METHYLTRIS(METHYLETHYLKETOXIMINO)SILANE, 92%

Safety Data Sheet SIM6590.0

Issue date: 01/07/2015 Revision date: 04/26/2022 Version: 1.2

SECTION 1: Identification

1.1. Identification

Product name : METHYLTRIS(METHYLETHYLKETOXIMINO)SILANE, 92%

Product code : SIM6590.0

Product form : Substance

Physical state : Liquid

Formula : C13H27N3O3Si

Synonyms : 2-BUTANONE, O,O',O''-(METHYLSILYLIDYNE)TRIOXINE; METHYLTRIS(1-METHYLPROPYLIDENEAMINOOXY) SILANE; 2-BUTANONE, 2,2',2''-[O,O',O''-(METHYLSILYLIDYNE)TRIOXIME]; METHYLTRIS(BUTANONEOXIME)SILANE

Chemical family : ORGANOAMINOSILANE

1.2. Recommended use and restrictions on use

Recommended use : Chemical intermediate

1.3. Supplier

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

1.4. Emergency telephone number

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

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Flammable liquids Category 4	H227 Combustible liquid
Acute toxicity (oral) Category 4	H302 Harmful if swallowed
Skin corrosion/irritation Category 2	H315 Causes skin irritation
Serious eye damage/eye irritation Category 1	H318 Causes serious eye damage
Skin sensitization, Category 1	H317 May cause an allergic skin reaction
Carcinogenicity Category 2	H351 Suspected of causing cancer

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US) :

Signal word (GHS US) : Danger

Hazard statements (GHS US) :
H227 - Combustible liquid
H302 - Harmful if swallowed
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H351 - Suspected of causing cancer

Precautionary statements (GHS US) :
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P210 - Keep away from heat, open flames, sparks. - No smoking.
P261 - Avoid breathing vapors.
P264 - Wash hands thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P272 - Contaminated work clothing must not be allowed out of the workplace.
P301+P312 - If swallowed: Call a doctor if you feel unwell.
P330 - Rinse mouth.
P302+P352 - If on skin: Wash with plenty of water.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove

contact lenses, if present and easy to do. Continue rinsing
P308+P313 - If exposed or concerned: Get medical advice/attention.
P332+P313 - If skin irritation occurs: Get medical advice/attention.
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P362+P364 - Take off contaminated clothing and wash it 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
P405 - Store locked up.
P501 - Dispose of contents/container to licensed waste disposal facility..

2.3. Hazards not otherwise classified (HNOC)

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Substance type : Multi-constituent
Name : METHYLTRIS(METHYLETHYLKETOXIMINO)SILANE, 92%
CAS-No. : 22984-54-9

Name	Product identifier	%	GHS US classification
Methyltris(methylethylketoxmino)silane	(CAS-No.) 22984-54-9	> 90	Flam. Liq. 4, H227 Skin Irrit. 2, H315 Eye Irrit. 2A, H319
Methylethylketoxime	(CAS-No.) 96-29-7	< 5	Flam. Liq. 4, H227 Acute Tox. 3 (Oral), H301 Acute Tox. 4 (Dermal), H312 Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1, H317 Carc. 1B, H350 STOT SE 1, H370 STOT SE 3, H336 STOT RE 2, H373

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. 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. Get medical advice/attention.

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.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects after inhalation : May cause irritation to the respiratory tract. Vapors from decomposition or exposure to atmospheric moisture may cause a reversible narcotic effect. Overexposure may cause coma and respiratory failure.

Symptoms/effects after skin contact : Causes skin irritation. May cause an allergic skin reaction.

Symptoms/effects after eye contact : Causes serious eye damage.

Symptoms/effects after ingestion : Harmful if swallowed. Swallowing a small quantity of this material will result in serious health hazard.

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

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

5.2. Specific hazards arising from the chemical

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

Reactivity : Contact with iron should be avoided. Contact with electrophiles such as ferric chloride can lead to a violent reaction.

5.3. Special protective equipment and precautions for fire-fighters

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

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

6.1. 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

Protective equipment : Equip cleanup crew with proper protection.

6.2. Environmental precautions

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

6.3. 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.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Keep away from heat, open flames, sparks. - No smoking.

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. Take precautionary measures against static discharge. Use only non-sparking tools.

Hygiene measures : Wash hands thoroughly after handling. Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment.

Storage conditions : Keep container tightly closed. Store in sealed containers without contacting iron or steel.

Incompatible materials : Acids. Iron. Metals. Moisture. Oxidizing agent.

Storage area : Store in a well-ventilated place. Store away from heat.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Methylethylketoxime (96-29-7)		
ACGIH	ACGIH OEL TWA [ppm]	10 ppm
AIHA	WEEL TWA [ppm]	10 ppm

8.2. Appropriate engineering controls

Appropriate engineering controls : Provide local exhaust or general room ventilation.

8.3. Individual protection measures/Personal protective equipment

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

Respiratory protection:

Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified combination organic vapor - amine gas (brown 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	:	301.46 g/mol
Color	:	Straw.
Odor	:	Mild.
Odor threshold	:	No data available
Refractive index	:	1.4548
pH	:	No data available
Relative evaporation rate (butyl acetate=1)	:	No data available
Melting point	:	No data available
Freezing point	:	-22 °C
Boiling point	:	110 – 111 °C @ 2 mm Hg
Flash point	:	90 °C
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	Combustible liquid
Vapor pressure	:	4 mm Hg @ 150°C
Relative vapor density at 20 °C	:	> 1
Relative density	:	0.982
% Volatiles	:	< 5 %
Solubility	:	Reacts with water.
Partition coefficient n-octanol/water (Log Pow)	:	No data available
Partition coefficient n-octanol/water (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
Explosion limits	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Contact with iron should be avoided. Contact with electrophiles such as ferric chloride can lead to a violent reaction.

10.2. Chemical stability

Stable in sealed containers.

10.3. Possibility of hazardous reactions

Reacts with water and moisture in air and acids liberating methylethylketoxime (MEKO).

10.4. Conditions to avoid

Open flame. Heat. Sparks.

10.5. Incompatible materials

Acids. Iron. Metals. Moisture. Oxidizing agent.

10.6. Hazardous decomposition products

Organic acid vapors. Carbon dioxide. Carbon monoxide. Methylethylketone. Methylethylketoxime. NOx. Silicon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	:	Harmful if swallowed.

Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

Methylethylketoxime (96-29-7)	
LD50 oral rat	930 mg/kg
ATE US (oral)	100 mg/kg body weight
ATE US (dermal)	1100 mg/kg body weight

Methyltris(methylethylketoxmino)silane (22984-54-9)	
LD50 oral rat	2000 – 3000 mg/kg

Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Causes serious eye damage.
Respiratory or skin sensitization : May cause an allergic skin reaction.
Germ cell mutagenicity : Not classified
In vivo and in vitro studies did not indicate mutagenicity or genotoxicity.
Carcinogenicity : Suspected of causing cancer.
The hydrolysis product, methylethylketoxime, in lifetime inhalation studies in which mice and rats were exposed 6hrs/day, 5days/week for 18 and 24 months, respectively, showed a statistical increase in liver carcinomas at exposure levels of 375ppm.
Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified
Aspiration hazard : Not classified
Potential Adverse human health effects and symptoms : Subchronic oral toxicity studies with the hydrolysis product, methylethylketoxime, indicate that ingestion may produce blood effects, reducing the blood's ability to transport oxygen (methemoglobenia and anemia.).
Symptoms/effects after inhalation : May cause irritation to the respiratory tract. Vapors from decomposition or exposure to atmospheric moisture may cause a reversible narcotic effect. Overexposure may cause coma and respiratory failure.
Symptoms/effects after skin contact : Causes skin irritation. May cause an allergic skin reaction.
Symptoms/effects after eye contact : Causes serious eye damage.
Symptoms/effects after ingestion : Harmful if swallowed. Swallowing a small quantity of this material will result in serious health hazard.

SECTION 12: Ecological information

12.1. Toxicity

Methylethylketoxime (96-29-7)	
LC50 - Fish [1]	777 – 914 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 - Crustacea [1]	750 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC50 - Fish [2]	760 mg/l (Exposure time: 96 h - Species: Poecilia reticulata [static])

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Methylethylketoxime (96-29-7)	
BCF - Fish [1]	0.5 – 5.8
Partition coefficient n-octanol/water (Log Pow)	0.65 (at 25 °C)

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 the ozone layer : No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Product/Packaging 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

DOT NA No NA1993

14.2. UN proper shipping name

Transport document description (DOT) : NA1993 Combustible liquid, n.o.s. (METHYLTRIS(METHYLETHYLKETOXIMINO)SILANE), 3, III

Proper Shipping Name (DOT) : Combustible liquid, n.o.s.
(METHYLTRIS(METHYLETHYLKETOXIMINO)SILANE)

Class (DOT) : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120

Packing group (DOT) : III - Minor Danger

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

DOT Packaging Bulk (49 CFR 173.xxx) : 241

DOT Packaging Exceptions (49 CFR 173.xxx) : 150

DOT Symbols : D - Proper shipping name for domestic use only, or to and from Canada,G - Identifies PSN requiring a technical name

14.3. Additional information

Other information : This product is Combustible as defined by the US Department of Transportation (DOT). It is regulated for transport in the US in container > 119 gallons (450 liters). The product is not regulated for transport by the IATA, ADR/RID, ADNR or the IMDG regulations. Therefore, no UN# is applicable to this product.

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 (49 CFR 173.27) : 60 L

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 220 L

SECTION 15: Regulatory information

15.1. US Federal regulations

Commercial status of components according to the United States Environmental Protection Agency's Toxic Substances Control Act (TSCA):

Name	CAS-No.	Listing	Commercial status	Flags
Methylethylketoxime	96-29-7	Present	Active	T
Methyltris(methylethylketoxmino)silane	22984-54-9	Present	Active	S

15.2. International regulations

CANADA

Methylethylketoxime (96-29-7)
Listed on the Canadian DSL (Domestic Substances List)

Methyltris(methylethylketoxmino)silane (22984-54-9)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Methylethylketoxime (96-29-7)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Methyltris(methylethylketoxmino)silane (22984-54-9)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Methylethylketoxime (96-29-7)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the NCI (Vietnam - National Chemical Inventory)

Methyltris(methylethylketoxmino)silane (22984-54-9)
Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on TECI (Thailand Existing Chemicals Inventory)
Listed on the NCI (Vietnam - National Chemical Inventory)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Full text of H-phrases::

H227	Combustible liquid
H301	Toxic if swallowed
H302	Harmful if swallowed
H312	Harmful in contact with skin
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H319	Causes serious eye irritation
H336	May cause drowsiness or dizziness
H350	May cause cancer
H351	Suspected of causing cancer
H370	Causes damage to organs
H373	May cause damage to organs through prolonged or repeated exposure

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; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor.

Hazard Rating

Health	:	2 Moderate Hazard - Temporary or minor injury may occur
Flammability	:	2 Moderate Hazard - Materials which must be moderately heated or exposed to high ambient temperatures before ignition will occur. Includes liquids having a flash point at or above 100 F but below 200 F. (Classes II & IIIA)
Physical	:	1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

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