BCGA Guidelines Dry Ice
SOLID CARBON DIOXIDE

Guidelines for the Safe Transportation, Storage, Use and Disposal of Dry Ice Products

Product Description

Solid Carbon Dioxide - CO_2 (dry ice) is very cold: -78°C. It sublimes (turns from a solid) to an asphyxiant gas that is heavier than air. It is important to note that a little bit of dry ice will sublime to a large volume of gas.

Dry ice is manufactured in the form of pellets, slices or blocks and may be supplied loose or in insulated containers.

The risks associated with dry ice in a customer caller-collect situation come from:

- The product (pellets, slices, blocks)
- Types of packaging and insulation used
- The way it is secured whilst in transit
- The type of vehicle being used; and
- The length of time the journey takes

Areas having an impact on the size of the risk include product packaging and insulation. Your supplier will have listed the hazards associated with the product on the wrapper or container in which the dry ice is supplied.

The Material Safety Data Sheet given to you by your supplier will inform you of the action to be taken in the event of an incident or emergency involving dry ice and the health hazards of the product. You should read this carefully before transporting, handling or using dry ice.

Transportation

The most significant risks incurred when transporting dry ice are:

- The creation of an unsafe atmosphere due to sublimation of the product (change of state from a solid to a gas) – the product will not "melt" into a liquid.
- Spillage from an insecure load would lead to a higher rate of sublimation as the surface area of the product type increases – pellets being worse than slices that, in turn, are worse than blocks.
- Impact damage / injury - As with any heavy load, dry ice loads **MUST BE SECURED**.

The following is intended as a guide to help you determine if the vehicle in which the ice is being collected is suitable:

AVOID transporting dry ice in the cab of a truck or the passenger compartment of a car. If this is not possible, the load should be well insulated and adequate ventilation must be maintained.

Preferably transport dry ice in vehicles where the driver's cab is isolated from the load compartment.

ALWAYS secure the load compartment doors in the open position before entering. For large "walk-in" load compartments, the doors should be capable of being opened from the inside.

ALWAYS ensure that there is adequate ventilation during transportation and before entering load compartment to unload product.

ALWAYS carry a carbon dioxide (solid) Material Safety Data Sheet in the cab or driver's compartment of any vehicle that is carrying dry ice.

REMEMBER: These are not hard and fast rules. However, drivers of vehicles carrying dry ice should be aware that the level of risk of an unsafe atmosphere occurring in the vehicle will depend on the following conditions:

- Quantity of dry ice being transported
- Type of packaging and insulation used
- The length of time the product is held in an enclosed space
- The temperature of the load compartment
- Vehicle ventilation – **ALWAYS** ensure that the heating / air supply is switched to draw in 'fresh air' from outside the vehicle.

ALWAYS unload product as soon as possible at the end of the journey and move to a suitable storage location.

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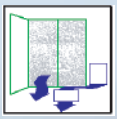
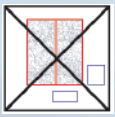
Storage

ALWAYS store dry ice in an area which is:

- Well ventilated.
- Preferably not below ground.
- Accessible with mechanical lifting equipment (where the ice is stored in large containers).
- Out of direct sunlight and sources of heat.
- Secure – to prevent unauthorised access.

Suitable dry ice containers are available from your supplier. Generally, the principle is – the better the insulation, the slower the sublimation rate and the longer the quality of the product will be maintained.


DO NOT store or use dry ice in any gas tight container. Within large containers, gas rich atmospheres will have built up.

ALWAYS secure the container lid open before reaching in to unload the product.

AVOID leaning into the container for longer than necessary.

How to use Dry Ice

FREEZING – place dry ice above items to be frozen.

DO NOT allow direct contact with items to be frozen as superficial damage / freezer burn may occur.

ALWAYS defrost completely before consumption.

COOLING – place dry ice in bottom of cooler, cover with water ice or insulating material, then place cans, food etc. on top. **DO NOT** allow direct contact with dry ice. **DO NOT** put it into drinks.

SPECIAL EFFECTS – use gloves to place small amounts of dry ice in hot water for fog. Can be used with a proprietary fog machine.

OTHER USES - • fresh meat processing and shipping • de-flashing moulded rubber and plastic • low temperature testing • industrial cleaning (dry ice pellet blasting) • shrink fitting • laboratory cold traps • inerting and purging • freeze branding.

Working with Dry Ice

Many applications of dry ice result in the sublimation of the dry ice volume into the working area.

REMEMBER – a little bit of dry ice will sublime to a large volume of CO_2 gas.

ALWAYS seek professional advice on suitable ventilation systems. Use of dry ice will generate gaseous CO_2, This may require assessment under the UK COSHH Regulations.


Do not handle dry ice with bare hands. It can cause severe cold burns and frostbite.


DO NOT play with dry ice. Playing games with dry ice is dangerous.

ALWAYS keep dry ice away from children.

USE AN INSULATED CONTAINER TO STORE DRY ICE

DO NOT PLACE IN WORKING REFRIGERATOR OR FREEZER

Safe Disposal

Dry ice sublimates leaving no residue. However, care should be taken when surplus ice remains when the application for which it was intended is completed.

- **ALWAYS** ensure that dry ice is disposed of in a safe place:
- Well-ventilated area
- Secured against access to passers-by – especially children and animals
- **DO NOT** dispose of dry ice in an area where CO_2 gas can collect in low-lying areas – garage pits, drains, confined spaces, etc.

Any left-over packaging should be disposed of with care and recycled wherever possible.

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