# Safety Data Sheet

**Material Name:** Argon/Hydrogen Gas Mixture  
**SDS ID:** 00244384  

## Section 1 - PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Material Name</th>
<th>Argon/Hydrogen Gas Mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Use</strong></td>
<td>Industrial and Specialty Gas Applications.</td>
</tr>
<tr>
<td><strong>Restrictions on Use</strong></td>
<td>None known.</td>
</tr>
</tbody>
</table>
| **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.**  
- Flammable Gases - Category 1  
- Gases Under Pressure - Compressed gas  
- Acute Toxicity - Inhalation - Gas - Category 4  
- Simple Asphyxiant

**GHS Label Elements**  
- Symbol(s)  

**Signal Word**  
- Danger

**Hazard Statement(s)**  
- Extremely flammable gas.  
- Contains gas under pressure; may explode if heated.  
- Harmful if inhaled.  
- May displace oxygen and cause rapid suffocation.

**Precautionary Statement(s)**  
**Prevention**  
- Keep away from heat, sparks, open flame, and hot surfaces - No smoking.  
- Avoid breathing gas.  
- Use only outdoors or in a well-ventilated area.

**Response**  
- Leaking gas fire: Do not extinguish, unless leak can be stopped safely.  
- Eliminate all ignition sources if safe to do so.  
- IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.  
- Call a POISON CENTER or doctor/physician if you feel unwell.

**Storage**
Safety Data Sheet

Material Name: Argon/Hydrogen Gas Mixture

Store in a well-ventilated place.
Protect from sunlight.

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

Other Hazards
Rapid release of compressed gas may cause frostbite.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS</th>
<th>Component Name</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1333-74-0</td>
<td>Hydrogen</td>
<td>2.93-99</td>
</tr>
<tr>
<td>7440-37-1</td>
<td>Argon</td>
<td>1-97.07</td>
</tr>
</tbody>
</table>

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 swallowed, get medical attention.

Most Important Symptoms/Effects
Acute
suffocation, frostbite

Delayed
no information on significant adverse effects.

Note to Physicians
For inhalation, consider oxygen.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media
Suitable Extinguishing Media
regular dry chemical, carbon dioxide

Unsuitable Extinguishing Media
Water may be ineffective.

Special Hazards Arising from the Chemical
Severe fire hazard. Severe explosion hazard. Vapor/air mixtures are explosive. Vapors or gases may ignite at distant ignition sources and flash back. Containers may rupture or explode if exposed to heat. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion. Burns with invisible flame.

Hazardous Combustion Products
None known.

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. For fires in cargo or storage area: Cool containers with water from
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
Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Keep unnecessary people away, isolate hazard area and deny entry. Remove sources of ignition. Ventilate closed spaces before entering. Avoid heat, flames, sparks and other sources of ignition. Do not touch spilled material. Stop leak if possible without personal risk. Reduce vapors with water spray. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304).

Environmental Precautions
Avoid release to the environment.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling
Wash hands thoroughly after handling. When using, do not eat, drink or smoke.

Conditions for Safe Storage, Including any Incompatibilities
Store in a well-ventilated place.
Protect from sunlight.

Incompatible Materials
combustible materials, halocarbons, halogens, metal oxides, metal salts, metals, oxidizing materials

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

<table>
<thead>
<tr>
<th>Component</th>
<th>Threshold Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen</td>
<td>1333-74-0</td>
</tr>
<tr>
<td>Argon</td>
<td>7440-37-1</td>
</tr>
</tbody>
</table>

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 ventilation system. Ensure compliance with applicable exposure limits.

## Individual Protection Measures, such as Personal Protective Equipment

### Eye/face protection
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.

### Skin Protection
For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating 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
For the gas: Wear appropriate chemical resistant gloves. For the liquid: Wear insulated gloves.

### Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Appearance</th>
<th>colorless gas</th>
<th>Physical State</th>
<th>gas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor</td>
<td>odorless</td>
<td>Color</td>
<td>colorless</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available</td>
<td>pH</td>
<td>Not available</td>
</tr>
<tr>
<td>Melting Point</td>
<td>-259.2 °C (-435 °F Hydrogen)</td>
<td>Boiling Point</td>
<td>-252.8 °C (-423 °F Hydrogen)</td>
</tr>
<tr>
<td>Boiling Point Range</td>
<td>Not available</td>
<td>Freezing point</td>
<td>Not available</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not available</td>
<td>Flammability (solid, gas)</td>
<td>Flammable gas</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>500 °C (932 °F Hydrogen)</td>
<td>Flash Point</td>
<td>(Flammable gas)</td>
</tr>
<tr>
<td>Lower Explosive Limit</td>
<td>4 % (Hydrogen)</td>
<td>Decomposition temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Upper Explosive Limit</td>
<td>75 % (Hydrogen)</td>
<td>Vapor Pressure</td>
<td>760 mmHg @ -253 °C</td>
</tr>
<tr>
<td>Vapor Density (air=1)</td>
<td>0.07 (Hydrogen)</td>
<td>Specific Gravity (water=1)</td>
<td>0.0686 (Hydrogen)</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>0.019 (Hydrogen)</td>
<td>Partition coefficient: n-octanol/water</td>
<td>Not available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>0.008957 cp</td>
<td>Kinematic viscosity</td>
<td>Not available</td>
</tr>
<tr>
<td>Solubility (Other)</td>
<td>Not available</td>
<td>Density</td>
<td>0.00521 lb/ft³ (Hydrogen)</td>
</tr>
</tbody>
</table>
Section 10 - STABILITY AND REACTIVITY

Reactivity
No reactivity hazard is expected.

Chemical Stability
Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions
Will not polymerize.

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.

Incompatible Materials
combustible materials, halocarbons, halogens, metal oxides, metal salts, metals, oxidizing materials

Hazardous decomposition products
miscellaneous decomposition products

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation
Harmful if inhaled, nausea, vomiting, dizziness, tingling sensation, convulsions, coma, difficulty breathing, Unconsciousness, Disorientation, loss of coordination, mood swings, fatigue, headache, irregular heartbeat

Skin Contact
frostbite

Eye Contact
frostbite, blurred vision

Ingestion
ingestion of a gas is unlikely

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:

Hydrogen (1333-74-0)
Inhalation LC50 Rat >15000 ppm 1 h

Product Toxicity Data

Acute Toxicity Estimate
No data available.

Immediate Effects
suffocation, frostbite

Delayed Effects
no information on significant adverse effects.

Irritation/Corrosivity Data
See component data.

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 for the mixture.
Tumorigenic Data
No data available
Reproductive Toxicity
No data available for the mixture.
Specific Target Organ Toxicity - Single Exposure
No information on significant adverse effects.
Specific Target Organ Toxicity - Repeated Exposure
No information on significant adverse effects.
Aspiration hazard
Not applicable.
Medical Conditions Aggravated by Exposure
respiratory disorders

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity
No LOLI ecotoxicity data are available for this product’s components.
Persistence and Degradability
This gas will be dissipated rapidly in well ventilated areas.
Bioaccumulative Potential
No information available for the product.
Mobility
No information available for the product.

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): D001.
Component Waste Numbers
The U.S. EPA has not published waste numbers for this product’s components.

Section 14 - TRANSPORT INFORMATION

US DOT Information:
Shipping Name: COMPRESSED GAS, FLAMMABLE, N.O.S., (Contains: Hydrogen, Argon)
Hazard Class: 2.1
UN/NA #: UN1954
Required Label(s): 2.1

IMDG Information:
Shipping Name: COMPRESSED GAS, FLAMMABLE, N.O.S., (Contains: Hydrogen, Argon)
Hazard Class: 2.1
UN#: UN1954
Required Label(s): 2.1

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 product’s 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**
Flammable; Gas Under Pressure; Acute toxicity; Simple Asphyxiant

**U.S. State Regulations**
The following components appear on one or more of the following state hazardous substances lists:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen</td>
<td>1333-74-0</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Argon</td>
<td>7440-37-1</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**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**

**Hydrogen (1333-74-0)**

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</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>DS</td>
<td>EIN</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
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<td>Yes</td>
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**Argon (7440-37-1)**

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<td>Yes</td>
<td>No</td>
<td>No</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Section 16 - OTHER INFORMATION**

**NFPA Ratings**
Health: 2 Fire: 4 Reactivity: 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

**Summary of Changes**
Updated: 05/01/2015

**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 -
Safety Data Sheet

Material Name: Argon/Hydrogen Gas Mixture  
SDS ID: 00244384

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; F - Background (for Venezuela Biological Exposure Indices); 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 LLists™ - ChemADVISOR’s Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX - Mexico; Ne - Non-specific; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; Nq - Non-quantitative; NSL - Non-Domestic Substance List (Canada); 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; Sc - Semi-quantitative; 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; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN (Draft) - Vietnam (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada).

Other Information

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