TRIMETHYLGALLIUM

Safety Data Sheet OMGA079

Date of issue: 08/02/2017 Version: 1.0

SECTION 1: Identification

1.1. Product identifier

Product name	:	TRIMETHYLGALLIUM
Product code	:	OMGA079
Product form	:	Substance
Physical state	:	Liquid
Formula	:	C3H9Ga
Synonyms	:	TMG TRIMETHYLGALLANE
Chemical family	:	METAL ALKYL

1.2. Recommended use of the chemical and restrictions on use

Recommended use	:	Chemical intermediate For research and industrial use only

1.3. 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

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 2	H225
Pyrophoric liquids Category 1	H250
Substances and mixtures which in contact with water emit flammable gases Category 1	H260
Skin corrosion/irritation Category 1B	H314
Serious eye damage/eye irritation Category 1	H318
Specific target organ toxicity (single exposure) Category 3	H335

Full text of H statements : see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :

GHS02 GHS05 GHS07

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) :
H225 - Highly flammable liquid and vapor
H250 - Catches fire spontaneously if exposed to air
H260 - In contact with water releases flammable gases which may ignite spontaneously
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage
H335 - May cause respiratory irritation

Precautionary statements (GHS-US) :
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P310 - Immediately call a doctor
P210 - Keep away from heat, sparks, open flames. - No smoking
P222 - Do not allow contact with air
P223 - Do not allow contact with water
P231+P232 - Handle under inert gas. Protect from moisture
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
P260 - Do not breathe vapors

P264 - Wash hands thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting
P302+P334 - If on skin: Immerse in cool water/wrap with wet bandages
P303+P361+P353 - If on skin (or hair): take off immediately all contaminated clothing. rinse skin with water/shower
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P312 - Call a doctor if you feel unwell
P321 - Specific treatment (see first aid instructions on this label)
P335+P334 - Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages
P363 - Wash contaminated clothing before reuse
P370+P378 - In case of fire: Use dry chemical powder followed by sand or dolomite to extinguish
P402+P404 - Store in a dry place. Store in a closed container
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P403+P235 - Keep in a cool place
P405 - Store locked up
P422 - Store contents under nitrogen
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)

No data available

SECTION 3: Composition/Information on ingredients

3.1. Substances

Substance type : Mono-constituent
Name : TRIMETHYLGALLIUM
CAS No : 1445-79-0

Name	Product identifier	%	GHS-US classification
Trimethylgallium	(CAS No) 1445-79-0	97 - 100	Flam. Liq. 2, H225 Pyr. Liq. 1, H250 Water-react. 1, H260 Skin Corr. 1B, H314 Eye Dam. 1, H318 STOT SE 3, H335

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

3.2. Mixtures

Not applicable

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 immediate medical advice/attention.
First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Get immediate medical advice/attention.
First-aid measures after ingestion : Never give anything by mouth to an unconscious person. Immediately call a poison center or doctor/physician.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects : Causes severe skin burns and eye damage.
Symptoms/effects after inhalation : May cause respiratory irritation. Direct respiratory contact is usually not possible, but will cause burns. Inhalation of combustion products can cause irritation.
Symptoms/effects after skin contact : Causes (severe) skin burns.
Symptoms/effects after eye contact : Causes serious eye damage.
Symptoms/effects after ingestion : Presumed to be a poison.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Dry chemical powder followed by sand or dolomite.
Unsuitable extinguishing media : Water.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Pyrophoric liquid. Highly flammable liquid and vapor. Catches fire spontaneously if exposed to air.

Explosion hazard : Container explosion may occur during fire conditions. May form flammable/explosive vapor-air mixture.

5.3. Advice for firefighters

Firefighting instructions : If material is ignited, allow to burn. Exercise caution when fighting any chemical fire. In case of fire: Stop leak if safe to do so.

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.

Other information : PYROPHORIC! If heated above 100°C, can decompose explosively.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Eliminate every possible source of ignition. Use special care to avoid static electric charges. Laboratory and production areas must be equipped with special fire-extinguishing media for pyrophorics.

6.1.1. For non-emergency personnel

Protective equipment : Wear protective equipment as described in Section 8.

Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".

Emergency procedures : Stop release.

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

For containment : Concentrate containment efforts to adjacent combustibles.

Methods for cleaning up : Cover with dry chemical extinguishing powder, lime, sand or soda ash. Do not use water. Remove combustible materials in the vicinity of the spill. Allow time for decomposition or fire to burn out, then sweep material and transfer to a suitable 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 : Handle empty containers with care because residual vapors are flammable. Catches fire spontaneously if exposed to air. Keep away from any possible contact with water, because of violent reaction and possible flash fire.

Precautions for safe handling : Avoid all eye and skin contact and do not breathe vapor and mist. Do not allow contact with water. Do not allow contact with air. Handle under inert gas. Protect from moisture. Ground/bond container and receiving equipment. Take precautionary measures against static discharge. Laboratory and production areas must be equipped with special fire-extinguishing media for pyrophorics. Use only outdoors or in a well-ventilated area. Use only non-sparking tools.

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

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof electrical equipment.

Storage conditions : Keep container tightly closed. Store in a dry place. Store in a closed container. Store in sealed containers under nitrogen or argon with <50ppm oxygen.

Incompatible materials : Alkalis. Bromine. Chlorine. Metal salts. Oxidizing agent. Precious metals. Water.

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

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Appropriate engineering controls	:	Glove box or sealed system under inert atmosphere is required. 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	:	Full face shield with chemical workers goggles. Contact lenses should not be worn.
Skin and body protection	:	Wear suitable protective clothing. Fire resistant laboratory jacket or apron should be worn.
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	:	Liquid. Ignites on exposure to air.
Molecular mass	:	114.82 g/mol
Color	:	Colorless.
Odor	:	No data available
Odor threshold	:	No data available
Refractive index	:	No data available
pH	:	No data available
Relative evaporation rate (butyl acetate=1)	:	No data available
Melting point	:	-16 °C
Freezing point	:	No data available
Boiling point	:	55 - 56 °C
Flash point	:	-1 °C
Auto-ignition temperature	:	< 50 °C
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	Highly flammable liquid and vapor,Catches fire spontaneously if exposed to air
Vapor pressure	:	64.5 mm Hg @ 0°C
Relative vapor density at 20 °C	:	> 1
Relative density	:	1.1151
Solubility	:	Reacts violently 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
Explosion 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 stored under a dry inert atmosphere.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Heat. Sparks. Open flame.

10.5. Incompatible materials

Alkalis. Bromine. Chlorine. Metal salts. Oxidizing agent. Precious metals. Water.

10.6. Hazardous decomposition products

Gallium oxides. Carbon monoxide. Formaldehyde. Hydrogen. Organic acid vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	:	Not classified
Skin corrosion/irritation	:	Causes severe skin burns and eye damage.
Serious eye damage/irritation	:	Causes serious eye damage.
Respiratory or skin sensitization	:	Not classified
Germ cell mutagenicity	:	Not classified
Carcinogenicity	:	Not classified None of the components in this product at concentrations >0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen.
Reproductive toxicity	:	Not classified
Specific target organ toxicity – single exposure	:	May cause respiratory irritation.
Specific target organ toxicity – repeated exposure	:	Not classified May cause damage to organs through prolonged or repeated exposure
Aspiration hazard	:	Not classified
Symptoms/effects after inhalation	:	May cause respiratory irritation. Direct respiratory contact is usually not possible, but will cause burns. Inhalation of combustion products can cause irritation.
Symptoms/effects after skin contact	:	Causes (severe) skin burns.
Symptoms/effects after eye contact	:	Causes serious eye damage.
Symptoms/effects after ingestion	:	Presumed to be a poison.

SECTION 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

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 effects from this product.
GWPmix comment	:	No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Sewage disposal recommendations	:	Do not dispose of waste into sewer.
Product/Packaging disposal recommendations	:	Incinerate. Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility. This is a RCRA hazardous waste: 40 CFR 261.21 (i.e. ignitable) 40 CFR 261.23 (i.e. reactive).
Additional information	:	Handle empty containers with care because residual vapors are flammable.
Ecology - waste materials	:	Avoid release to the environment.

SECTION 14: Transport information

14.1. UN number

UN-No.(DOT)	:	3394
DOT NA no.		UN3394

14.2. UN proper shipping name

Transport document description	:	UN3394 Organometallic substance, liquid, pyrophoric, water-reactive (TRIMETHYLGALLIUM), 4.2 (4.3), I
Proper Shipping Name (DOT)	:	Organometallic substance, liquid, pyrophoric, water-reactive (TRIMETHYLGALLIUM)
Class (DOT)	:	4.2 - Class 4.2 - Spontaneously combustible material 49 CFR 173.124

Packing group (DOT)	:	I - Great Danger
Hazard labels (DOT)	:	4.2 - Spontaneously combustible 4.3 - Dangerous when wet

DOT Packaging Non Bulk (49 CFR 173.xxx)	:	181
DOT Packaging Bulk (49 CFR 173.xxx)	:	244
DOT Packaging Exceptions (49 CFR 173.xxx)	:	None
DOT Symbols	:	G - Identifies PSN requiring a technical name

14.3. Additional information

Emergency Response Guide (ERG) Number	:	135
Other information	:	No supplementary information available.

Transport by sea

DOT Vessel Stowage Location	:	D - The material must be stowed ‘‘on deck only’’ on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded.
DOT Vessel Stowage Other	:	13 - Keep as dry as reasonably practicable,52 - Stow ‘‘separated from’’ acids,78 - Stow ‘‘separated longitudinally by an intervening complete compartment or hold from’’ explosives

Air transport

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	Forbidden
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	Forbidden

SECTION 15: Regulatory information

15.1. US Federal regulations

Trimethylgallium (1445-79-0)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

Trimethylgallium (1445-79-0)
Listed on the Canadian NDSL (Non-Domestic Substances List)

EU-Regulations

Trimethylgallium (1445-79-0)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Trimethylgallium (1445-79-0)
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 the Japanese ISHL (Industrial Safety and Health Law) Listed on the Korean ECL (Existing Chemicals List)

15.3. US State regulations

No additional information available

SECTION 16: Other information

Full text of H-phrases::

H225	Highly flammable liquid and vapor
H250	Catches fire spontaneously if exposed to air
H260	In contact with water releases flammable gases which may ignite spontaneously
H314	Causes severe skin burns and eye damage

H318	Causes serious eye damage
H335	May cause respiratory irritation

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.

HMIS III Rating

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

Flammability : 4 Severe Hazard - Flammable gases, or very volatile flammable liquids with flash points below 73 F, and boiling points below 100 F. Materials may ignite spontaneously with air. (Class IA)

Physical : 2 Moderate Hazard - Materials that are unstable and may undergo violent chemical changes at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.

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