



Mr Iceman's Emergency Refrigeration & Freezing Information

With Dry Ice

BROKEN REFRIGERATOR, BROKEN FREEZER

Dry Ice will keep things frozen when the power goes out or the freezer breaks down.

POWER OUTAGE

If the electricity is out for a brief period of time keep the refrigerator & freezer closed & everything will be all right. The time everything will stay frozen or cool will depend on the type of freezer or refrigerator, the thermostat setting, & the temperature surrounding the appliance. Generally speaking on a hot summer day after the first hour, for every hour off, an equivalent day of storage will be lost for refrigerated items. Three to six hours could represent two to five days of storage. For the freezer, depending on how full it is, (the more full the better) things will stay frozen from three to six hours in a refrigerator freezer & up to twelve hours for a chest freezer.

ONLY TAKE ACTION IF THE POWER IS EXPECTED TO BE OFF FOR A LONGER PERIOD OF TIME!

Follow the directions for each appliance below:

FREEZER NOT WORKING

Do not touch Dry Ice directly. Use insulated gloves, potholder, towel, etc. Use the following guidelines for each type of freezer. For each 24-hour period:

- (1)** Freezer on bottom: use 7 to 10 Kg's.
- (2)** Freezer on top: use 9 to 14 Kg's.
- (3)** Side by side Freezer: use 14kg to 20 Kg's. Place each slab, starting with the top shelf, on top of the food to be kept frozen. Bottom shelves will be kept frozen by the Dry Ice above it.
- (4)** Chest Freezer: use 20 to 25 Kg. When taking out the frozen food, carefully lift the Dry Ice slab up with gloves, potholder, towel, etc., without touching the Dry Ice directly.

REFRIGERATOR NOT WORKING

For each 12 to 24 hour period, place a ten pound slab of Dry Ice on bottom shelf of the refrigerator to cool. Do not touch Dry Ice with bare hands. Do not place it directly on the glass shelf, but use newspaper or other insulated protection such as a hot pad between the Dry Ice & the shelf. When the Dry Ice is sublimated replace it with a new slab. Keep extra Dry Ice in an ice chest. Because Dry Ice is frozen CO₂, it will carbonate open containers. Carbonated water is OK but carbonated milk sure tastes different! Also anything too close to the Dry Ice may freeze. Watch out for items below the bottom shelf as they may freeze too. Regular block ice is better for the refrigerator - the old fashion "ice box" - but then the melted ice water must be removed.

WALK-IN FREEZER

A 3.5mx3.5m walk in freezer will use 75Kg to 115Kg per day. If the fans are running, place half the Dry Ice as high & close to the back of the evaporator unit where the air is sucked through. Place remainder slabs on top shelves directly on frozen food. Leave door open when entering the freezer. Carbon dioxide gas will accumulate in lowest areas & could cause suffocation. Use the buddy system with one person outside the walk-in at all times to help remove items from the walk-in. Leave walk-in if you start to pant & breath quickly or your fingernails or lips start to turn blue. This is the sign that you have breathed in too much CO₂ & not enough oxygen.

WALK-IN REFRIGERATOR

A 3.5mx3.5m walk in refrigerator will use 25Kg to 50 Kg per day. If the fans are running, place all the Dry Ice as high & close to the back of the evaporator unit where the air is sucked through. Otherwise, place slabs on top shelves without touching any food. Too much Dry Ice will lower the temperature too much & freeze food near the floor. Monitor the temperature closely after several hours. Add or subtract Dry Ice as needed. Keep extra Dry Ice in an ice chest. Leave door open when entering walk-in. Carbon dioxide gas will accumulate in lowest areas & could cause suffocation. Use the buddy system with one person outside the walk-in at all times to help remove items from the walk-in. Leave walk-in if you start to pant & breath quickly or your fingernails or lips start to turn blue. This is the sign that you have breathed in too much CO₂ & not enough oxygen.

HOW TO PACK DRY ICE

If the Dry Ice is placed on top of the food (cold sinks), it will work better. However it is sometimes in the way so many people prefer to keep the Dry Ice on the bottom of the ice chest for convenience. When packing items in the container fill the empty space with wadded newspaper or other filler. Any "dead air space" will cause the Dry Ice to sublimate faster. The best storage container is a three-inch thick urethane insulated box "Esky". Lining the inside of your ice chest with sheets of Styrofoam will increase the life of Dry Ice. Dry Ice sublimation (changing from a solid to a gas) will vary depending on the temperature, air pressure & thickness of insulation. **The more Dry Ice you have stored in the container, the longer it will last.**