

MATERIAL SAFETY DATA SHEET



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MAJOR SUPPLIERS OF CRYOGENICS AND WELDING EQUIPMENT

MSDS # NUML5102

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SECTION 1. MATERIAL IDENTIFICATION

<u>Product Name</u>	CAS #	O2 = 7782-44-7	<u>NFPA CODE 704/ HMIS</u>	
UNAMIX 5 (Cryogenic Liquid)		Ar = 7440-37-1	Health	1
			Fire	0
			Reactivity	0
			Special Hazard	None
<u>Trade Name And Synonym</u>	<u>DOT Identification No</u>			
Argon, Refrigerated Liquid (D.O.T.)	UN-1951			
<u>Chemical Name And Synonyms</u>	<u>DOT Hazard Class</u>			
5 Molar % Oxygen in Argon	Division 2.2			
<u>Formula</u>	<u>Chemical Family</u>	<u>Description</u>		
5 Molar % O2 in Ar	Cryogenic Liquid Mixture	Welding or welding shielding mixture		

SECTION 2. HEALTH HAZARD INFORMATION

Time Weighted Average Exposure Limit

No TWA is established for oxygen; argon is a simple asphyxiant (ACGIH 1998). Oxygen levels should be maintained at greater than 18 Molar percent at normal atmospheric pressure (pO₂>135 torr). OSHA 1995 does not list either oxygen or argon.

Symptoms Of Exposure

Effects of exposure to high concentrations so as to displace the oxygen in air necessary for life may include ANY, ALL or NONE of the following:

- * Loss of balance or dizziness
- * Tightness in the frontal area of the forehead
- * Tingling of the tongue, fingertips or toes
- * Weakened speech leading to the inability to utter sounds
- * Rapid reduction in the ability to perform movements
- * Reduced consciousness of the surroundings
- * Loss of tactile sensations
- * Heightened mental activity

It should be recognized that it is possible that none of the above symptoms may occur in argon asphyxia so that there are no DEFINITE warning symptoms. Contact with cryogenic liquid or cold piping containing the liquid can cause tissue freezing or frostbite on dermal contact or if splashed into the eyes.

Toxicological Properties

UNAMIX 5 (Cryogenic Liquid) is nontoxic but the liberation of a large amount in a confined area could displace the amount of oxygen in air necessary to support life.

Frostbite effects are a change in color of the skin to gray or white, possibly followed by blistering.

UNAMIX 5 (Cryogenic Liquid) is not listed in the IARC, NTP or by OSHA as a carcinogen or potential carcinogen.

Persons in ill health, where such illness would be aggravated by exposure to UNAMIX 5 (Cryogenic), should not be

allowed to work with or handle this product.

Recommended First Aid Treatment

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO UNAMIX 5 (CRYOGENIC LIQUID). RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

INHALATION: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given assisted respiration and supplemental oxygen. Further treatment should be symptomatic and supportive.

For dermal contact or frostbite, flush affected areas with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if the cryogenic "burn" has resulted in blistering of the dermal surface or deep tissue freezing.

SECTION 3. PHYSICAL DATA

Boiling Point

O₂ = -297.3°F (-182.9°C)

Ar = -302.6°F (-185.9°C)

Vapor Pressure @ 70° F (21.1°C)

Above the critical temperature of:

O₂ = -181.1°F (-118.4°C)

Ar = -188.1°F (-122.3°C)

Solubility In Water

Very slight

Evaporation Rate

N/A (Cryogenic Liquid)

Appearance And Odor

Colorless, odorless liquid and gas

Liquid Density at Boiling Point

O₂ = 71.23 lb/ft³ (1141 kg/m³)

Ar = 87 lb/ft³ (1393 kg/m³)

Gas Density at 70°F 1 ATM

.1024 lb/ft³ (1.640 kg/m³)

Freezing Point

O₂ = -361.8°F (-218.8°C)

Ar = -308.9°F (-189.4°C)

Specific Gravity (AIR = 1)

@ 70°F (21.1°C) = 1.36

SECTION 4. FIRE AND EXPLOSION HAZARD DATA

Flash Point

N/A

Auto Ignition Temperature

N/A

Flammable Units Percent by Volume

LEL N/A

UEL N/A

Extinguishing Media

Non-flammable, inert

Electrical Classification

Non-hazardous

Special Firefighting Procedure

If liquid cylinders are involved in a fire, safely relocate or keep cool with water spray.

Unusual Fire and Explosion Hazards

None

Hazardous Mixtures Of Other Liquids, Solids or Gases

None

SECTION 5. REACTIVITY DATA

Stability

Unstable

Stable

Conditions To Avoid

None

Hazardous Polymerization

May Occur

Will Not Occur

Conditions To Avoid

None

Incompatibility; (Materials to Avoid)

None

Hazardous Decomposition Products

None

SECTION 6. SPILL, LEAK AND DISPOSAL PROCEDURES

Steps to be taken in Case Material is Released or Spilled

UNIMIX 5 (Cryogenic Liquid) is delivered to a customer into stationary vacuum-jacketed vessels at the customer's location or in portable vacuum-jacketed "liquid" cylinders.

Stationary customer-site vessels should be operated in accordance with the manufacturer's and your supplier's instructions. Do not attempt to repair, adjust or in any way modify the operation of these vessels. If there is a malfunction or other type of operational problem with the vessel, contact the closest supplier location immediately.

UNIMIX 5 (Cryogenic Liquid) cylinders should be used only in well-ventilated areas and in accordance with the manufacturer's and your supplier's instructions. These cylinders must ALWAYS be kept in an upright position. Specialized hand trucks are needed for their movement. A "first in - first out" inventory system should be used with these cylinders.

Waste Disposal

Information not available.

SECTION 7. SPECIAL PROTECTION INFORMATION

Respiratory Protection

Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

<u>Ventilation</u>	<u>Local Exhaust</u>	<u>Special</u>
See Local Exhaust	To prevent accumulation of high concentrations so as to reduce the oxygen level in the air to less than 18 Molar percent.	N/A

<u>Mechanical</u>	<u>Other</u>
N/A	N/A

Protective Gloves

Loose fitting, insulated

Eye Protection

Safety goggles or glasses plus face shield

Other Protective Equipment

Safety shoes

SECTION 8. SPECIAL PRECAUTIONS AND COMMENTS

Special Labeling Information

DOT Shipping Name: Argon, Refrigerated Liquid	DOT Hazard Class: Division 2.2
DOT Shipping Label: Nonflammable Gas	I.D. No.: UN 1951

Special Handling Recommendations

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For additional information, see Compressed Gas Association Safety Bulletin SB-2 and Compressed Gas Association Pamphlets P-9, P-12 and P-14.

Special Storage Recommendations

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Special Packaging Recommendations

UNAMIX 5 (Cryogenic Liquid) cannot be handled in carbon or low alloy steels. Eighteen-eight and 18-10 stainless steels are acceptable as are copper and its alloys, nickel and its alloys, brass, bronze, silicon alloys, Monel®, Inconel®, and beryllium.

Also see Compressed Gas Association Safety Bulletin SB-2 and Compressed Gas Association Pamphlets P-9, P-12 and P-14.

Other Recommendations or Precautions

Liquefied gas cylinders should not be refilled except by qualified producers of these products. Shipment of a compressed gas container which has not been filled by the owner or with his (written) consent is a violation of Federal Law (49CFR).

Always secure cylinders in an upright position before transporting them. NEVER transport cylinders in trunks of vehicles, enclosed vans, truck cabs or in passenger compartments. Transport cylinders secured in open flatbed or in open pickup type vehicles.

Special Notes

Reporting under SARA, Title III, Section 313 not required.