

**MATHESON**

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## Safety Data Sheet

**Material Name: Tetrasilane****SDS ID: 00244473**

### Section 1 - PRODUCT AND COMPANY IDENTIFICATION

**Material Name**

Tetrasilane

**Product Use**

Industrial and Specialty Gas Applications.

**Restrictions on Use**

None known.

**Details of the supplier of the safety data sheet**

MATHESON TRI-GAS, INC.

150 Allen Road, Suite 302

Basking Ridge, NJ 07920

General Information: 1-800-416-2505

Emergency #: 1-800-424-9300 (CHEMTREC)

Outside the US: 703-527-3887 (Call collect)

### Section 2 - HAZARDS IDENTIFICATION

**Classification in accordance with paragraph (d) of 29 CFR 1910.1200.**

Pyrophoric Liquids - Category 1

**GHS Label Elements****Symbol(s)****Signal Word**

Danger

**Hazard Statement(s)**

Catches fire spontaneously if exposed to air.

**Precautionary Statement(s)****Prevention**

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Handle and store contents under inert gas. Protect from moisture.

Keep container tightly closed.

Wear protective gloves and eye/face protection.

**Response**

In case of fire, use dry chemical, soda ash, lime or sand.

IF ON SKIN.

Immerse in cool water/wrap in wet bandages.

**Storage**

Store contents under inert gas.

**Disposal**

Dispose of contents/container in accordance with local/regional/national/international regulations.

### Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
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7783-29-1

Tetrasilane

100

### Section 4 - FIRST AID MEASURES

**Inhalation**

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

**Skin**

IF ON SKIN: Immerse in cool water/wrap in wet bandages.

**Eyes**

Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

**Ingestion**

If a large amount is swallowed, get medical attention.

**Most Important Symptoms/Effects****Acute**

respiratory tract irritation, skin irritation, eye irritation

**Delayed**

No information on significant adverse effects.

### Section 5 - FIRE FIGHTING MEASURES

**Extinguishing Media****Suitable Extinguishing Media**

regular dry chemical, dry sand, lime, soda ash, Large fires: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn.

**Unsuitable Extinguishing Media**

Do not use water, foam or carbon dioxide.

**Special Hazards Arising from the Chemical**

Severe fire hazard. May ignite on exposure to air. Vapor/air mixtures are explosive. The vapor is heavier than air.

Vapors or gases may ignite at distant ignition sources and flash back.

**Hazardous Combustion Products**

Hydrogen, oxides of silicon

**Fire Fighting Measures**

Move container from fire area if it can be done without risk. Do not attempt to extinguish fire unless flow of material can be stopped first. Use extinguishing agents appropriate for surrounding fire. Do not use water. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Evacuate if fire gets out of control or containers are directly exposed to fire. Evacuation radius: 500 meters (1/3 mile). Consider downwind evacuation if material is leaking.

**Special Protective Equipment and Precautions for Firefighters**

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

### Section 6 - ACCIDENTAL RELEASE MEASURES

**Personal Precautions, Protective Equipment and Emergency Procedures**

Wear personal protective clothing and equipment, see Section 8.

**Methods and Materials for Containment and Cleaning Up**

Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. Avoid heat, flames, sparks and other sources of ignition. Do not touch spilled material. Stop leak if safe to do so - Prevent entry into waterways, drains, or confined areas. Do not get water directly on material. Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry.



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**Material Name: Tetrasilane****SDS ID: 00244473****Environmental Precautions**

Avoid release to the environment.

**Section 7 - HANDLING AND STORAGE****Precautions for Safe Handling**

Keep away from heat, sparks, open flame or other ignition sources - No smoking. Handle under inert gas. Protect from moisture. Keep container tightly closed. Wear protective gloves and eye/face protection.

**Conditions for Safe Storage, Including any Incompatibilities**

Store contents under inert gas.

Store and handle in accordance with all current regulations and standards. May ignite on exposure to air. Store under an inert atmosphere. Do not store above 55 °C (130 °F). Store in a tightly closed container. Store outside or in a detached building. Protect from physical damage. See original container for storage recommendations. Avoid contact with water. Grounding and bonding required. Keep separated from incompatible substances.

**Incompatible Materials**

oxidizing materials, halogens, combustible materials

**Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION****Component Exposure Limits**

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

**ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)**

There are no biological limit values for any of this product's components.

**Engineering Controls**

Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

**Individual Protection Measures, such as Personal Protective Equipment****Eye/face protection**

Wear chemical safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

**Skin Protection**

Wear appropriate chemical resistant clothing.

**Respiratory Protection**

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

**Glove Recommendations**

Wear fire-resistant gloves.

**Section 9 - PHYSICAL AND CHEMICAL PROPERTIES**

<b>Appearance</b>	gas	<b>Physical State</b>	liquid
<b>Odor</b>	irritating odor	<b>Color</b>	colorless
<b>Odor Threshold</b>	0.14 ppm (Recognition Arsine )	<b>pH</b>	Not available
<b>Melting Point</b>	-84.3 °C (-120 °F )	<b>Boiling Point</b>	107.4 °C (225 °F )
<b>Boiling Point Range</b>	Not available	<b>Freezing point</b>	Not available

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<b>Evaporation Rate</b>	Not available	<b>Flammability (solid, gas)</b>	Not flammable
<b>Autoignition Temperature</b>	(Pyrophoric )	<b>Flash Point</b>	(Flammable )
<b>Lower Explosive Limit</b>	Not available	<b>Decomposition temperature</b>	Not available
<b>Upper Explosive Limit</b>	Not available	<b>Vapor Pressure</b>	Not available
<b>Vapor Density (air=1)</b>	Not available	<b>Specific Gravity (water=1)</b>	Not available
<b>Water Solubility</b>	(Decomposes )	<b>Partition coefficient: n-octanol/water</b>	Not available
<b>Viscosity</b>	Not available	<b>Kinematic viscosity</b>	Not available
<b>Solubility (Other)</b>	Not available	<b>Density</b>	0.79 g/cc
<b>Physical Form</b>	liquid	<b>Molecular Formula</b>	H10Si4
<b>Molecular Weight</b>	122.4214		

### Section 10 - STABILITY AND REACTIVITY

**Reactivity**

May ignite on exposure to air.

**Chemical Stability**

May ignite on exposure to air.

**Possibility of Hazardous Reactions**

Will not polymerize.

**Conditions to Avoid**

Avoid contact with air. Keep dry. Keep out of water supplies and sewers.

**Incompatible Materials**

oxidizing materials, halogens, combustible materials

**Hazardous decomposition products**

Hydrogen, oxides of silicon

### Section 11 - TOXICOLOGICAL INFORMATION

**Information on Likely Routes of Exposure****Inhalation**

irritation, nausea, headache, lung damage

**Skin Contact**

irritation, blisters

**Eye Contact**

No information is available for tetrasilane, classification is based on analogy to silane: irritation, blurred vision

**Ingestion**

ingestion of a gas is unlikely.

**Acute and Chronic Toxicity****Component Analysis - LD50/LC50**



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The components of this material have been reviewed in various sources and no selected endpoints have been identified.

**Product Toxicity Data**

**Acute Toxicity Estimate**

No data available.

**Immediate Effects**

respiratory tract irritation, skin irritation, eye irritation

**Delayed Effects**

No information on significant adverse effects.

**Irritation/Corrosivity Data**

No animal testing data available for skin or eyes.

**Respiratory Sensitization**

No data available.

**Dermal Sensitization**

No data available.

**Component Carcinogenicity**

None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA

**Germ Cell Mutagenicity**

No data available.

**Tumorigenic Data**

No data available

**Reproductive Toxicity**

No data available.

**Specific Target Organ Toxicity - Single Exposure**

No target organs identified.

**Specific Target Organ Toxicity - Repeated Exposure**

No target organs identified.

**Aspiration hazard**

No data available.

**Medical Conditions Aggravated by Exposure**

No data available.

### Section 12 - ECOLOGICAL INFORMATION

**Component Analysis - Aquatic Toxicity**

No LOLI ecotoxicity data are available for this product's components.

**Persistence and Degradability**

No data available.

**Bioaccumulative Potential**

No data available.

**Mobility**

No data available.

### Section 13 - DISPOSAL CONSIDERATIONS

**Disposal Methods**

Dispose of contents/container in accordance with local/regional/national/international regulations.

**Component Waste Numbers**

The U.S. EPA has not published waste numbers for this product's components.

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### Section 14 - TRANSPORT INFORMATION

**US DOT Information:****Shipping Name:** PYROPHORIC LIQUID, INORGANIC, N.O.S. , ( Contains: Tetrasilane )**Hazard Class:** 4.2**UN/NA #:** UN3194**Packing Group:** I**Required Label(s):** 4.2**IMDG Information:****Shipping Name:** PYROPHORIC LIQUID, INORGANIC, N.O.S. , ( Contains: Tetrasilane )**Hazard Class:** 4.2**UN#:** UN3194**Packing Group:** I**Required Label(s):** 4.2**International Bulk Chemical Code**

This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

### Section 15 - REGULATORY INFORMATION

**U.S. Federal Regulations**

None of this products components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

**SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories**

Pyrophoric

**U.S. State Regulations**

None of this product's components are listed on the state lists from CA, MA, MN, NJ or PA.

**Not listed under California Proposition 65****Canada Regulations****Canadian WHMIS Ingredient Disclosure List (IDL)**

The components of this product are either not listed on the IDL or are present below the threshold limit listed on the IDL.

**Component Analysis - Inventory****Tetrasilane (7783-29-1)**

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN - NCI (Draft)
No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

### Section 16 - OTHER INFORMATION

**NFPA Ratings**

Health: 1 Fire: 4 Reactivity: 2

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

**Summary of Changes**

New SDS:02/16/2016

**Key / Legend**

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA -

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California/Massachusetts/Minnesota/New Jersey/Pennsylvania\*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC - European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX - Mexico; NDSL - Non-Domestic Substance List (Canada); NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL - Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH - Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TCCA - Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW - Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN NCI (Draft) - Vietnam National Chemicals Inventory (NCI) (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada) .

**Other Information****Disclaimer:**

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