

# CO<sub>2</sub> in Food Transportation and Storage

## Food transportation and storage in general

Research on gas concentration in food packaging has been ongoing since the 1930's. It's proven that the control of gases, humidity and temperature within the food container can slow down the ripening process. With better measurement and control of these parameters, it is now possible to better control decomposition and help prevent pathogens from growing on the food.

## Why the need to measure CO<sub>2</sub>?

Food stays fresh longer and has enhanced flavor under controlled conditions. Controlled conditions leads to reduced waste and more food for minimal amount of energy.

Food can be transported longer distances in a controlled environment.



### Facts & Figures

- "Food kilometers" or "Food Miles" describe the distance that food is transported as it travels from producer to consumer.
- In the UK, food travels an amazing 30 billion kilometers each year.
- According to NRDC, food miles for these products are:
  - Table grapes = 5,909 miles
  - Wine = 10,361
  - Oranges = 8,655
  - Rice = 8,229

There is a positive environmental benefit as well, as you ship only fresh food with no need for costly freezing and thawing processes.

When you control the growth process it reduces the amount of food that gets wasted in the stores. The food producers also benefit from gas concentration measurement due to reduced losses in the supply chain.

Utilizing a CO<sub>2</sub> controlled packaging method to increase shelf life of food products will result in less discarded food due to short expiration dates of uncontrolled packaged products. Regulating the temperature and gas concentration in the air can slow down the ripening process without the need for using chemicals.

## How does it work?

Small concentrations of ethylene have an effect on plant maturation rates to differing extents. The concentration of ethylene that is required depends on temperature. If the temperature is low, a low concentration of ethylene is required.

Sustainability of meat increases by 20% when using CO<sub>2</sub> for modified atmosphere processing.

Low oxygen levels (1% to 3%) can destroy the microorganisms that cause decay.

Carbon dioxide levels of 60% combined with oxygen at 1% concentration is an effective condition for killing insects that may be in leaves and stems of tropical fruits and vegetables.