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## Safety Data Sheet

**SDS ID# 5037**

### Section 1. IDENTIFICATION

#### 1.1. Product identifier

Product form : Mixture

Product name : Phosphine (0.00005%-0.0005%) in Nitrogen

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

Product use : Calibration gas/Bumptest gas/Function test gas

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

Intermountain Specialty Gases

520 N. Kings Road

Nampa, ID 83687

Telephone 1-208-466-9425 or Toll free 1-800-552-5003

Fax 1-208-466-9144

www.isgases.com

#### 1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300

### Section 2. HAZARDS IDENTIFICATION

#### 2.1. Classification of the substance or mixture

**Classification** GASES UNDER PRESSURE - Compressed gas  
Simple asphyxiant - Yes

#### 2.2. Label elements

##### Hazard pictograms



**Signal word** : WARNING

**Hazard statements** : H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED  
: OSHA-H01 - MAY DISPLACE OXYGEN AND CAUSE RAPID SUFFOCATION.  
: OSHA - PG01 - DO NOT REMOVE THIS PRODUCT LABEL

##### Precautionary statements

[General] : Read and follow all Safety Data Sheets (SDS's) before use. Read label before use. Keep out of reach of children. If medical advice is needed, have a product container or label at hand.

Use equipment rated for cylinder pressure.

- [Prevention] : P202 - Do not handle until all safety precautions have been read and understood  
: P308+P313 - If exposed or concerned: Get medical advice/attention.  
: P271+P403- Use only outdoors or in a well-ventilated area
- [Response] : P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.  
: P313 - Get medical advice/attention.
- [Storage] : CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)  
: P403 - Store in a well-ventilated place
- [Disposal] : Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

### 2.3. Other hazards

No additional information available

### 2.4. Unknown acute toxicity

No data available

## Section 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substance

Not applicable

### 3.2. Mixture

Name	Product Identifier	%
Nitrogen	(CAS No) 7727-37-9	99.9995 - 99.99995
Phosphine	(CAS No) 7803-51-2	0.00005 - 0.0005

## Section 4. FIRST AID MEASURES

### 4.1. Description of first aid measures

- General : IF exposed or concerned: Get medical advice/attention.
- Inhalation : Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing has stopped, give artificial respiration or oxygen by trained personnel. If victim feels unwell, seek medical advice.
- Skin contact : Immediately flush with copious amount of water for at least 15 minutes.
- Eye contact : Immediately flush with copious amount of water for at least 15 minutes.
- Ingestion : Ingestion is not considered a potential route of exposure, refer to the inhalation section.

### 4.2. Most important symptoms/effects, acute and delayed

#### Acute

- Inhalation : May displace oxygen and cause rapid suffocation.
- Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.
- Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.
- Ingestion : Ingestion is not considered a potential route of exposure, refer to the inhalation section.
- Frostbite : Thaw frosted parts with lukewarm water. Do not rub affected areas. Get immediate medical advice/attention.
- Symptoms/injuries upon intravenous administration : May cause respiratory irritation. Symptoms of overexposure can include headache, coughing, shortness of breath, wheezing, phlegm, abdominal pain, nausea, vomiting, thirst, drowsiness, double vision, dizziness, tremors, and coma.

Chronic symptoms : Adverse effects not expected from this product.  
Delayed : Adverse effects not expected from this product.

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

If victim feels unwell, seek medical advice. If breathing is difficult, give artificial respiration or oxygen by trained personnel.

### Section 5. FIREFIGHTING MEASURES

#### 5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.  
Unsuitable extinguishing media : None known

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

Fire hazard : The product is not flammable  
Explosion hazard : Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.  
Reactivity : None known.

#### 5.3. Advice for fire-fighters

Firefighting instructions : In case of fire: Evacuate all personnel from the danger area. Stop the leak and flow of gas before extinguishing fire, if safe to do so. If this is not possible, withdraw from area and allow fire to burn. Fight fire remotely due to the risk of explosion. Use water spray or fog for cooling exposed containers. Let the fire burn. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Exercise caution when fighting any chemical fire.  
Protection during firefighting : Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus, SCBA) for fire fighters. Do not enter fire area without proper protective equipment, including respiratory protection.

### Section 6. ACCIDENTAL RELEASE MEASURES

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

General measures : Ensure adequate ventilation.  
**6.1.1. For non-emergency personnel**  
Protective equipment : Wear protective equipment consistent with the site emergency plan.  
Emergency procedures : Escape the danger area by the closest safe route. Close doors and windows of adjacent premises. Keep containers closed. Mark the danger area. Seal off low-lying areas. Keep upwind.  
**6.1.12. For emergency responders**  
Protective equipment : Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire fighters. Equip cleanup crew with proper protection.  
Emergency procedures : Evacuate and limit access. Ventilate area. See information above "For non-emergency personnel".

#### 6.2. Methods and material for containment and cleaning up

For containment : Immediately contact emergency personnel. Try to stop gas leak if safe to do so.  
Methods for cleaning up : Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

### Section 7. HANDLING AND STORAGE

#### 7.1. Precautions for safe handling

Precautions for safety handling : Pressurized container: Do not pierce or burn, even after use. Use equipment rated for cylinder pressure. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Protect cylinders from physical damage; do not drag, roll, slide, or drop.

Hygiene measures

: Do not eat, drink or smoke when using this product.

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

Technical measures

: None known.

Storage conditions

: Do not expose to temperatures exceeding 52°C (125°F). Store locked up. Keep containers closed when not in use. Protect cylinder from physical damage. Store and use away from heat, sparks, open flame or any other ignition source. Store in well ventilated area.

Incompatible products

: None known.

Incompatible materials

: None known.

## Section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Nitrogen (7727-37-9)

OSHA PEL		Cal/OSHA PEL	NIOSH REL	ACGIH 2015 TLV
		(as of 4/26/13)	(as of 4/26/13)	
ppm	mg/m <sup>3</sup>	8-hour TWA (ST) STEL ( C ) Ceiling	up to 10-hour TWA (ST) STEL ( C ) Ceiling	8-hour TWA (ST) STEL ( C ) Ceiling
<i>Not established</i>	<i>Not established</i>	<i>Not established</i>	<i>Not established</i>	Simple asphyxiant

### Phosphine (7803-51-2)

OSHA PEL		Cal/OSHA PEL	NIOSH REL	ACGIH 2015 TLV
		(as of 4/26/13)	(as of 4/26/13)	
ppm	mg/m <sup>3</sup>	8-hour TWA (ST) STEL ( C ) Ceiling	up to 10-hour TWA (ST) STEL ( C ) Ceiling	8-hour TWA (ST) STEL ( C ) Ceiling
0.3 ppm	0.4 mg/m <sup>3</sup>	0.3 ppm (ST) 1 ppm	0.3 ppm (ST) 1 ppm	0.3 ppm (ST) 1 ppm

### 8.2. Appropriate engineering controls

Engineering measures/controls

: Provide adequate general and local exhaust ventilation. Systems under pressure should be regularly check for leakages. Ensure exposure is below occupational exposure limits. Oxygen detectors should be used when asphyxiating gases may me released. Consider work permit system e.g. for maintenance activities.

### 8.3. Individual protection measures

Hand protection

: Wear working gloves when handling gas containers. 29CFR 1910.138: Hand Protection.

Eye protection

: Wear safety glasses with side shields. 29 CFR 1910.133: Eye and Face Protection.

Skin and body protection

: Wear suitable protective clothing, e.g.-Lab coats, coveralls or flame resistant clothing.

Respiratory protection

: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary.

Thermal hazard protection

: None necessary during normal and routine operations.

Environmental exposure controls

: Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

Other information

: Wear safety shoes while handling containers. 29 CFR 1910.136: Foot Protection

## Section 9. PHYSICAL AND CHEMICAL PROPERTIES

## 9.1. Exposure controls

Appearance	: Clear, colorless gas.
Physical state	: Gas
Color	: Colorless
Odor	: Repulsive
Odor threshold	:0.51 ppm (PH3)
pH	: No data available
Freezing point	: No data available
Flash point	: No data available
Evaporation rate	: No data available
Flammability (solid, gas)	: Not Flammable - not combustible
Upper flammability	: Not Flammable - not combustible
Lower flammability	: Not Flammable - not combustible
Relative density	: No data available
Solubility	: No data available
Partition coefficient	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: Not applicable

	Phosphine	Nitrogen		
Molecular weight (grams)	34	28.013		
Boiling point	-82.72 °C	-196 °C		
Vapor pressure	510 psia @21 °C	Above critical temperature		
Vapor density at 20°C	1.17	0.97		
Relative gas density	1.423 @ 20 °C	1.153		
Critical Temperature	51.61 °C	-146.9 °C		

## Section 10. STABILITY AND REACTIVITY

### 10.1. Reactivity

No reactivity hazard other than the effects described below.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

None

### 10.4. Conditions to avoid

Phosphine liberates hydrogen and forms phosphide when passed over heated metal. Flammable or explosive when mixed with chlorine or other oxidizing materials. Fluorine and hydrogen react at -418°F (-250°C) when impurities are present.

### 10.5. Incompatible materials

Phosphine is incompatible with: Bases. Halogens. Nitrates. Nitrogen trichloride. Oxidizing agents.

### 10.6. Hazardous decomposition products

Phosphorus at approximately 1100°F (600°C).

## Section 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

## Nitrogen (7727-37-9)

LC50 inhalation rat (ppm) 410,000 ppm/4h

## Phosphine (7803-51-2)

LC50 inhalation rat (ppm) 11 ppm/4h

CGA P-20 20 ppm/1h

### 11.1. Information on routes of exposure

Inhalation : May displace oxygen and cause rapid suffocation.  
:Respiratory, gastrointestinal, and nervous system symptoms were noted in workers exposed to mean phosphine concentrations less than 10 ppm.

Skin contact : May cause irritation.

Eye contact : May cause irritation.

Ingestion : Ingestion is not considered a potential route of exposure

### 11.2. Symptoms related to physical, chemical and toxicological characteristics

Symptoms : No information available

### 11.3. Delayed and immediate effects

Skin corrosion/irritation : Contact with rapidly expanding gas may cause burns or frostbite.

Serious eye damage/irritation : Contact with rapidly expanding gas may cause burns or frostbite. Sulfur dioxide can cause irritation at relatively low levels (1-5ppm); however workers may become acclimated even to initially unbearable concentrations (25 ppm). Pure sulfur dioxide may damage the skin, eyes, and mucous membranes.

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Developmental Toxicity : Not classified

Specific target organ toxicity (single exposure) : Respiratory system, eyes, skin

Specific target organ toxicity (repeated exposure) : Respiratory system, eyes, skin

Chronic toxicity : May cause adverse liver and kidney effects. Chronic absorption of phosphine may be associated with disturbances of sight, speech and motor functions.

Target Organ Effects : Respiratory system.

Aspiration hazard : Not classified  
Not applicable for gases and gas-mixtures

### 11.4. Carcinogenic effects

The components of this material are not found on the following lists: FEDERAL OSHA Z LIST, NTP AND IARC; therefore, they are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

## Section 12. ECOLOGICAL INFORMATION

### 12.1. Aquatic Toxicity

No information available for the product

### 12.2. Persistence and degradability

No information available for the product

### 12.3. Bioaccumulative potential

No information available for the product

#### 12.4. Mobility in soil

No information available for the product

#### 12.5. Other





Contains fluorinated greenhouse gas.

### Section 13. DISPOSAL CONSIDERATIONS

#### 13.1. Disposal methods

Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

### Section 14. TRANSPORTATION INFORMATION

	US DOT	TDG	IMDG	IATA
<b>UN #</b>	UN 1956	UN 1956	UN 1956	UN 1956
<b>Proper shipping name</b>	Compressed gas, n.o.s. (Nitrogen, Phosphine)	Compressed gas, n.o.s. (Nitrogen, Phosphine)	Compressed gas, n.o.s. (Nitrogen, Phosphine)	Compressed gas, n.o.s. (Nitrogen, Phosphine)
<b>Transport hazard class(es)</b>	2.2 	2.2 	2.2 	2.2 
<b>Packing group</b>	-	-	-	-
<b>Environment</b>	No.	No.	No.	No.

### Section 15. REGULATORY INFORMATION

#### 15.1. US Federal regulations

##### SARA 311/312 hazard categories

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

SARA 311/312 Sudden Release of Pressure Hazard

SARA 313 Title III Notifications and Information: This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

##### Phosphine (7803-51-2)

SARA 313 - Threshold Values % 1

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

##### Phosphine (7803-51-2)

Hazardous Substances RQ's 100 lbs  
 CERCLA/SARA RQ 100 lbs  
 Reportable Quantity(RQ) 100 lbs/45.4 kg

#### 15.2. US State regulations

**Nitrogen (007727-37-9)**

U.S. - Massachusetts - Right To Know List

U.S. - Minnesota - Right To Know Hazardous Substance List

U.S. - New Jersey - Right To Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right To Know) List

**Phosphine (7803-51-2)**

U.S. - Massachusetts - Right To Know List

U.S. - New Jersey - Right To Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right To Know) List

**Section 16. OTHER INFORMATION****Date of issue/Date of revision** : New SDS 4/3/2018**Revision Note** : Initial release**Hazardous Material Information System (USA)**

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

**Health** : 1**Fire** : 0**Physical hazards** : 3**Key/Legend**

SARA	Superfund Amendments and Reauthorization Act
OSHA	Occupational Safety and Health Administration
DOT	Department of Transportation
TSCA	Toxic Substance Control Act
NTP	National Toxicology Program
ACGIH	American Conference of Governmental Industrial Hygienists
PEL	Permissible Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TDG	Transportation of Dangerous Goods
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
TWA	Time Weighted Average
Prop	Proposition
ATE	Acute Toxicity Estimate
Repr. 2	Reproductive toxicity Category 2

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