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		Date: 11/06/2020
MSDS V1.1	Liquid Argon	DG007L



Label 2.2: Non flammable, non toxic gas.



NFPA RATING

1 IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

Trade Name	: Liquid Argon
Chemical Formula	: Ar
Chemical Family	: Inert Gas
MSDS No	: DG007L
Company Identification	: Aldakheel Industrial Gases Plant (DIGAS)
Emergency Phone Number	: 04-8455-101

2 COMPOSITION / INFORMATION ON INGREDIENTS

COMPONENT	CAS NUMBER	CONCENTRATION
Argon (liquid)	7440-37-1	>99%*


*The symbol > means "greater than"

3 HAZARDS IDENTIFICATION

Emergency Overview	: Caution! Extremely cold liquid and gas under pressure. Can cause rapid suffocation. Can cause severe frostbite. May cause dizziness and drowsiness. Self-contained breathing apparatus and protective clothing may be required by rescue workers.
Effects of a Single (Acute) Overexposure	
-Inhalation	: Asphyxiant. Effects are due to lack of oxygen. Moderate concentrations may cause headache, drowsiness, dizziness, excitation, excess salivation, vomiting, and unconsciousness. Lack of oxygen can kill.
Skin Contact	: No harm expected from vapour. Liquid may cause frostbite.
Skin Absorption	: No harm expected. Liquid may cause frostbite.
Swallowing	: An unlikely route of exposure, but frostbite of the lips and mouth may result from contact with the liquid.
Eye Contact	: No harm expected from vapour. Liquid may cause frostbite.
Effects of Repeated (Chronic) Overexposure	: No evidence of adverse effects from available information.
Other Effects of Overexposure	: This material is an asphyxiant. Lack of oxygen can cause death.
Medical Conditions Aggravated by Overexposure	: A knowledge of the available toxicology information and of the physical and chemical properties of the material suggests that overexposure is unlikely to aggravate existing medical conditions.
Potential Environmental Effects	: None known.

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4 FIRST AID MEASURES

Inhalation	: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Skin contact	: Immediately warm frostbite area with warm water (not to exceed 40C). In case of massive exposure, remove clothing and shoes while showering with warm water. Get medical attention immediately.
Swallowing	: This product is a gas at normal temperature and pressure.
Eye Contact	: Immediately flush eyes with water for a least 15 minutes. See a physician, preferably an ophthalmologist, immediately.
Notes to Physician	: This product is inert. There is no specific antidote. Treatment of over-exposure should be directed at the control of symptoms and the clinical condition. Victim may not be aware of asphyxiation.

5 FIRE-FIGHTING MEASURES


Flammable class	: Non flammable.
Extinuishina media - Suitable extinguishing media	: All known extinguishants can be used.
Hazardous combustion products	: None.
Specific physical and chemical hazards	: Container may rupture due to heat of fire. This material will freeze water rapidly. Containers are provided with a pressure relief device designed to vent contents when they are exposed to elevated temperature.
Specific methods	: If possible, stop flow of product. Evacuate all personnel from danger area. Immediately deluge cylinders with water from maximum distance until cool; then move them away from fire area if without risk. Self-contained breathing apparatus may be required by rescue workers.
Protective equipment and precautions for firefighters	: CAUTION! Asphxiant. Effects are due to lack of oxygen. Evacuate all personnel from danger area. Immediately deluge cylinders with water from maximum distance until cool; then move them away from fire area if without risk.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions	: Evacuate area. Use protective clothing. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation.
Environmental precautions	: Try to stop release. Prevent from entering sewers, basements and work pits, or any place where its accumulation can be dangerous.
Clean up methods	: Ventilate area.

7 HANDLING AND STORAGE

Precautions to be taken in handling	: Never allow any unprotected part of your body to touch uninsulated pipes or vessels containing fluids. Flesh will stick to the extremely cold metal and will tear when you try to pull free. For liquid withdraw, wear face shield and gloves. Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, scroll, slide, drop or roll them on their sides. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact DIGAS.
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7 HANDLING AND STORAGE (Continued)

Precautions to be taken in storage : Store and use with adequate ventilation. Firmly secure cylinders upright to keep them from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 52C. Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering controls

Local exhaust : Preferred.

Mechanical (General) : Acceptable.

Special : Not applicable.

Other : Not applicable.

Personal protective equipment

Respiratory Protection : Use air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below TLV.

Skin Protection : Loose-fitting cryogenic gloves.

Eye/Face Protection : Wear goggles with filter lens. Provide protective screens and goggles, if necessary to protect others.

Other Protective Equipment : As needed, wear hand, head, and body protection which help to prevent injury from radiation, sparks and electrical shock. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, chaps, shoulder protection, as well as dark substantial clothing. Train the worker not to touch live electrical parts.

9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Colorless.

Odor : Odorless.

Odor Threshold : Odorless.

Physical State : Liquid.

pH : Not applicable.

Boiling Point : -185.9°C(-302.6°F)

Freezing Point : -189.2°C (-308.6°F)

Evaporation Rate (Butyl Acetate = 1) : High.

Vapor Pressure : Not applicable.

Vapor Density : 0.0016 g/ml @ 21.1°C

Specific Gravity Liquid (Water =1) : 1.39 @ -185.9°

Specific Gravity Vapor (Air = 1) : 1.38 g/ml @21.1°C

Solubility In Water : Negligible.

Coefficient of water/oil distribution : Not available.


Percent Volatiles By Volume : 100

Molecular Weight : 39.95 g/mole

Molecular Formula : Ar

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10 STABILITY AND REACTIVITY

Stability : The product is stable.
Conditions of Chemical Instability : Avoid elevated temperatures.
Incompatibility (Materials to Avoid) : None currently known. Product is inert.
Hazardous Decomposition Products : None.
Hazardous Polymerization : will not occur.
Conditions of Reactivity : None.
Conditions to Avoid : None:

11 TOXICOLOGICAL INFORMATION

Acute Dose Effect : Argon is a simple asphyxiant.
Study Results : No known effects.

12 ECOLOGICAL INFORMATION

Ecological Effects Information : No adverse ecological effects expected. This product does not contain any Class I or Class II ozone-depleting chemicals.

13 DISPOSAL CONSIDERATION


Waste Disposal Method : Do not attempt to dispose of residual or unused quantities. Return cylinder to DIGAS.

14 TRANSPORT INFORMATION

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 containers are firmly secured.
- Ensure cylinder valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.
- Ensure there is adequate ventilation.
- Compliance with applicable regulations.

15 OTHER INFORMATION

Asphyxiant in high concentrations.
Keep container in a well-ventilated place.
Do not breathe the gas.
May cause frostbite.
Wear suitable protective clothing.
Ensure all national/local regulations are observed.
The hazard of asphyxiation is often overlooked and must be stressed during operator training.

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15 OTHER INFORMATION (Continued)

Hazard Rating Systems

NFPA Ratings:

Health =3
 Flammability =0
 Instability =0

HMIS Ratings:

Health =3
 Flammability =0
 Physical Hazard =2

Standard valve connections

Threaded : CGA-295
Pin-Indexed Yoke : Not available

Use the proper CGA connections **Do Not Use Adapters.**

This Material Safety Data Sheet has been established for the best knowledge of DIGAS.

Details given in this document are believed to be correct at the best of DIGAS knowledge. 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.

End of Documents