

Carefully to Carry

SEPTEMBER 2006

Meat and meat products in containers

Contamination by odour

Meat is particularly vulnerable to foreign odours and substantial claims can result. Health authorities are naturally concerned when this occurs but even in cases where the authorities are not involved, remedial treatment can be costly. If the intensity of the odour or its penetration of the meat surface is significant, the warehouse or cold store where the meat is stored may reject it because of the risk of taint to other meat already in store. Modern cold stores usually have no facilities for carrying out remedial treatment for small quantities and it can be difficult and expensive to carry out the treatment at other premises.

Soft condition

Apart from complete failure of the refrigeration plant, this damage is usually brought about in the case of Con-Air system containers, by the incomplete closure of the vents at the connection point, where the ship's refrigeration has been disconnected. Damage can comprise blood-stained and misshapen carcasses and the distortion and staining of cartoned meat in the area of the ambient airflow.

Chilled beef

It should be borne in mind that the shelf life of chilled beef is about 10 weeks from the time of slaughter and that it may have been in store for some time before shipment. Occasionally on arrival at destination, the amount of free blood in the vacuum pack is found to be far in excess of normal. Provided that there is no evidence of intra-muscular icing at the time of discharge, any allegation that the transit temperatures were too low should be refuted. The cause could be that the meat has been kept below its freezing point (-2°C) before shipment, in an effort to keep it as cool as possible and prolong its shelf life.

Vacuum packed chilled meat

During the past few years a number of claims have been raised by receivers of chilled vacuum packed meat of high quality, primarily in northern European ports. They have complained that their meat had suffered a considerable depreciation as a result of the presence of ice crystals in the meat.



“The carrier shall properly and carefully load, handle, stow, carry, keep, care for and discharge the goods carried.”

Hague Rules,
Articles iii, Rule 2

Carefully to Carry Advisory Committee

This report was produced by the Carefully to Carry Committee – the UK P&I Club's advisory committee on cargo matters. The aim of the Carefully to Carry Committee is to reduce claims through contemporaneous advice to the Club's Members through the most efficient means available.

The committee was established in 1961 and has produced many articles on cargoes that cause claims and other cargo related issues such as hold washing, cargo securing, and ventilation.

The quality of advice given has established Carefully to Carry as a key source of guidance for shipowners and ships' officers. In addition, the articles have frequently been the source of expertise in negotiations over the settlement of claims and have also been relied on in court hearings.

In 2002 all articles were revised and published in book form as well as on disk. All articles are also available to Members on the Club website. Visit the Carefully to Carry section in the Loss Prevention area of the Club website www.ukpandi.com for more information, or contact the Loss Prevention Department.

The object of chilling is to provide meat which resembles, as closely as possible, fresh meat and to retain the maximum degree of flavour, texture, appearance and nutritive value.

Vacuum packed meat is placed in a gas impermeable film of plastic bags at a temperature slightly above 0°C. After the meat has been placed in the bags, the air is then exhausted, the film tightly applied to the meat surface and the temperature held at the appropriate level. The purpose of this process is to reduce bacterial growth and surface dehydration activity and hence prolong the storage life of chilled meat.

It should be noted that, because of the absence of air, chilled meat may show an abnormal discoloration and upon removal of the vacuum packing can give off a characteristic and distinctive odour. On exposure to air, the colour of the meat reverts to normal and the distinctive odour will disappear. Thus no immediate conclusions should be drawn as to the condition of the meat after removal of the packing.

The claims made by receivers are on the basis that, because of the presence of ice crystal, the meat can no longer be considered to be chilled (or fresh) meat but it to be considered as 'frozen chilled meat' and they claim the difference in market value between chilled and frozen meat at the time of delivery at the port of discharge. It is quite possible that the difference in market value of these two types of meat may be as much as 20-25% bearing in mind the high quality of the meat involved.

The usual carrying temperature will range from -1.4°C to +2°C but on short voyages the shippers may require a carrying temperature as high as 0°C. The shippers should normally issue precise instruction on this point and if they do not, ships' masters should press for such instruction to be given preferably in writing. As the meat is vacuum packed, spike temperatures cannot be taken upon loading but spot checks on individual cartons, placing the thermometers between the layers, is recommended. Should there be any significant variation above or below the recommended carrying temperatures, it is suggested that a competent surveyor be called in.

For significant ice crystal formation to occur within the meat requires exposure to temperatures lower than -2°C for prolonged periods because the meat contains various salts which lower its freezing point. Minor quantities of crystal near the surface within the meat should not be taken to demonstrate a deterioration in condition or value. Crystals may also form on the meat at temperatures of 0°C (the freezing point of water) and below. These crystals between the meat and the vacuum packing result form moisture migration and

are not indicative of any deterioration in the quality of the meat or any fault in the carriage. Any claim presented on the basis of the presence of such crystals should be strongly resisted.

Transshipment

There have been isolated instances where, as a result of damage to the original container during transit, restowage of the cargo into a sound container has been necessary. If such a transfer is carried out without veterinary control, in a country designated as a 'disease pollution' area, such as the United Kingdom, the consignees in some countries may reject the consignment on the grounds that there has been a breach of their own health regulations.

Insulated and integral refrigeration containers

The shipment of chilled meat in Con-Air units has been accomplished with great success with carriage temperatures as low as -1.4°C. However, when similar carriage temperatures are attempted in containers fitted with integral refrigeration equipment, problems with intra-muscular icing have been encountered. It is recommended that chilled meat shipments are not carried in integral refrigeration containers with temperature settings lower than -0.5°C.

Regulations in the United Kingdom

It appears that in the United Kingdom, there are two regulations which govern the importation of foodstuff, namely:

- The *Imported Food Regulations* 1994, and 1997 with subsequent amendments; and
- The *Products of Animal Origin (Import and Export) Regulations* 1996 and subsequent amendments.

The first of these includes matters of importance to shippers and importers and in Schedule 4, sets out specific requirements as to wrapping, packing and transport of imported meat. For instance, the temperature controls are:

- For carcasses and cuts (excluding rabbit, hare meat and poultry meat) not higher than +7°C (chilled) or -12°C (frozen).
- For offals (excluding rabbit offals, hare offals and poultry offals) not higher than +3°C.
- For rabbit meat, hare meat, poultry meat, rabbit offals, hare offals and poultry offals not higher than +4°C.

- For meat products – temperature as specified on the label (when appropriate).

The foregoing temperature variations and constraints are not as rigorous as those normally applied by for instance, the North Atlantic Conference Lines and possibly other shippers or carriers. The second regulation mentioned above relates primarily to veterinary requirements and applies mainly to shippers and importers.

There are of course, a number of other regulations which touch upon the same aspects and these include:

- The *Food Safety Act 1990*; and
- The *Channel Tunnel (Amendment of Agriculture Fisheries and Food Import Legislation) Order 1990*

So far as the Committee is aware however, only the Imported Food Regulations 1994, noted above, incorporate specific temperature requirements.