MESSER
Gases for Life

Gas Packaging for Meat and Poultry.

Health-conscious, convenience-seeking consumers are putting the food industry under ever-increasing pressure. Consumers are especially concerned about product quality including the source, treatment, and freshness of meat products and poultry. For food processors, this translates into a need for production processes that deliver consistently high-quality meats that satisfy strict food regulations, consumer expectations, and the need for longer shelf life.

The solution lies in new, highly-sophisticated, efficient production and packaging processes that guarantee taste, appearance, food safety, and value for money.

Meat and meat products

The challenges – The naturally high water and nutrient content in meat and meat products makes them susceptible to bacterial contamination. Food handling and processing are also potential sources of contamination. Another challenge is the de-oxygenation of myoglobin within red meat which can lead to undesirable color change.

The solution – Strict hygiene, temperature, and atmospheric control during processing and pre-packaging minimize the growth of mold and chemical breakdown which cause rancidity and food poisoning.

Carbon dioxide can also inhibit the growth of harmful bacteria such as Pseudomonas while a high concentration of oxygen (60 – 80%) in the fresh meat packaging room can help to retain the red color in meat. Additionally, the right mix of oxygen can extend shelf life. For example, the shelf life of meat in consumer packs can be doubled from 2 – 4 days to 5 – 8 days at 39 °F.

Poultry

The challenges – Poultry is susceptible to microbial growth, evaporation loss, off-odor, discoloration, and biochemical deterioration. Unlike red meat, however, it does not undergo irreversible surface discoloration in the presence of oxygen.

The solution – Carbon dioxide is an effective inhibitor of aerobic spoilage bacteria in poultry. Levels of 20% and above can help retain original taste and texture, as well as significantly extend shelf life provided the headspace volume (nearly) equates to the product volume. The right gas mix is proven to lengthen the shelf life of pre-packed poultry between 16 and 21 days.

The Messer solution

Messer's Modified Atmosphere Packaging brings you a full range of tailored solutions to meet the packaging requirements of the food industries. Our Messer specialists will recommend the most suitable gas, equipment, and safety products for your process, site, and employees.

Messer's Modified Atmosphere Packaging gas range has been created to match the special quality requirements of the food industry. They comply with the strict food standards and legislation regarding packaging, storage, and distribution. We can provide the traceability and safety guarantees demanded by the law.

Food grade gases

Messer's dedicated field and in-house specialists have in-depth knowledge of the options available to you. We will work with you to develop the right gas mixture for the products being packed.

Gases:

- Oxygen
- Nitrogen
- Carbon Dioxide

Technical service

Messer works closely with the food industry to create and develop leading technologies and applications. Across Messer, we have dedicated MAP technical specialists in place to support and aid all our customers. They can advise you on a range of topics, including gas mixture selection, achievable shelf life, and analysis techniques.

Recommended gas mixtures for meat and poultry products

Product	Gas mixtures	Gas volume / Product volume	Typical shelf-life Air	MAP	Storage temp.
Raw red meat	60 – 80% O_2 + 20 – 40% CO_2	0.02 - 0.04 SCF/lb	2 – 4 days	5 – 8 days	35 – 37°F
Raw light poultry	40 – 100% CO_2 + 0 – 60% N_2	0.02 - 0.04 SCF/lb	4 – 7 days	6 – 21 days	35 – 37°F
Raw dark poultry	70% O_2 + 30% CO_2	0.02 - 0.04 SCF/lb	3 – 5 days	7 – 14 days	35 – 37°F
Sausages	20 – 30% CO_2 + 70 – 80% N_2	0.01 - 0.02 SCF/lb	3 – 5 days	2 – 5 weeks	39 – 43°F
Sliced cooked meat	30% CO_2 + 70% N_2	0.01 - 0.02 SCF/lb	2 – 4 days	2 – 5 weeks	39 – 43°F

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