

MEAT RESEARCH NEWS LETTER

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THE USE OF PACKAGING FILMS FOR CHILLED PROCESSED MEATS

As with fresh meat, the preservation of appearance in processed meats is of great importance to the consumer. Packaging protects product colour, and facilitates marketing by enabling brand selling of conveniently sized portions and, in some cases, by increasing storage life.

UNCOOKED CURED MEAT

In uncooked meats, the desirable attractive pink colour is susceptible to oxidation and is readily converted to the undesirable brown metmyoglobin. Light also has an adverse effect on cured meat pigments and acts, with oxygen, to cause colour fading or discolouration. These reactions are slowed down by lower temperatures.

The higher the intensity of light and the longer the exposure, the greater will be the undesirable colour changes. For this reason, display cabinets should not be over illuminated and the lights should be turned off when the cabinets are not in use. Temperatures as close as possible to freezing should be used.

Since cured meats retain their colour best in the absence of oxygen, films with low permeability to oxygen are commonly used. To get maximum colour retention in a vacuum package, trapped air in or around the product must be avoided (e.g. in the use of comminuted meats, by vacuum chopping).

With cured meats the presence of salt and undissociated nitrous acid inhibit the bacteria that normally cause spoilage of fresh meats. However, spoilage can still occur and for long storage life, vacuum or gas packaging in impermeable films is necessary.

Removal of air by vacuum packaging permits carbon dioxide to build up in the pack to a level similar to that with fresh meat, thus retarding the growth of bacteria. Alternatively, gas flushing with 25 - 40% carbon dioxide would be adequate. Higher levels of carbon dioxide do not adversely affect the colour, but give little additional benefit. Nitrogen percentages close to 100%, and mixtures of nitrogen and carbon dioxide, will also give extended storage life.

COOKED MEAT PRODUCTS

The above comments concerning colour apply to all cooked products, although for slightly different reasons. Oxygen and light are again needed for most of the undesirable colour changes and these changes are slowed down by low temperatures. In the case of bacterial greening of cured products the adverse colour is caused by bacteria which can grow where the oxygen level is low. The green discolouration is a product of the reaction between peroxide produced by bacteria and the nitroso-haemochrome. It occurs only after the consumer has opened the package and the product is exposed to oxygen. The occurrence of greening may be a sign of underprocessing.

As cooked products generally lack any substantial amount of dissolved carbon dioxide, vacuum packaging does not lead to any appreciable accumulation of this gas within the package. Gas packaging is, therefore, commonly preferred. In semi rigid packs, a percentage of nitrogen mixed with the carbon dioxide (e.g. a 1:1 mix of nitrogen and carbon dioxide) is desirable in order to prevent collapse due to carbon dioxide absorption by the meat.

Most cooked meat products are intended for consumption without further heating. Cooking is not a substitute for strict control of hygiene in all phases of preparation, and careful control of temperatures. Particular attention should be paid to:-

- adequately cooking to an internal temperature of at least 150° to 155°F for 10 minutes.
- rapidly cooling the product to below 45°F.

- following hygienic practices in the packaging room: For maximum storage life, it is desirable that the product be cooked in its final package, e.g. chubs. For products that are not cooked in the final package it is essential to keep post-processing recontamination to a minimum. Once packaged, the product is protected from possible recontamination.
- maintenance of temperatures as close as practicable to 30°F during storage, distribution and display.

Thus with processed meats, the lower the permeability of the film to gases, and the lower the oxygen concentration and higher the carbon dioxide concentration in the pack, the longer will be the storage life and the better the appearance. As with fresh meats, storage life of processed meat is related directly to the bacterial load at the time of packaging and the temperature under which the product is held. Once opened, the shelf life of the package is limited. It is important to remember these points and not allow your staff or customers to get a false sense of security.

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NEWS JOTTINGS:

CLEANING AND SANITATION WORKING PARTY

The CSIRO Meat Research Laboratory, Industry Section is conducting Working Parties on Cleaning and Sanitation in Melbourne on 28th and 29th August, 1970 and in Perth on 18th and 19th September, 1970.

The course is intended for Works and Boning Room Managers or their nominees. The aim is to demonstrate a recommended cleaning programme, give the reasons for running such a programme and show how the programme can be tested.

NEXT ISSUE is:

"Batch Process Dry Rendering".