

Safety Data Sheet Ametalene

Creation date: 01.20.2014
Revision date: 01.20.2014

Version 1.0

SP / E

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name

Ametalene / Alkane Hydrocarbons (C₄-C₈)
Formulated by Chemtane Energy LLC

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

Relevant identified uses

Industrial and professional.

Uses advised against

Consumer use.

1.3. Details of the supplier of the safety data sheet

Company identification

Chemtane Energy LLC, Suite 3
10902 Interstate-10 East, Baytown, TX 77523
Contact in EU: inmasegarra@gdaparatos.com
e-mail address info@chemtane.com
Website: <http://www.chemtane2.com>

Person responsible for placing on market:

Raymond Davis
PO Box 2210
Baytown, Texas 77522
USA
800-776-1485; Cell 281-382-1062

SDS preparation: James Boucher

1.4. Emergency telephone number

Spill Chemtrec (800) 424-9300(Account No. 11781)
Emergency Number 24 hr. (703) 527-3887

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification acc. Regulation

- EXTREMELY FLAMMABLE LIQUID and VAPOR
- MAY EXCLUDE OXYGEN AVAILABLE FOR BREATHING
- MAY NOT GIVE LEAK DETECTION BY SENSE OF SMELL
- CONTENTS UNDER PRESSURE

HMIS Rating: HEALTH 1

FLAMMABILTY 4.

REACTIVITY 0

NFPA RATING HEALTH 1

FLAMMABILTY 4.

REACTIVITY 0

Classification

Extremely flammable.
Harmful: may cause lung damage if swallowed.
Repeated exposure may cause skin dryness or cracking.
Vapors may cause drowsiness and dizziness.
Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment

2.2. Label elements

-Labeling Pictograms



- Signal word

Danger

- Hazard Statements

H224 Extremely flammable liquid and vapor
H304 May be fatal if swallowed and enters airways

H336 May cause drowsiness or dizziness.
H411 Toxic to aquatic life with long lasting effects.
EUH066 Repeated exposure may cause skin dryness or cracking.

- Precautionary Statements

Precautionary Statement Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233 Keep container tightly closed.
P240 Ground / bond container and receiving equipment.
P241 Use explosion-proof electrical, ventilating, and lighting equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing mist / vapors.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves and eye / face protection.

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Precautionary Statement Response

P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P331	Do NOT induce vomiting.
P370 + P378	In case of fire: Use water fog, foam, dry chemical or carbon dioxide (CO ₂) for extinction. Collect spillage.
P391	Collect spillage.

Precautionary Statement Storage

P403 + P233+ P235 Store in a well-ventilated place. Keep container tightly closed. Keep cool.

P405 Store locked up.

Precautionary Statement Disposal

P501 Dispose of contents and container in accordance with local regulations.

2.3. Other hazards

Contact with liquid may cause inflammation or dry skin.

SECTION 3: Composition/information on ingredients Substance / Mixture: Mixture.

3.1. Substances

Name	CAS No.	EC No.	Classification
Propane	74-98-6	200-287-9	

All Other Components present in this proprietary blend of Hydrocarbons are at less than 1%

No Carcinogens are present.

REACH Registration number: Not Required

Contains no other components or impurities which will influence the classification of the product.

3.2. Mixtures

See 3.1 above for composition.

SECTION 4: First aid measures**4.1. Description of first aid measures****First Aid General Information:**

Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First Aid Inhalation:

Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

First Aid Skin / Eye:

In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical assistance. Immediately flush eyes with water for at least 15 minutes.

First Aid Ingestion:

Do not let victim drink anything.
Do NOT induce vomiting.
Get immediate medical advice/attention.

4.2. Most important symptoms and effects, both acute and delayed

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination. May have damaging effect on respiratory system, central nervous system (CNS) and liver. Depression of CNS. Symptoms may include dizziness, headache, nausea, unconsciousness, irritation of the mucous membranes and dry coughs. Irregular cardiac activity.

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

Get immediate medical advice/attention.

SECTION 5: Fire fighting measures**5.1. Extinguishing media****Suitable extinguishing media**

All known extinguishants can be used.

Unsuitable extinguishing media

Do not use a solid water stream.

5.2. Special hazards arising from the substance or mixture**Specific hazards**

Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products

If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition: Carbon dioxide, Carbon monoxide.

5.3. Advice for fire-fighters**Specific methods**

If possible, stop flow of product. Move container away or cool with water from a protected position. If leaking do not extinguish a flame unless absolutely necessary.

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Spontaneous/explosive re-ignition may occur. Extinguish any other fire. Prevent water used in emergency cases from entering sewers and drainage systems.

Special protective equipment for fire-fighters

Use self-contained breathing apparatus and chemically protective clothing. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to EN 469 will provide a basic level of protection from chemical incidents. EN 469:2005: Protective clothing for fire-fighters. Performance requirements for protective clothing for firefighting.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Consider the risk of potentially explosive atmospheres. Evacuate area. Ensure adequate air ventilation. Use self-contained breathing apparatus and chemically protective clothing. Eliminate ignition sources. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

6.2. Environmental precautions

Try to stop release.

6.3. Methods and material for containment and Cleaning up

Ventilate area. Keep away from ignition sources (including static discharges). Evacuate area. Prevent evaporation by covering with foam. Absorb excess liquid spillage on inorganic adsorbent material such as fine sand, brick dust etc. Place spent adsorbent in sealed packages and contact specialist waste disposal contractor.

6.4. Reference to other sections

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Only experienced and properly instructed persons should handle the product. The substance must be handled in accordance with good industrial hygiene and safety procedures. Avoid contact with skin. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your supplier if in doubt. Take precautionary measures against static discharges. Ensure equipment is adequately earthed. Purge air from system before introducing product. Do not smoke while handling product. Assess the risk of potentially explosive atmosphere and the need for explosion-proof equipment. Consider the use of only non-sparking tools. Ensure the complete system has been (or is regularly) checked for leaks before use. Refer to supplier's handling instructions. Do not allow backfeed into the container. Protect cylinders from physical damage; do not drag, roll, slide or drop. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.

Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Keep container valve outlets clean and free from contaminants particularly oil and water. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to transfer products from one cylinder/container to another. Never use direct flame or electrical heating devices to raise the pressure of a container. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.

7.2. Conditions for safe storage, including any incompatibilities

Observe all regulations and local requirements regarding storage of containers. Segregate from other oxidants in store. Keep container below 35°C in a well ventilated place. Containers should be stored in the vertical position and properly secured to prevent falling over. Stored containers should be periodically checked for general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials. All electrical equipment in the storage areas should be compatible with the risk of potentially explosive atmosphere. Containers should not be stored in conditions likely to encourage corrosion.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limit value

Value type	value	Note
LTEL	600 ppm	EH 40/07

OSHA, NIOSH

Product/ingredient name	Type	Exposure Long Term	Value ppm	Value mg/m ³	Effect
propane	OSHA NIOSH	Inhalation	1000	3000	Sys
propane	PEL	8 hr	1000	3000	Sys
Propane ACGIH TLV			1000	3000	Sys

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Predicted No Effect Concentrations

Not applicable

8.2. Exposure controls

Appropriate engineering controls

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered. Gas detectors should be used when quantities of flammable gases/vapors may be released. Consider work permit system e.g. for maintenance activities. Systems under pressure should be regularly checked for leakages. Provide adequate general or local ventilation. Keep concentrations well below occupational exposure limits.

Personal protective equipment

Eye and face protection

Protect eyes, face and skin from liquid splashes. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wear a face -shield when transfilling and breaking transfer connections. Safety eyewear, goggles or face-shield to EN166 should be used to avoid exposure to liquid splashes. Full-face mask recommended.

Guideline:

CEN: EN136 Respiratory protective devices. Full face masks. Requirements, testing, marking.

Skin protection

Hand protection

Advice:

Wear cold insulating gloves.

Guideline:

EN 511 Protective gloves against cold.

Chemically resistant gloves complying with EN 374 should be worn at all times when handling chemical products if a risk assessment indicates this is necessary

Material:

Nitrile

Guideline:

EN 374-1/2/3 Protective gloves against chemicals and microorganisms

Body protection

Protect eyes, face and skin from contact with product. Keep suitable chemically resistant protective clothing readily available for emergency use. Personal protective equipment for the body should be selected based on the task being performed and the risks involved.

Guideline:

EN 943: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles.

Other protection

Wear flame resistant/retardant clothing. Take precautionary measures against static discharges. Wear working gloves and

safety shoes when handling cylinders.

ISO 20345 Safety footwear

Respiratory protection

Keep self contained breathing apparatus readily available for emergency use. Use SCBA in the event of high concentrations. The selection of the Respiratory Protective Device (RPD) must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected RPD. When allowed by a risk assessment Respiratory Protective Equipment (RPE) may be used.

Guideline:

EN 136: Respiratory protective devices. Full face masks. Requirements, testing, marking.

Material:

Filter AX

Guideline:

EN 14387: Respiratory protective devices. Gas filter(s) and combined filter(s). Requirements, testing, marking

Environmental Exposure Controls

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste product treatment. Provide adequate general or local ventilation.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General information

Appearance/Color: Colorless liquid.

Odor: Faint. Poor warning properties at low concentrations.

Odor threshold:

Odor threshold is subjective and inadequate to warn for over exposure.

Melting point: -135°C

Boiling point: -42°C (-43.6 °F)

Flash point: -101 °C (-150 °F)

Flammability range: 2.1 %(V) – 9.5%(V)

Vapor Pressure 21.1 °C: 8.5299 bar

Relative density, gas: 2.48

Solubility in water: 30 mg/l @ 10 °C

Partition coefficient: n-octanol/water: No data available.

Autoignition temperature: 450 °C

Relative density, liquid: 0.5853

Viscosity 0.11 cp at -60 °C Explosion limits: LEL 1% UEL 6%

9.2. Other information

Gas/vapor heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10: Stability and reactivity

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10.1. Reactivity

Unreactive under normal conditions.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Can form potential explosive atmosphere in air., May react violently with oxidants.

10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

10.5. Incompatible materials

Air, Oxidizer.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition:
Carbon dioxide, Carbon monoxide.

SECTION 11: Toxicological information**11.1. Information on toxicological effects****Acute oral toxicity**

Value: LD50

Species: Rat

Value in non-standard unit: > 2.000 mg/kg

Slightly toxic.

Acute inhalation toxicity

Value: LC50

Species: Rat

Value in non-standard unit: > 25,3 mg/l

Slightly toxic.

Acute dermal toxicity

Slightly toxic

Acute toxicity other routes

May be fatal if swallowed and enters airways.

Skin irritation

Not classified as an irritant. Repeated exposure may cause skin dryness or cracking. May cause dermatitis by skin contact.

Eye irritation

Not classified as an irritant. May cause mild, short-term discomfort to eyes.

Sensitization

This substance is not classified as a sensitizer.

Repeated dose toxicity

Not expected to cause damage to organs from prolonged or repeated exposure.

Assessment mutagenicity

There is no evidence of mutagenic potential.

Assessment carcinogenicity

No evidence of carcinogenic effects.

Assessment toxicity to reproduction

No indication of toxic effects.

Assessment teratogenicity

No indication of teratogenic effects.

SECTION 12: Ecological information**12.1. Toxicity**

May cause long-term adverse effects in the aquatic environment.

Acute and prolonged toxicity fish

Species: Rainbow trout (*Oncorhynchus mykiss*)

Exposure time: 96 h

Value type: LC50

Value in standard unit mg/l: 4,26 mg/l

Acute toxicity aquatic invertebrates

Species: *Daphnia magna*

Exposure time: 48 h

Value type: EC50

Value in standard unit mg/l: 2,7 mg/l

Toxicity aquatic plants

Species: Algae

Exposure time: 72 h

Value type: NOEC

Value in standard unit mg/l: 7,51 mg/l

Species: Algae

Exposure time: 72 h

Value type: EC50

Value in standard unit mg/l: 10,7 mg/l

12.2. Persistence and degradability**Atmospheric degradation**

The substance degrades rapidly in the atmosphere.

Readily biodegradable

Photo degradation

Half life (direct photolysis): 2,3 d

Non-significant photolysis.

Stability in water

Degradation: 71,4%

Duration: 28 days

Non-significant hydrolysis

12.3. Bioaccumulative potential

Not determined

12.4. Mobility in soil

Because of its high volatility, the product is unlikely to cause ground or water pollution.

12.5. Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

12.6. Other adverse effects

None

SECTION 13: Disposal considerations**13.1. Waste treatment methods**

Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste product should be flared through a suitable burner with flash back arrestor. Toxic and corrosive gases formed during combustion

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should be scrubbed before discharge to atmosphere. Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required. Dispose of container via supplier only.

SECTION 14: Transport information
ADR/RID

14.1. UN number **1075**

14.2. UN proper shipping name
 LIQUEFIED PETROLEUM GAS (PROPANE)

14.3. Transport hazard class(es)
 Class: 2.1
 Classification Code: F1
 Emergency Action Code: 3YE
 Tunnel code: (D/E)

14.4. Packing group (Packing Instruction)

14.5. Environmental hazards
 Environmentally Hazardous.

14.6. Special precautions for user
 None.

IMDG

14.1. UN number **1075**

14.2. UN proper shipping name
 LIQUEFIED PETROLEUM GAS (PROPANE)

14.3. Transport hazard class(es)
 Class: 3

EmS: F-E,S-D

14.4. Packing group (Packing Instruction)

14.5. Environmental hazards
 Environmentally Hazardous

14.6. Special precautions for user
 None.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
 Substance name: PENTANE (ALL ISOMERS)
 Ship type required: 3
 Pollution category: Y

IATA

14.1. UN number **1075**

14.2. UN proper shipping name
 Flammable Liquids, n.o.s.

14.3. Transport hazard class(es)
 Class: 3

14.4. Packing group FG11

14.5. Environmental hazards
 Environmentally Hazardous.

14.6. Special precautions for user
 None.

Other transport information
 Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers ensure that they are firmly secured. Ensure that the cylinder valve is closed and not leaking. Ensure that the valve outlet cap nut or plug (where provided) is correctly fitted. Ensure that the valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
 Seveso Directive 96/82/EC: Covered.

15.2. Chemical safety assessment
 CSA has been carried out

SECTION 16: Other information

Ensure all national/local regulations are observed. Ensure operators understand the flammability hazard. The hazard of asphyxiation is often overlooked and must be stressed during operator training. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

Advice

Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted. Details given in this document are believed to be correct at the time of going to press.

Further information

Note:

When using this document care should be taken, as the decimal sign and its position complies with rules for the structure and drafting of international standards, and is a comma on the line.

As an example 2,000 is two (to three decimal places) and not two thousand, whilst 1.000 is one thousand and not one (to three decimal places).

End of document

SAFETY DATA SHEET

Argon

Section 1. Identification

GHS product identifier	: Argon
Chemical name	: argon
Other means of identification	: Argon.
Product use	: Synthetic/Analytical chemistry.
Synonym	: Argon.
SDS #	: 001004
Supplier's details	: Airgas USA, LLC and its affiliates 259 North Radnor-Chester Road Suite 100 Radnor, PA 19087-5283 1-610-687-5253
24-hour telephone	: 1-866-734-3438

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : GASES UNDER PRESSURE - Compressed gas

GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : Contains gas under pressure; may explode if heated.
May displace oxygen and cause rapid suffocation.

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 product container or label at hand. Close valve after each use and when empty. Use equipment rated for cylinder pressure. Do not open valve until connected to equipment prepared for use. Use a back flow preventative device in the piping. Use only equipment of compatible materials of construction.
- Prevention** : Not applicable.
- Response** : Not applicable.
- Storage** : Protect from sunlight when ambient temperature exceeds 52°C/125°F. Store in a well-ventilated place.
- Disposal** : Not applicable.
- Hazards not otherwise classified** : In addition to any other important health or physical hazards, this product may displace oxygen and cause rapid suffocation.

Argon

Section 3. Composition/information on ingredients

Substance/mixture : Substance
Chemical name : argon
Other means of identification : Argon.

CAS number/other identifiers

CAS number : 7440-37-1
Product code : 001004

Ingredient name	%	CAS number
Argon	100	7440-37-1

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- Eye contact** : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : As this product is a gas, refer to the inhalation section.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Contact with rapidly expanding gas may cause burns or frostbite.
- Inhalation** : No known significant effects or critical hazards. Acts as a simple asphyxiant.
- Skin contact** : Contact with rapidly expanding gas may cause burns or frostbite.
- Frostbite** : Try to warm up the frozen tissues and seek medical attention.
- Ingestion** : As this product is a gas, refer to the inhalation section.

Over-exposure signs/symptoms

- Eye contact** : No specific data.
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.

Section 4. First aid measures

- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

- Specific hazards arising from the chemical** : Contains gas under pressure. In a fire or if heated, a pressure increase will occur and the container may burst or explode.

- Hazardous thermal decomposition products** : No specific data.

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Avoid breathing gas. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- Environmental precautions** : Ensure emergency procedures to deal with accidental gas releases are in place to avoid contamination of the environment. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

- Small spill** : Immediately contact emergency personnel. Stop leak if without risk.
- Large spill** : Immediately contact emergency personnel. Stop leak if without risk. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Contains gas under pressure. Avoid contact with eyes, skin and clothing. Avoid breathing gas. Empty containers retain product residue and can be hazardous. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Section 7. Handling and storage

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store away from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10). Keep container tightly closed and sealed until ready for use. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Argon	Oxygen Depletion [Asphyxiant]

Appropriate engineering controls : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

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. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state	: Gas.
Color	: Colorless.
Molecular weight	: 39.95 g/mole
Molecular formula	: Ar
Boiling/condensation point	: -185.9°C (-302.6°F)
Melting/freezing point	: -189.2°C (-308.6°F)
Critical temperature	: -122.4°C (-188.3°F)
Odor	: Odorless.
Odor threshold	: Not available.
pH	: Not available.
Flash point	: [Product does not sustain combustion.]
Burning time	: Not applicable.
Burning rate	: Not applicable.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: Not available.
Vapor density	: 1.66 (Air = 1)
Specific Volume (ft ³ /lb)	: 9.7087
Gas Density (lb/ft ³)	: 0.103
Relative density	: Not applicable.
Solubility	: Not available.
Solubility in water	: Not available.
Partition coefficient: n-octanol/water	: 0.74
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
SADT	: Not available.
Viscosity	: Not applicable.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	: No specific data.
Incompatible materials	: No specific data.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 10. Stability and reactivity

Irritation/Corrosion

Not available.

Sensitization

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Contact with rapidly expanding gas may cause burns or frostbite.
Inhalation : No known significant effects or critical hazards. Acts as a simple asphyxiant.
Skin contact : Contact with rapidly expanding gas may cause burns or frostbite.
Ingestion : As this product is a gas, refer to the inhalation section.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.
Inhalation : No specific data.
Skin contact : No specific data.
Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Argon

Section 11. Toxicological information

- Mutagenicity** : No known significant effects or critical hazards.
Teratogenicity : No known significant effects or critical hazards.
Developmental effects : No known significant effects or critical hazards.
Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Not available.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Argon	0.74	-	low

Mobility in soil






- Soil/water partition coefficient (K_{oc})** : Not available.

- Other adverse effects** : No known significant effects or critical hazards.

Section 13. Disposal considerations

- Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Empty Airgas-owned pressure vessels should be returned to Airgas. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Empty containers or liners may retain some product residues. Do not puncture or incinerate container.

Section 14. Transport information

	DOT	TDG	Mexico	IMDG	IATA
UN number	UN1006	UN1006	UN1006	UN1006	UN1006
UN proper shipping name	ARGON, COMPRESSED	ARGON, COMPRESSED	ARGON, COMPRESSED	ARGON, COMPRESSED	ARGON, COMPRESSED
Transport hazard class(es)	2.2 	2.2 	2.2 	2.2 	2.2 

Section 14. Transport information

Packing group	-	-	-	-	-
Environment	No.	No.	No.	No.	No.
Additional information	<u>Limited quantity</u> No	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.13-2.17 (Class 2). <u>Explosive Limit and Limited Quantity Index</u> 0.125 <u>Passenger Carrying Road or Rail Index</u> 75 <u>Special provisions</u> 42	-	-	Limited quantity No <u>Passenger and Cargo Aircraft</u> Quantity limitation: Forbidden

“Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product.”

Special precautions for user : **Transport within user’s premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** This material is listed or exempted.
United States inventory (TSCA 8b): This material is listed or exempted.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Sudden release of pressure

Composition/information on ingredients

Argon

Section 15. Regulatory information

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
Argon	100	No.	Yes.	No.	No.	No.

State regulations

- Massachusetts** : This material is listed.
- New York** : This material is not listed.
- New Jersey** : This material is listed.
- Pennsylvania** : This material is listed.

International regulations

International lists

National inventory

- Australia** : This material is listed or exempted.
- Canada** : This material is listed or exempted.
- China** : This material is listed or exempted.
- Europe** : This material is listed or exempted.
- Japan** : Not determined.
- Malaysia** : Not determined.
- New Zealand** : This material is listed or exempted.
- Philippines** : This material is listed or exempted.
- Republic of Korea** : This material is listed or exempted.
- Taiwan** : This material is listed or exempted.

Canada

- WHMIS (Canada)** : Class A: Compressed gas.
- CEPA Toxic substances**: This material is not listed.
- Canadian ARET**: This material is not listed.
- Canadian NPRI**: This material is not listed.
- Alberta Designated Substances**: This material is not listed.
- Ontario Designated Substances**: This material is not listed.
- Quebec Designated Substances**: This material is not listed.

Section 16. Other information

- Canada Label requirements** : Class A: Compressed gas.

Hazardous Material Information System (U.S.A.)

Health	0
Flammability	0
Physical hazards	3

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Section 16. Other information



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
Press. Gas Comp. Gas, H280	Expert judgment

History

Date of printing : 7/1/2016

Date of issue/Date of revision : 7/1/2016

Date of previous issue : 7/1/2016

Version : 0.06

Key to abbreviations :

- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- UN = United Nations

References : Not available.

☑ Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.