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HAZCHEM 2RE  
CLASS 2.2

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LIQUID ARGON

### TECHNICAL SPECIFICATION

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Argon > 99.9%

#### PHYSICAL DATA

Chemical Symbol Ar

Boiling Point -185.9°C

Relative Density (Air = 1) 1.4

Molecular Weight 39.948

Critical Temperature -122.4°C

Flashpoint Non-flammable

Density of Gas (@101.3 kPa & 15°C) 1.78 kg/m<sup>3</sup>

Density of Liquid (B.Pt.) 1393 kg/m<sup>3</sup>

Specific Volume (@101.3 kPa & 15°C) 0.591 m<sup>3</sup>/kg

#### PROPERTIES

Argon is colourless, odourless and constitutes approx. 0.9% of the atmosphere

Argon does not support life, it is non-toxic.

It is non-flammable and will not support combustion.

#### USES

Owing to its chemical inertness, argon is employed for welding in inert gas atmospheres. Argon, either pure or in combination with carbon dioxide, oxygen, hydrogen or helium, is the most widely used gas in welding applications.

Argon is employed in metallurgy for heat treatment in a protective atmosphere, notably for the annealing of high carbon steels, to avoid decarburization.

It serves as a carrier gas for silane in the deposition of silicon.

Argon is employed in the iron and steel industry in the following manner: In the gaseous state, it serves in degassing and de-sulfuration of molten steel and iron baths.

In the area of electrical lighting, argon is used to fill:

- incandescent light bulbs.
- phosphorescent tubes, in mixtures with neon, helium and mercury vapour.
- thyratron radio tubes, in mixtures with neon.

Argon is also employed as a carrier gas in chromatography. Mixed with methane, argon is used for flushing Geiger-Muller counters employed for the detection of X- and  $\gamma$ -rays. These instruments are employed in monitoring nuclear radiation and for the analysis of spectra emitted by X-ray fluorescence analytical devices.

#### SUPPLY & STORAGE

As Cryogenic Liquid in Cryogenic Storage Tanks, Bulk Tankers, Liquid containers, Dewars etc

### HANDLING & SAFETY

#### HAZARDS

Should argon replace oxygen in air there is a risk of asphyxia: air containing less than 16% oxygen is dangerous.

Extremely low temperature. (-185.9°C)

#### MATERIALS COMPATIBILITY

Argon is non-corrosive and so any common metal is acceptable, provided equipment is designed to withstand process pressure and temperature.

#### PRECAUTIONS IN USE

Use only in well-ventilated area to prevent accumulation of high concentration of argon. Ensure that oxygen content of air is maintained above 18%.

It is recommended that the user of liquid argon is familiar with relevant standards "The storage and handling of nonflammable cryogenic and refrigerated liquids".

#### PERSONAL PROTECTION

Full face mask, well-fitting cryogenic gloves and full overalls without cuffs should be worn when handling liquid argon supply systems.

#### FIRST AID

If victim is conscious:

- Move to uncontaminated area to breathe fresh air.
- Keep warm and quiet. Call Doctor

#### FIRST AID contd

If victim is unconscious:

- Move to uncontaminated area and give assisted respiration.
  - When breathing is restored, treatment as above.
- Continued treatment should be symptomatic and supportive.
- Cold burns/Frostbite:
- Flush with lukewarm water for at least 10 minutes then treat as thermal burns.
  - Seek hospital attention for all but the most superficial cases. Do not apply direct heat or give alcohol or cigarettes.
  - Protect frozen parts from infection.

Hospital treatment of cold burns/frostbite may differ from heat burns.

#### ADDITIONAL INFORMATION

The information, recommendations and data contained in this publication are intended to give basic guidance to users for their safe handling and use.

For further information please refer Material Safety Data Sheets (MSDS)

It is essential for the safe use of gases that personnel are properly trained and are fully aware of the possible hazards.