

SAFETY ALERT

HAZARDS OF LIQUID NITROGEN IN THE FOOD AND BEVERAGE INDUSTRY

In the past few years the use of liquid nitrogen has grown in popularity in the front end of food and beverage establishments for use in food and beverage preparation and consumption. Liquid nitrogen also is used to take advantage of its cryogenic properties to entertain the guests with vapor clouds and “smoke” effects. The use of liquid nitrogen has also been highlighted on many television cooking shows and continues to gain in popularity at trade shows and entertainment venues in various food related demonstrations.

The variety of popular uses for liquid nitrogen include using it for freezing foods, preparing cold drinks, and creating clouds or other special effects with the vapor cloud liquid nitrogen produces. Liquid nitrogen is especially popular in making ice cream and specialty cocktails.

The Compressed Gas Association (CGA) is aware of several incidents that have resulted in serious injuries to customers who have consumed liquid nitrogen or workers who used it for food or beverage preparation.

Proper training, procedures, and handling precautions are necessary when using liquid nitrogen in the food and beverage industry. CGA would like to make members of the food and beverage industry aware of the physical properties of liquid nitrogen and the potential hazards associated with using it, so that appropriate precautions can be taken when handling or using liquid nitrogen for food and beverage preparation.

- Liquid nitrogen is a simple asphyxiant that quickly turns to a gas and expands rapidly at room temperature [1]. One cubic foot of liquid can expand into 700 cubic feet of gas.
 - Never use liquid nitrogen in an enclosed or inadequately ventilated area or room. As the liquid warms and turns into a gas it can quickly displace oxygen and create a risk of oxygen deficiency and asphyxiation [1].
 - Never trap liquid nitrogen in an enclosed container not designed for this purpose. As the liquid warms, the pressure rises, and improper containers can rupture catastrophically.
 - Never consume liquid nitrogen directly. Even a small amount of liquid, when consumed, will expand significantly inside the body to potentially dangerous levels.
- Liquid nitrogen is an extremely cold liquid (–320 °F [–196 °C]) and can burn or freeze body tissue quickly.
 - The liquid and cold vapors can quickly burn skin and eyes if direct contact is made. Care should be taken to prevent direct contact with the skin and to protect the body from splashing or spraying of liquid or cold vapors.
 - Liquid nitrogen must never be consumed directly. Liquid nitrogen and very cold vapors can freeze delicate tissue such as the mouth, esophagus, and stomach.

For more detailed information on the properties, safe handling and use of liquid nitrogen and other cryogenic liquids, refer to the supplier’s safety data sheet on liquid nitrogen and CGA P-12, *Safe Handling of Cryogenic Liquids* [2].

References

Unless otherwise specified, the latest edition shall apply.

[1] CGA SB-2, *Oxygen-Deficient Atmospheres*, Compressed Gas Association, Inc., 14501 George Carter Way, Suite 103, Chantilly, VA 20151. www.cganet.com

[2] CGA P-12, *Safe Handling and Use of Cryogenic Liquids*, Compressed Gas Association, Inc., 14501 George Carter Way, Suite 103, Chantilly, VA 20151. www.cganet.com

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Food Gases Committee

NOTE—No technical information has been changed from the 2013 edition. This reaffirmed edition may include minor editorial changes.

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