

Section 1: Product and Company Identification

Absolute Accuracy
 4591 S Wayside Dr
 Houston, TX 77087
 (832) 571-2387

Product Code: 1632
 Part Number: 1632

Synonyms:
Recommended Use:
Usage Restrictions:

Section 2: Hazards Identification



Warning

Hazard Classification:
 Acute Aquatic Toxicity (Category 1)
 Gases Under Pressure

Hazard Statements:
 Contains gas under pressure; may explode if heated
 Very toxic to aquatic life

Precautionary Statements

Storage:
 Protect from sunlight.
 Store in well-ventilated place.

Section 3: Composition/Information on Ingredients

| | CAS # | Concentration |
|-----------|-----------|---------------|
| Phosphine | 7803-51-2 | 200 ppm |
| Nitrogen | 7727-37-5 | Balance |

| | Chemical Substance | Chemical Family | Trade Names |
|-----------|--------------------------|-----------------|---|
| Phosphine | PHOSPHINE | Inorganic gases | HYDROGEN PHOSPHIDE; CELPHOS; DELICIA; DETIA; DETIA GAS EX-B; GASEX-B; PHOSPHORUS TRIHYDRIDE; RCRA P096; UN 2199 |
| Nitrogen | NITROGEN, COMPRESSED GAS | Inorganic gases | DIATOMIC NITROGEN; DINITROGEN; NITROGEN; NITROGEN-14; NITROGEN GAS; UN 1066; N2 |

Section 4: First Aid Measures

| | Skin Contact | Eye Contact | Ingestion | Inhalation | Note to Physicians |
|-----------|--|---|--|--|----------------------------------|
| Phosphine | 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. | Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention. | If a large amount is swallowed, get medical attention. | If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention. | None |
| Nitrogen | Wash exposed skin with soap and water. | Flush eyes with plenty of water. | If a large amount is swallowed, get medical attention. | 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. | For inhalation, consider oxygen. |

Section 5: Fire Fighting Measures

| | Suitable Extinguishing Media | Products of Combustion | Protection of Firefighters |
|-----------|--|---|--|
| Phosphine | Let burn unless leak can be stopped immediately. Large fires: Use regular foam or flood with fine water spray. | Hydrogen, forms explosive mixtures with air | <ul style="list-style-type: none"> Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode. Use chemical resistant suit. Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode. Use chemical resistant suit. |
| Nitrogen | Non-flammable. Use suitable extinguishing media for surrounding fire. Cylinders may rupture or explode if exposed to heat. | Non-flammable | <ul style="list-style-type: none"> Respiratory protection may be needed for frequent or heavy exposure. |

Section 6: Accidental Release Measures

| | Personal Precautions | Environmental Precautions | Methods for Containment |
|------------------|--|---|--|
| Phosphine | Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering. | Avoid heat, flames, sparks and other sources of ignition. | Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition. |
| Nitrogen | Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas. | No significant effects from contamination expected. | Stop leak if possible without personal risk. |

| | Methods for Cleanup | Other Information |
|------------------|--|---|
| Phosphine | Stop leak, evacuate area, and contact emergency personnel. | Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RG (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA). |
| Nitrogen | N/A | N/A |

Section 7: Handling and Storage

| | Handling | Storage |
|------------------|---|--|
| Phosphine | Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30). | Keep separated from incompatible substances. |
| Nitrogen | Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. | Keep separated from incompatible substances. |

Section 8: Exposure Controls/Personal Protection

| | Exposure Guidelines |
|------------------|---|
| Phosphine | PHOPHINE: 0.3 ppm (0.4 mg/m ³) OSHA TWA 1 ppm (1 mg/m ³) OSHA STEL (vacated by 58 FR 35338, June 30, 1993) 0.3 ppm ACGIH TWA 1 ppm ACGIH STEL 0.3 ppm (0.4 mg/m ³) NIOSH recommended TWA 10 hour(s) 1 ppm (1 mg/m ³) NIOSH recommended STEL |
| Nitrogen | NITROGEN, COMPRESSED GAS: NITROGEN: ACGIH (simple asphyxiant) |

Engineering Controls

Handle only in fully enclosed systems.

| | Eye Protection | Skin Protection | Respiratory Protection |
|------------------|--|---|---|
| Phosphine | For the gas: Eye protection not required, but recommended. For the liquid: 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. | For the gas: Wear appropriate chemical resistant clothing. For the liquid: Wear appropriate protective, cold insulating clothing. | Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode. Use chemical resistant suit. |
| Nitrogen | Eye protection not required, but recommended. | Protective clothing is not required. | Respiratory protection may be needed for frequent or heavy exposure. |

General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

Section 9: Physical and Chemical Properties

| | Physical State | Appearance | Color | Change in Appearance | Physical Form | Odor | Taste |
|------------------|----------------|------------|-----------|----------------------|---------------|--|-----------|
| Phosphine | Gas | Clear | Colorless | N/A | Gas, liquid | Unpleasant odor, fishy odor, garlic odor | N/A |
| Nitrogen | Gas | Clear | Colorless | N/A | Gas | Odorless | Tasteless |

| | Flash Point | Flammability | Partition Coefficient | Autoignition Temperature | Upper Explosive Limits | Lower Explosive Limits |
|------------------|---------------|---------------|-----------------------|--------------------------|------------------------|------------------------|
| Phosphine | Flammable | Not available | Not available | 212 F (100 C) | 0.98 | 0.01 |
| Nitrogen | Not flammable | Not available | Not available | Nonflammable | Nonflammable | Nonflammable |

| | Boiling Point | Freezing Point | Vapor Pressure | Vapor Density | Specific Gravity | Water Solubility | pH | Odor Threshold | Evaporation Rate | Viscosity |
|------------------|------------------|---------------------|-------------------|---------------|---------------------------|------------------|---------------------|----------------|------------------|-------------------|
| Phosphine | -126 F (-87.7 C) | -208.3 F (-133.5 C) | 41.9 bar @ 20 C | 1.17 (Air=1) | 77F (25C) and 1 atm: 1.18 | 26% @ 17 C | Neutral in solution | 0.021 ppm | Not applicable | Not available |
| Nitrogen | -321 F (-196 C) | -346 F (-210 C) | 760 mmHg @ -196 C | 0.967 (Air=1) | Not applicable | 1.6% @ 20 C | Not applicable | Not available | Not applicable | 0.01787 cP @ 27 C |

| | Molecular Weight | Molecular Formula | Density | Weight per Gallon | Volatility by Volume | Volatility | Solvent Solubility |
|------------------|------------------|-------------------|---------------|-------------------|----------------------|----------------|---|
| Phosphine | 34 | P-H3 | Not available | Not available | 100% | Not applicable | Soluble: Alcohol, ether, cuprous chloride solutions, cyclohexanol |
| Nitrogen | 28.0134 | N2 | 1.2506 g/L | Not available | 100% | 1 | Soluble: Liquid ammonia |

Section 10: Stability and Reactivity

| | Stability | Conditions to Avoid | Incompatible Materials |
|------------------|---|---|---|
| Phosphine | May ignite on exposure to air. | May ignite on exposure to air. | Acids, halogens, oxidizing materials, halo carbons, metal nitrates, nitrous oxide, potassium, ammonia |
| Nitrogen | Stable at normal temperatures and pressure. | Stable at normal temperatures and pressure. | Metals, oxidizing materials |

| | Hazardous Decomposition Products | Possibility of Hazardous Reactions |
|-----------|----------------------------------|------------------------------------|
| Phosphine | Oxides of phosphorus | Will not polymerize. |
| Nitrogen | Oxides of nitrogen | Will not polymerize. |

Section 11: Toxicology Information

Acute Effects

| | Oral LD50 | Dermal LD50 | Inhalation |
|-----------|--------------------------|---------------|--|
| Phosphine | LC50, 1 hr, rat = 20 ppm | Not available | Toxic. irritation, garlic odor, tearing, nausea, vomiting, diarrhea, stomach pain, difficulty breathing, irregular heartbeat, headache, drowsiness, symptoms of drunkenness, fainting, tingling sensation, visual disturbances, dilated pupils, bluish skin color, lung congestion, kidney damage, liver damage, paralysis, convulsions, coma, death |
| Nitrogen | Not available | Not available | Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma |

| | Eye Irritation | Skin Irritation | Sensitization |
|-----------|---|---|---|
| Phosphine | Liquid: frostbite, blurred vision | Liquid: blisters, frostbite | Acute toxicity, Category 1, inhalation; H330: Fatal if inhaled. Skin corrosion, Category 1B; H314: Causes severe skin burns and eye damage. |
| Nitrogen | Contact with rapidly expanding gas may cause burns or frostbite | No information on significant adverse effects | Difficulty breathing |

Chronic Effects

| | Carcinogenicity | Mutagenicity | Reproductive Effects | Developmental Effects |
|-----------|-----------------|---------------|----------------------|-----------------------|
| Phosphine | Not available | Available. | Not available | No data |
| Nitrogen | Not hazardous | Not available | Not available | No data |

Section 12: Ecological Information

Fate and Transport

| | Eco toxicity | Persistence / Degradability | Bioaccumulation / Accumulation | Mobility in Environment |
|-----------|---|-----------------------------|--------------------------------|-------------------------|
| Phosphine | Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available | Not available | Not available | Not available |
| Nitrogen | Fish toxicity: Not available Invertebrate toxicity: Not available Algal toxicity: Not available Phyto toxicity: Not available Other toxicity: Not available | Not available | Not available | Not available |

Section 13: Disposal Considerations

| | |
|-----------|---|
| Phosphine | Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): P096. |
| Nitrogen | Dispose in accordance with all applicable regulations. |

Section 14: Transportation Information

U.S. DOT 49 CFR 172.101

DOT Information For This Mixture

| | |
|--------------------|--|
| Shipping Name | Compressed gas, n.o.s. (Nitrogen, Phosphine) |
| UN Number | UN1956 |
| Hazard Class | 2.2 |
| Hazard Information | Non-Flammable Gas |

Individual Component Information

| | Proper Shipping Name | ID Number | Hazard Class or Division | Packing Group | Labeling Requirements | Passenger Aircraft or Railcar Quantity Limitations | Cargo Aircraft Only Quantity Limitations | Additional Shipping Description |
|-----------|----------------------|-----------|--------------------------|----------------|-----------------------|--|--|---------------------------------|
| Phosphine | Phosphine | UN2199 | 2.3 | Not applicable | 2.3; 2.1 | Forbidden | Forbidden | Toxic-Inhalation Hazard Zone A |
| Nitrogen | Nitrogen, compressed | UN1066 | 2.2 | Not applicable | 2.2 | 75 kg or L | 150 kg | N/A |

Canadian Transportation of Dangerous Goods

| | Shipping Name | UN Number | Class | Packing Group / Risk Group |
|-----------|----------------------|-----------|----------|----------------------------|
| Phosphine | Phosphine | UN2199 | 2.3; 2.1 | Not applicable |
| Nitrogen | Nitrogen, compressed | UN1066 | 2.2 | Not applicable |

Section 15: Regulatory Information

U.S. Regulations

| | CERCLA Sections | SARA 355.30 | SARA 355.40 |
|-----------|-----------------|----------------|----------------|
| Phosphine | 100 LBS RQ | 500 LBS TPQ | 100 LBS RQ |
| Nitrogen | Not regulated. | Not regulated. | Not regulated. |

SARA 370.21

| | Acute | Chronic | Fire | Reactive | Sudden Release |
|------|-------|---------|------|----------|----------------|
| Phos | Yes | No | Yes | Yes | Yes |

| | | | | | |
|----------|-----|----|----|----|-----|
| phine | | | | | |
| Nitrogen | Yes | No | No | No | Yes |

SARA 372.65

| | |
|-----------|----------------|
| Phosphine | PHOSPHINE |
| Nitrogen | Not regulated. |

OSHA Process Safety

| | |
|-----------|----------------|
| Phosphine | 100 LBS TQ |
| Nitrogen | Not regulated. |

State Regulations

| | |
|-----------|--------------------------|
| | CA Proposition 65 |
| Phosphine | Not regulated. |
| Nitrogen | Not regulated. |

Canadian Regulations

| | |
|-----------|-----------------------------|
| | WHMIS Classification |
| Phosphine | ABD1 |
| Nitrogen | A |

National Inventory Status

| | US Inventory (TSCA) | TSCA 12b Export Notification | Canada Inventory (DSL/NDSL) |
|-----------|----------------------|------------------------------|-----------------------------|
| Phosphine | Listed on inventory. | Not listed. | Not determined. |
| Nitrogen | Listed on inventory. | Not listed. | Listed on inventory. |

Section 16: Other Information

| | |
|-----------|---|
| | NFPA Rating |
| Phosphine | HEALTH=4 FIRE=4 REACTIVITY=1 |
| Nitrogen | HEALTH=0 FIRE=0 REACTIVITY=0 SPECIAL=SA |

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard