Meat Packaging Discussion

D. Kropf: In discussing effects of temperature on oxygen permeability, what general principles can be used to determine what characteristics of films will provide a flat versus steep slope as the temperature is elevated?

S. Gilbert: If the film is a nylon, saran or polyester type, with a high energy absorption, it will have a steep slope. Primary hydrocarbon films like polyethylene and polypropylene will have a relatively flat slope.

D. Kropf: Can we assume the same curve will continue at sub-freezing temperatures as reported above freezing conditions?

S. Gilbert: While it is difficult to measure the properties below freezing temperature, and little actual data exists, it is realistic to assume that the slope would be very flat due to the slow rate of the reaction at sub-freezing temperatures.

J. Regenstein: Are the thermoformed packages shown in the presentation capable of being heated in the microwave?

W. Gehrke: Due to the low forming temperatures with materials like nylon/surlyn, the thermoformed packages have a high shrink and low temperature resistance when microwaved, sometimes causing seal failures.

S. Gilbert: By using polypropylene sealant, you can withstand microwave heating if you vent the package but you create forming problems on the packaging machine.

D. Nauman: Where in the distribution process would excess corner thinning result in package failure as compared to damage?

W. Gehrke: Most excessive corner thinning or blowouts can be picked up in line at the packaging machine or on rechecks in the meat packing plant. Handling and shipping abuse show up at the distribution center or retail store.

D. Kinsman: Can we assume that the packaging materials do not impart an off flavor or odor to the meat product?

S. Gilbert: The films themselves seldom are responsible for any off-odor or flavor problems. However, printing inks and/or adhesives can cause odor and/or flavor problems when not properly processed for solvent removal.

L. Ernst: Is it more difficult to form with plug assist versus straight vacuum?

W. Gehrke: It is easier to form with plug assist but also very sensitive to temperature adjustments. If you target for a 2 to 2.5 mil minimum corner thickness for a 10-12 mil film, the heat setting and timing are very critical to form a good package, yet have good spring back in the cook to create a tight package.

J. Regenstein: Do you put any safety factor (1 or 2 days) in the use date code on the fresh meat vacuum packages in Denmark to allow for temperature differences? Is there any effort to see that home refrigerators are at 35°F?

P. Hermansen: This is a problem. The vacuum packages are currently only used for export. Atmos-pack products, whether coded for 5 or 7 days, did not have sufficient shelf life for a 1 to 2 day safety factor. There is no way to regulate household refrigerators accurately. The whole program is still experimental.

D. Kropf: Do you have a severe problem with free moisture in the modified atmosphere packages? Does this purge tend to hasten discoloration?

P. Hermansen: Yes, especially if the temperature is permitted to reach 5° to 7°C. The more purge you have, the faster the discoloration.

D. Nauman: Why do you expect the vacuum packed beef production to increase to 50% of the market by 1985?

P. Hermansen: This is easy. The Danish government has declared that all exported beef products will be vacuum packed by 1985. This amounts to about 50% of this product/market.

R. Field: All pictures shown were with boneless cuts, do the same principles apply with bone-in cuts and can the same results be expected?

P. Hermansen: There is no difference in the basic technology. However, the chances for package defects are much greater with bone-in product. A clear bone guard material should be used.

R. Field: Does the bone or bone marrow have an affect on the vacuum level or bacterial load in the package?

P. Hermansen: There was no difference in the vacuum level but there is a higher bacterial load in the bone marrow versus the solid muscle area.

D. Bartholomew: Are there any differences between the types of lactic acid bacteria in the modified atmosphere versus vacuum packages?

P. Hermansen: We have not attempted to type the bacteria as they have a minimal influence on spoilage. Our work has been concentrated more on the functional aspects of the package.