including any incompatibilities

Technical measures

Proper grounding procedures to avoid static electricity should be followed.

Storage conditions

Storage area

Keep container tightly closed.

Incompatible materials

: Moisture. Water. : Store in a well-ventilated place. Store away from heat.

#### Specific end use(s)

No additional information available

## SECTION 8: Exposure controls/personal protection

#### **Control parameters**

Methanol (67-56-1)		
USA ACGIH	ACGIH TWA (ppm)	200 ppm
USA ACGIH	ACGIH STEL (ppm)	250 ppm
USA NIOSH	NIOSH REL (TWA) (mg/m³)	260 mg/m³
USA NIOSH	NIOSH REL (TWA) (ppm)	200 ppm
USA NIOSH	NIOSH REL (STEL) (mg/m³)	325 mg/m³
USA NIOSH	NIOSH REL (STEL) (ppm)	250 ppm
USA OSHA	OSHA PEL (TWA) (mg/m³)	260 mg/m³
USA OSHA	OSHA PEL (TWA) (ppm)	200 ppm
USA IDLH	US IDLH (ppm)	6000 ppm

#### **Exposure controls**

Appropriate engineering controls

: Provide local exhaust or general room ventilation.

Personal protective equipment

: Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Hand protection

: Neoprene or nitrile rubber gloves.

Eye protection

: Chemical goggles. Contact lenses should not be worn.

Skin and body protection

: Wear suitable protective clothing.

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Respiratory protection

: Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified organic vapor (black cartridge) respirator.

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

Physical state : Liquid
Appearance : Clear liquid.
Molecular mass : 178.3 g/mol
Color : Straw.
Odor : Mild.

Odor threshold : No data available

Refractive index : 1.3941

pH : No data available Relative evaporation rate (butyl acetate=1) : No data available Melting point : No data available

Freezing point : < 0 °C Boiling point : 140 - 141 °C Flash point : 33 °C

Auto-ignition temperature : No data available Decomposition temperature : No data available

Flammability (solid, gas) : Flammable liquid and vapor

Vapor pressure : No data available

Relative vapor density at 20 °C : > 1
Relative density : 0.903

Solubility : Insoluble in water. Reacts with water.

Log Pow : No data available
Log Kow : No data available
Viscosity, kinematic : No data available
Viscosity, dynamic : No data available
Explosive properties : No data available
Oxidizing properties : No data available
Explosive limits : No data available

#### 9.2. Other information

No additional information available

#### **SECTION 10: Stability and reactivity**

#### 10.1. Reactivity

No additional information available

#### 10.2. Chemical stability

Stable in sealed containers.

#### 10.3. Possibility of hazardous reactions

Reacts with water and moisture in air, liberating methanol.

## 10.4. Conditions to avoid

Heat. Open flame. Sparks.

#### 10.5. Incompatible materials

Moisture. Water.

## 10.6. Hazardous decomposition products

Methanol. Organic acid vapors.

### **SECTION 11: Toxicological information**

## 11.1. Information on toxicological effects

Acute toxicity : Not classified

Methanol (67-56-1)		
LD50 oral rat	6200 mg/kg	
LD50 dermal rabbit	20 g/kg	
LC50 inhalation rat (ppm)	22500 ppm (Exposure time: 8 h)	
ATE US (oral)	100.000 mg/kg body weight	

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Methanol (67-56-1)	
ATE US (dermal)	300.000 mg/kg body weight
ATE US (vapors)	3.000 mg/l/4h
Skin corrosion/irritation	: Causes skin irritation.
Serious eye damage/irritation	: Causes serious eye irritation.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Symptoms/injuries after inhalation	: May cause irritation to the respiratory tract. Overexposure may cause: Coughing. Headache. Nausea.
Symptoms/injuries after skin contact	: Causes skin irritation.
Symptoms/injuries after eye contact	: Causes serious eye irritation.
Symptoms/injuries after ingestion	: Oral toxicity is associated with methanol, the solvent and a hydrolysis product which causes nausea, vomiting, headache, visual effects including blindness.
Chronic symptoms	: On contact with water this compound liberates methanol which is known to have a chronic effect on the central nervous system. Methanol may effect the central nervous system resulting in persistent or recurring headaches or impaired vision.

## **SECTION 12: Ecological information**

#### 12.1. Toxicity

Methanol (67-56-1)	
LC50 fish 1	28200 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
LC50 fish 2	> 100 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])

### 12.2. Persistence and degradability

No additional information available

## 12.3. Bioaccumulative potential

Methanol (67-56-1)	
BCF fish 1	< 10
Log Pow	-0.77

### 12.4. Mobility in soil

No additional information available

## 12.5. Other adverse effects

Other adverse effects : This substance may be hazardous to the environment.

Effect on ozone layer : No additional information available

Effect on the global warming : No known ecological damage caused by this product.

## **SECTION 13: Disposal considerations**

## 13.1. Waste treatment methods

Waste disposal recommendations : May be incinerated. Dispose in a safe manner in accordance with local/national regulations.

Dispose of contents/container to licensed waste disposal facility.

Ecology - waste materials : Avoid release to the environment.

## **SECTION 14: Transport information**

#### 14.1. UN number

UN-No.(DOT) : 1993 DOT NA no. UN1993

#### 14.2. UN proper shipping name

Proper Shipping Name (DOT) : Flammable liquids, n.o.s.

(t-BUTYLTRIMETHOXYSILANE)

Department of Transportation (DOT) Hazard : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120

Classes

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Hazard labels (DOT) : 3 - Flammable liquid



**DOT Symbols** : G - Identifies PSN requiring a technical name

Packing group (DOT) : III - Minor Danger

DOT Packaging Exceptions (49 CFR 173.xxx) : 150 DOT Packaging Non Bulk (49 CFR 173.xxx) : 203 DOT Packaging Bulk (49 CFR 173.xxx) : 242

#### 14.3. Additional information

Other information : No supplementary information available.

#### Transport by sea

**DOT Vessel Stowage Location** : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a

passenger vessel.

#### Air transport

DOT Quantity Limitations Passenger aircraft/rail : 60 L

(49 CFR 173.27)

DOT Quantity Limitations Cargo aircraft only (49 : 220 L

CFR 175.75)

#### **SECTION 15: Regulatory information**

#### 15.1. US Federal regulations

### t-BUTYLTRIMETHOXYSILANE (18395-29-4)

TSCA Exemption/Exclusion

CAUTION: This material is supplied for research and development purposes subject to the R&D exemption under TSCA, 40 CFR 720.36, and must meet the requirements of the exemption, including supervision by a "technically qualified individual" as defined by 40 CFR 720.3(ee). The use of this material for "commercial purposes" as defined by 40 CFR 720.3(r) is not permitted in the United States

#### t-Butyltrimethoxysilane (18395-29-4)

Not listed on the United States TSCA (Toxic Substances Control Act) inventory

#### Methanol (67-56-1)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Listed on United States SARA Section 313

SARA Section 313 - Emission Reporting 1.0 %

#### 15.2. International regulations

#### Methanol (67-56-1)

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on the Canadian DSL (Domestic Sustances List)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Japanese Poisonous and Deleterious Substances Control Law

Listed on the Canadian IDL (Ingredient Disclosure List)

## 15.3. US State regulations

t-BUTYLTRIMETHOXYSILANE(18395-29-4)		
U.S California - Proposition 65 - Carcinogens List	No	
U.S California - Proposition 65 - Developmental Toxicity	No	
U.S California - Proposition 65 - Reproductive Toxicity - Female	No	
U.S California - Proposition 65 - Reproductive Toxicity - Male	No	

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t-Butyltrimethoxysilane (	(18395-29-4)			
U.S California - Proposition 65 - Carcinogens List	U.S California - Proposition 65 - Developmental Toxicity	U.S California - Proposition 65 - Reproductive Toxicity - Female	U.S California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
No	No	No	No	
Methanol (67-56-1)		<del>'</del>		
U.S California - Proposition 65 - Carcinogens List	U.S California - Proposition 65 - Developmental Toxicity	U.S California - Proposition 65 - Reproductive Toxicity - Female	U.S California - Proposition 65 - Reproductive Toxicity - Male	No significance risk level (NSRL)
No	Yes	No	No	

#### Methanol (67-56-1)

- U.S. California Proposition 65 Maximum Allowable Dose Levels (MADL)
- U.S. California SCAQMD Toxic Air Contaminants Non-Cancer Acute
- U.S. California SCAQMD Toxic Air Contaminants Non-Cancer Chronic
- U.S. California Toxic Air Contaminant List (AB 1807, AB 2728)
- U.S. Colorado Hazardous Wastes Discarded Chemical Products, Off-Specification Species, Container and Spill Residues
- U.S. Connecticut Hazardous Air Pollutants HLVs (30 min)
- U.S. Connecticut Hazardous Air Pollutants HLVs (8 hr)
- U.S. Connecticut Volatile Substances
- U.S. Delaware Pollutant Discharge Requirements Reportable Quantities
- U.S. Idaho Non-Carcinogenic Toxic Air Pollutants Acceptable Ambient Concentrations
- U.S. Idaho Non-Carcinogenic Toxic Air Pollutants Emission Levels (ELs)
- U.S. Idaho Occupational Exposure Limits TWAs
- U.S. Illinois Toxic Air Contaminants
- U.S. Louisiana Reportable Quantity List for Pollutants
- U.S. Maine Air Pollutants Hazardous Air Pollutants
- U.S. Maine Chemicals of High Concern
- U.S. Massachusetts Allowable Ambient Limits (AALs)
  U.S. Massachusetts Allowable Threshold Concentrations (ATCs)
- U.S. Massachusetts Oil & Hazardous Material List Groundwater Reportable Concentration Reporting Category 1
- U.S. Massachusetts Oil & Hazardous Material List Groundwater Reportable Concentration Reporting Category 2
- U.S. Massachusetts Oil & Hazardous Material List Reportable Quantity
- U.S. Massachusetts Oil & Hazardous Material List Soil Reportable Concentration Reporting Category 1
- U.S. Massachusetts Oil & Hazardous Material List Soil Reportable Concentration Reporting Category 2
- U.S. Massachusetts Right To Know List
- U.S. Massachusetts Threshold Effects Exposure Limits (TELs)
- U.S. Massachusetts Toxics Use Reduction Act
- U.S. Michigan Occupational Exposure Limits Skin Designations
- U.S. Michigan Occupational Exposure Limits STELs U.S. Michigan Occupational Exposure Limits TWAs
- U.S. Michigan Polluting Materials List
- U.S. Minnesota Chemicals of High Concern
- U.S. Minnesota Groundwater Health Risk Limits
- U.S. Minnesota Hazardous Substance List
- U.S. Minnesota Permissible Exposure Limits Skin Designations
- U.S. Minnesota Permissible Exposure Limits STELs
- U.S. Minnesota Permissible Exposure Limits TWAs
- U.S. New Hampshire Regulated Toxic Air Pollutants Ambient Air Levels (AALs) 24-Hour
- U.S. New Hampshire Regulated Toxic Air Pollutants Ambient Air Levels (AALs) Annual
- U.S. New Jersey Discharge Prevention List of Hazardous Substances U.S. New Jersey Environmental Hazardous Substances List
- U.S. New Jersey Right to Know Hazardous Substance List
- U.S. New Jersey Special Health Hazards Substances List
- U.S. New Jersey Water Quality Ground Water Quality Criteria
- U.S. New Jersey Water Quality Practical Quantitation Levels (PQLs)
- U.S. New York Occupational Exposure Limits Skin Designations
- U.S. New York Occupational Exposure Limits TWAs
- U.S. New York Reporting of Releases Part 597 List of Hazardous Substances
- U.S. North Dakota Air Pollutants Guideline Concentrations 1-Hour
- U.S. North Dakota Air Pollutants Guideline Concentrations 8-Hour
- U.S. North Dakota Hazardous Wastes Discarded Chemical Products, Off-Specification Species, Container and Spill Residues
- U.S. Oregon Permissible Exposure Limits TWAs
- U.S. Pennsylvania RTK (Right to Know) Environmental Hazard List
- U.S. Pennsylvania RTK (Right to Know) List
- U.S. Rhode Island Air Toxics Acceptable Ambient Levels 1-Hour
- U.S. Rhode Island Air Toxics Acceptable Ambient Levels Annual
- U.S. South Carolina Toxic Air Pollutants Maximum Allowable Concentrations U.S. - South Carolina - Toxic Air Pollutants - Pollutant Categories
- U.S. Tennessee Occupational Exposure Limits Skin Designations
- U.S. Tennessee Occupational Exposure Limits STELs
- U.S. Tennessee Occupational Exposure Limits TWAs

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#### Methanol (67-56-1)

U.S. - Texas - Effects Screening Levels - Long Term

U.S. - Texas - Effects Screening Levels - Short Term

U.S. - Vermont - Permissible Exposure Limits - Skin Designations

U.S. - Vermont - Permissible Exposure Limits - STELs

U.S. - Vermont - Permissible Exposure Limits - TWAs

U.S. - Washington - Dangerous Waste - Discarded Chemical Products List

U.S. - Washington - Permissible Exposure Limits - Skin Designations

U.S. - Washington - Permissible Exposure Limits - STELs

U.S. - Washington - Permissible Exposure Limits - TWAs

## **SECTION 16: Other information**

Abbreviations and acronyms

Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemcial Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development.

## Full text of H-ph

ext of H-phrases::			
Acute Tox. 3 (Dermal)	Acute toxicity (dermal) Category 3		
Acute Tox. 3 (Inhalation:vapour)	Acute toxicity (inhalation:vapor) Category 3		
Acute Tox. 3 (Oral)	Acute toxicity (oral) Category 3		
Eye Dam. 1	Serious eye damage/eye irritation Category 1		
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A		
Flam. Liq. 2	Flammable liquids Category 2		
Flam. Liq. 3	Flammable liquids Category 3		
Skin Irrit. 2	Skin corrosion/irritation Category 2		
STOT SE 1	Specific target organ toxicity (single exposure) Category 1		
STOT SE 3	Specific target organ toxicity (single exposure) Category 3		
H225	Highly flammable liquid and vapor		
H226	Flammable liquid and vapor		
H301	Toxic if swallowed		
H311	Toxic in contact with skin		
H315	Causes skin irritation		
H318	Causes serious eye damage		
H319	Causes serious eye irritation		
H331	Toxic if inhaled		
H336	May cause drowsiness or dizziness		
H370	Causes damage to organs		

## **HMIS III Rating**

Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is

Flammability : 2 Moderate Hazard Physical : 1 Slight Hazard

Prepared by safety and environmental affairs.

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SDS US (GHS HazCom 2012) - Custom

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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