

## Nitrogen (N<sub>2</sub>), Liquid

A colourless, odourless, non-toxic liquid.

### Hazards

- Extremely cold, cryogenic liquid
- Asphyxiant in high concentrations.

### Classifications

| Gas                | Purity |
|--------------------|--------|
| Nitrogen technical | 99,5%  |

Higher grades and purities of this product are available from Afrox on request

### Supply

Details of a wide range of storage vessels and ancillary equipment are available from Afrox on request.

### Physical Data

|   |  |
|---|--|
| Appearance/odour                                    | Colourless, odourless and non-toxic liquid |
| Molecular weight                                    | 28,0134                                    |
| Specific volume at 21,1 °C and 101,325 kPa          | 861,5 l/kg                                 |
| Boiling point at 101,325 kPa                        | -195,8 °C                                  |
| Critical temperature                                | 146,9 °C                                   |
| Relative density (air = 1) at 101,325 kPa and 25 °C | 0,967                                      |
| Density, liquid at boiling point                    | 803,6 kg/m <sup>3</sup>                    |
| Flammability  | Inert                                      |

### Uses and Features

- To prevent the undesirable presence of oxygen, nitrogen is valuable in furnaces, metal plating and tinning, chemical processing, food packing, wine making, paint and varnish manufacture, tube manufacture and packaging and preserving rubber products
- Dry nitrogen is used for in-transit refrigeration, artificial insemination, biological freezing, tissue preservation, cryosurgery, laboratory low temperature tests, dermatology, low temperature component testing, environmental testing, shrink fitting, grinding of plastics, quick freezing of foods, metal grinding and rubber de-flashing
- Among the many uses for gaseous nitrogen are flow testing, gauge calibration, plastic forming, aerosol propellant, powering air tools, metal de-gassing, pipeline testing, pressure testing cables and generators, recoil systems, hydraulic systems (cushions), inflating aircraft tyres and the handling and transfer of flammable liquids
- Gaseous nitrogen is also used for the inert packaging of foods, sparging wines, pressurisation of head spaces in liquid containers and conveyance of beverages in pressurised pipe systems

- Shrink fitting and pipe freezing
- Carrier gas in chromatography
- Blood freezing, tissue culture and freezing biological specimens.

### Precautions in Use

- Use only approved degreased temperature and pressure rated equipment
- Do not trap liquid between closed valves
- Wear leather gloves, face shield and safety shoes when handling low temperature products
- Keep self-contained full face positive pressure breathing apparatus nearby
- Refer to MSDS for more information.

### Material Compatibility

- Nitrogen is non-corrosive and so any common metal is acceptable provided equipment is designed to withstand process pressure and temperature. Equipment to handle liquid nitrogen must be constructed of suitable materials for the low temperature encountered.

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