## **Dry Ice Facts**

## History

In 1835 the French chemist Charles Thilorier published the first account of dry ice. Upon opening the lid of a large cylinder containing liquid carbon dioxide he noted much of the carbon dioxide rapidly evaporated leaving solid dry ice in the container. Throughout the next 60 years, dry ice was observed and tested by scientists.

## Manufacturing

- 1. Carbon dioxide is pressurized and refrigerated until it changes into its liquid form.
- 2. The pressure is reduced. When this occurs some liquid carbon dioxide vaporizes, and this causes a rapid lowering of temperature of the remaining liquid carbon dioxide. The extreme cold makes the liquid solidify into a snow-like consistency.
- 3. The snow-like solid carbon dioxide is compressed into either small pellets or larger blocks of dry ice.

Dry ice is typically produced in two standard forms, blocks and cylindrical pellets. A standard block is most common and is approximately 30 kg. These are commonly used in shipping, because they sublime slowly due to a relatively small surface area. Pellets are around 1 cm in diameter and can be bagged easily. This form is suited to small scale use, for example at grocery stores and laboratories. Dry ice is also inexpensive; it costs about US \$2 per kilogram.

## Applications

Dry ice is commonly used to package items that need to remain cold or frozen, such as ice cream, without the use of mechanical cooling. In medicine it is used to freeze warts to make removal easier. In the construction industry it is used to loosen floor tiles by shrinking and cracking them, as well as to freeze water in valveless pipes to allow repair. In laboratories, a slurry of dry ice in an organic solvent is a useful freezing mixture for cold chemical reactions.

Dry ice can also be used for making ice cream.

Dry ice is also used as a source of carbon dioxide. It can be used to carbonate water and other liquids such as root beer. It can be used as bait to trap mosquitoes and other insects

When dry ice is placed in water sublimation is accelerated, and low-sinking dense clouds of fog are created. This is used in fog machines at theaters and nightclubs for dramatic effects.