

University of Sydney

GUIDELINES FOR TRANSPORTING LIQUEFIED GASES (ALSO KNOWN AS CRYOGENIC LIQUIDS OR FLUIDS)

1. GENERAL

Use only containers designed specifically for the liquefied gas. These containers are designed to withstand temperature differences and sudden temperature changes, and for safe handling of low temperature fluids in general. Always handle these fluids with care. Exposure of the skin or eyes to the liquids or low-temperature gases from them can cause burn-like effects. For further information on the hazards and general handling precautions for cryogenic fluids, consult the references listed below.

2. TRANSPORT IN VEHICLES

Liquefied gases such as liquid nitrogen, liquid oxygen, liquefied natural gas and liquefied petroleum gas (LPG) require care when transporting in containers. Shocks and bumps to containers may lead to damage to and failure of the containers, followed by a rapid escape of gas. In enclosed spaces this can result in an asphyxiating or explosive atmosphere. It is therefore recommended that containers of liquefied gases only be transported in open vehicles. The containers should be firmly secured to the vehicle and protected from other objects striking against them during transport. Containers should be inspected for structural integrity prior to transport. Vents on containers should be positioned so that any escaping jet of fluid will not impinge directly on the vehicle or other goods being carried.

Liquefied gases should not be transported in enclosed vehicles such as sedans or station wagons, nor in cabs of trucks and utilities. When transported on the open tray of a utility or truck, any gases that are accidentally released will be diluted and dispersed into the atmosphere.

Liquid Oxygen requires special care as it can explode on contact with dust or oil. Special containers with appropriate stoppers must be used. Refer to the Australian Standards Emergency Procedures Guide 1678.2.2.000, your supplier's Material Safety Data Sheet and other supplier information for further guidance on safe handling of liquid Oxygen.

3. TRANSPORT IN LIFTS

Transporting liquefied gases in lifts poses a potential asphyxiation and fire/explosion risk should the container fail within the enclosed space of the lift. Staff, students or visitors must not ride in a lift in which liquefied gases are being transported. If the safest or only method for transporting a liquefied gas container to or from an upper floor of a building is via a lift, then a clearly visible sign should be placed on the container warning staff and students not to enter the lift whilst the container is travelling in it. Staff shall be in attendance at the destination floor to collect the container and return the lift promptly to normal service. Schools and Departments which transport liquefied gases in building lifts shall make staff and students aware of the procedure and the rationale for it.

4. TRANSPORT AROUND BUILDINGS

Care must be taken to avoid knocks, bumps and uneven surfaces when transporting liquefied gases using trolleys around buildings. Secure these containers to trolleys and inspect them for structural integrity prior to transport. Ensure the route to be taken is free of obstructions and use ramps rather than steps. The building may require modification to eliminate steps from routes regularly used for transport of liquefied gases.

When transporting small quantities, always use a vessel fitted with a carrying handle and splash guard. Wear gloves when carrying these vessels.

If using a thermos flask with a screw top, do not screw the lid in, but allow it to rest on the rim. This allows evaporating gas to safely escape. If the lid is screwed in, pressure can build up and an explosion can result.

Safety glasses should always be worn when decanting the liquid.

5. REFERENCES

Australian Standard 1894-1997 - The storage and handling of non-flammable cryogenic and refrigerated liquids

Australian Standard 1678.2.2.000-1986 - Emergency Procedures Guide Oxygen (refrigerated liquid)
CCH Laboratory Safety Manual

See also:

Chem Alert II Database for Material Safety Data Sheets for specific substances

University of Sydney Policy on Safe Storage, Handling and Use of Compressed Gases in Cylinders.