



MATHESON

ask...The Gas Professionals™

Safety Data Sheet

Material Name: 1% Phosphine in Helium, Gas Mix

SDS ID: 00244264

Section 1 - IDENTIFICATION

Manufacturer Information

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)

Product Identifier: 1% Phosphine in Helium, Gas Mix

Product Use

industrial

Restrictions on Use

None known.

Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Gas under pressure, Compressed gas
Acute Toxicity (Inhalation), Category 1 (99% unknown)
Specific Target Organ Toxicity - Single Exposure, Category 1 (cardiovascular system, digestive tract, liver, nervous system, and respiratory system)
Specific Target Organ Toxicity - Repeated Exposure, Category 1 (nervous system and respiratory system)

GHS LABEL ELEMENTS

Symbol(s)



Signal Word

DANGER

Hazard Statement(s)

Contains gas under pressure; may explode if heated
Fatal if inhaled
Causes damage to cardiovascular system, digestive tract, liver, nervous system, and respiratory system.
Causes damage to nervous system and respiratory system through prolonged or repeated exposure.

Precautionary Statement(s)

Prevention

Do not breathe gas. Use only outdoors or in a well-ventilated area. Wear respiratory protection. Wash thoroughly after handling. Do not eat, drink, or smoke when using this product.

Response

IF exposed: Call a POISON CENTER or doctor/physician. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. Specific treatment is urgent, see first aid section of Safety Data Sheet.

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Storage

Store in a well-ventilated place. Protect from sunlight. Keep container tightly closed. Store locked up.

Disposal

Dispose of in accordance with applications with applicable regulations.

Other Hazards which do not Result in Classification

May cause asphyxia. May cause frostbite upon sudden release of compressed gas.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS#	Component	Percent
7440-59-7	Helium	99
7803-51-2	Phosphine	1

Section 4 - FIRST AID MEASURES

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin

If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.

Eyes

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.

Symptoms: Immediate

frostbite, suffocation, respiratory tract irritation, central nervous system depression, cardiovascular system damage, digestive tract damage, liver damage, nervous system damage, respiratory system damage

Symptoms: Delayed

nervous system damage, respiratory system damage

Section 5 - FIRE FIGHTING MEASURES

See Section 9 for Flammability Properties

Specific Hazards Arising from the Chemical

Negligible fire hazard. Containers may rupture or explode if exposed to heat.

Extinguishing Media

regular dry chemical, carbon dioxide

Unsuitable Extinguishing Media

None known.

Protective Equipment and Precautions for Firefighters

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

Fire Fighting Measures

Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Evacuation radius: 800 meters (1/2 mile).

Hazardous Combustion Products

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Combustion: oxides of phosphorus, phosphorus

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions

Wear personal protective clothing and equipment, see Section 8.

Environmental Precautions

Avoid release to the environment.

Methods for Containment

Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.

Cleanup Methods

Stop leak if possible without personal risk.

Section 7 - HANDLING AND STORAGE

Handling Procedures

Wash thoroughly after handling.

Storage Procedures

Store and handle in accordance with all current regulations and standards. Avoid direct sunlight. Store in a tightly closed container. Store in a well-ventilated place. Store locked up. May ignite on exposure to air. See original container for storage recommendations. Keep separated from incompatible substances.

Incompatibilities acids, halo carbons, halogens, nitric acid, oxidizing materials

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

Helium (7440-59-7)

ACGIH: Simple asphyxiant (See Appendix F: Minimal Oxygen Content)

Phosphine (7803-51-2)

ACGIH: 0.3 ppm TWA
1 ppm STEL

Europe: 0.1 ppm TWA; 0.14 mg/m³ TWA
0.2 ppm STEL; 0.28 mg/m³ STEL

OSHA (Final): 0.3 ppm TWA; 0.4 mg/m³ TWA

OSHA (Vacated): 0.3 ppm TWA; 0.4 mg/m³ TWA
1 ppm STEL; 1 mg/m³ STEL

NIOSH: 0.3 ppm TWA; 0.4 mg/m³ TWA
1 ppm STEL; 1 mg/m³ STEL

Component Biological Limit Values

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

Engineering Controls

Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face

Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Protective Clothing

For the gas: Wear appropriate chemical resistant clothing. For the liquid: Wear appropriate protective, cold insulating clothing.

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Glove Recommendations

For the gas: Wear appropriate chemical resistant gloves. For the liquid: Wear insulated gloves.

Respiratory Protection

The following respirators and maximum use concentrations are drawn from NIOSH and/or OSHA.

3 ppm

Any supplied-air respirator.

7.5 ppm

Any supplied-air respirator operated in a continuous-flow mode.

15 ppm

Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against the compound of concern.

Any self-contained breathing apparatus with a full facepiece.

Any supplied-air respirator with a full facepiece.

50 ppm

Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode.

Emergency or planned entry into unknown concentrations or IDLH conditions -

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

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Escape -

Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted canister providing protection against the compound of concern.

Any appropriate escape-type, self-contained breathing apparatus.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

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

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Gas	Appearance:	Colorless gas
Color:	colorless	Physical Form:	gas
Odor:	fishy odor, pungent odor	Odor Threshold:	Not available
pH:	Not available	Melting/Freezing Point:	Not available
Boiling Point:	Not available	Flash Point:	Not flammable
Decomposition:	Not available	Evaporation Rate:	Not available
LEL:	1 % (phosphine)	UEL:	98 % (phosphine)
Vapor Pressure:	Not available Not available	Vapor Density (air = 1):	Not available
Specific Gravity (water=1):	Not available	Water Solubility:	Not available
Log KOW:	Not available	Coeff. Water/Oil Dist:	Not available
Auto Ignition:	100 °C (phosphine)	Viscosity:	Not available

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Section 10 - STABILITY AND REACTIVITY

Chemical Stability

May ignite on exposure to air. Avoid contact with temperatures above 150 C. May decompose violently.

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Minimize contact with material. Containers may rupture or explode if exposed to heat.

Possibility of Hazardous Reactions

Will not polymerize.

Incompatible Materials

acids, halo carbons, halogens, nitric acid, oxidizing materials

Hazardous Decomposition

Combustion: oxides of phosphorus, phosphorus

Section 11 - TOXICOLOGICAL INFORMATION

Acute and Chronic Toxicity

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Phosphine (7803-51-2)

Inhalation LC50 Rat 11 ppm 4 h

RTECS Acute Toxicity (selected)

The components of this material have been reviewed, and RTECS publishes the following endpoints:

Phosphine (7803-51-2)

Inhalation: 11 ppm/4 hour Inhalation Rat LC50

Acute Toxicity Level

Phosphine (7803-51-2)

Highly Toxic: inhalation

Immediate Effects

frostbite, suffocation, respiratory tract irritation, central nervous system depression, cardiovascular system damage, digestive tract damage, liver damage, nervous system damage, respiratory system damage

Delayed Effects

nervous system damage, respiratory system damage

Irritation/Corrosivity Data

No animal testing data available for skin or eyes.

RTECS Irritation

The components of this material have been reviewed and RTECS publishes no data as of the date on this document.

Local Effects

Phosphine (7803-51-2)

Irritant: inhalation

Target Organs

Phosphine (7803-51-2)

central nervous system

Respiratory Sensitizer

No data available.

Dermal Sensitizer

No data available.

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Carcinogenicity

Component Carcinogenicity

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

Mutagenic Data

No data available for the mixture.

RTECS Mutagenic

The components of this material have been reviewed, and RTECS publishes data for one or more components.

Reproductive Effects Data

No data available for the mixture.

Tumorigenic Data

No data available for the mixture.

RTECS Tumorigenic

The components of this material have been reviewed, and RTECS publishes data for one or more components.

Specific Target Organ Toxicity - Single Exposure

central nervous system, respiratory system, cardiovascular system, digestive tract, liver, nervous system

Specific Target Organ Toxicity - Repeated Exposure

nervous system, respiratory system

Aspiration Hazard

Not applicable.

Medical Conditions Aggravated by Exposure

respiratory disorders, kidney disorders, liver disorders, nervous system disorders, skin disorders

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity

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

Persistence and Degradability

No data available for the mixture.

Bioaccumulative Potential

No data available for the mixture.

Mobility in Environmental Media

No data available for the mixture.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262.

Hazardous Waste Number(s): D003.

Component Waste Numbers

Phosphine (7803-51-2)

RCRA: waste number P096

Section 14 - TRANSPORT INFORMATION

US DOT Information

Shipping Name: Compressed gas, toxic, n.o.s. (Contains: Phosphine, Helium)

UN/NA #: UN1955 **Hazard Class:** 2.3

Required Label(s): 2.3

Additional Info.: Inhalation Hazard Zone C

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IMDG Information

Shipping Name: Compressed gas, toxic, n.o.s. (Contains: Phosphine, Helium)

UN #: UN1955 **Hazard Class:** 2.3

Required Label(s): 2.3, +

Section 15 - REGULATORY INFORMATION

Component Analysis

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

Phosphine (7803-51-2)

SARA 302: 500 lb TPQ

SARA 304: 100 lb EPCRA RQ

SARA 313: 1.0 % de minimis concentration

CERCLA: 100 lb final RQ; 45.4 kg final RQ

OSHA (safety): 100 lb TQ

SARA 311/312 Hazardous Categories

Acute Health: Yes **Chronic Health:** Yes **Fire:** No **Pressure:** Yes **Reactive:** Yes

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
Helium	7440-59-7	No	Yes	Yes	Yes	Yes
Phosphine	7803-51-2	Yes	Yes	Yes	Yes	Yes

Not regulated under California Proposition 65

Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
Helium	7440-59-7	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
Phosphine	7803-51-2	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes

Section 16 - OTHER INFORMATION

NFPA Ratings: Health: 4 **Fire:** 0 **Reactivity:** 2

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

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Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; 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; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; 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; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Other Information

Matheson Tri-Gas, Inc. makes no express or implied warranties, guarantees or representations regarding the product or the information herein, including but not limited to any implied warranty or merchantability or fitness for use. Matheson Tri-Gas, Inc. shall not be liable for any personal injury, property or other damages of any nature, whether compensatory, consequential, exemplary, or otherwise, resulting from any publication, use or reliance upon the information herein.

End of Sheet 00244264