

Chilled Australian beef achieves 12-week shelf life



Vacuum-packaged striploins after 12 weeks of aging

Extensive commercial and recent scientific studies indicate that chilled, vacuum-packaged, Australian boneless beef achieves a storage life of 12 weeks or more under optimal storage conditions.

Shelf life is dependent upon the initial quality of the meat (pH, color, and microbiological quality), as well as adequate vacuum packing and temperature control through the supply chain. Careful control of these factors by processors and distributors has resulted in the consistent superior quality after storage times.

An aging and packaging process proven over time

Studies undertaken over the years have led to process guidelines for Australian exporters of vacuum-packaged beef. One such study was conducted in 2008 by Food Science Australia (FSA) on primal cuts of beef destined for the export market.

This study, along with national surveys of the microbiological status of Australian beef undertaken in 1993, 1998 and 2004, found the microbiological count at the time of vacuum packaging on the primals was generally very low. Further, when the test packs were stored at the recommended temperature for transport and storage ($0.5^{\circ}\text{C} \pm 0.5^{\circ}$), even after 12 weeks, the total viable count on many primals was very low.

The colour and appearance consumers demand

Aging can improve eating quality and is a process that occurs as the muscle fibers in meat are slowly broken down by naturally-occurring enzymes. This leads to the muscle fibers being weakened and, as a result, aged beef tends to be more tender. The appearance of beef does not change with aging, as the breaking down of the muscle fibers happens on a microscopic level.

Appearance is one of the most important attributes by which consumers judge the quality of meat, therefore, color deterioration is one of the main factors that limits storage life. Australian processors carefully check vacuum packs for evidence of leaks 24-hours after packaging, thereby successfully preventing the appearance of brown-colored beef in vacuum packs.



Three environment factors

play a major role in controlling the growth of microorganisms on meats in vacuum packs



Temperature

Growth rates at 0° to 1°C are only about half those at 5°C and are further reduced as the temperature falls.

A storage temperature, as low as is practical, is used for vacuum-packaged meat. About -1°C is optimal provided that temperature control is such that freezing of the packs is avoided.

Under normal commercial conditions, product is transported to South east Asia at 1.5° to 0.5°C and stored on arrival at 2° to 3°C. This temperature stability is important in beef aging.

Gas atmosphere

The basis of effective vacuum packaging in preventing spoilage and prolonging the storage life of meat is the oxygen-free environment, which inhibits the growth of spoilage bacteria, while still allowing the natural tenderizing process of aging to continue.

pH

High pH meat (pH6.0 and higher the traditional definition of a 'dark cutter') will spoil more quickly than meat below pH6, as some bacteria are able to survive in this environment. By excluding meat from carcasses where the pH of the strip loin is 6.0 or higher, Australian Beef processors have eliminated these spoilage problems.

Additional factors

Other factors that impact Australian beef's ability to obtain a shelf life of 12 weeks include the cleanliness of the cattle prior to slaughter, decreased processing speeds (resulting in less cross contamination and enhanced hygiene), audited HACCP procedures, and the fact that all export-accredited processors have extremely high food safety and hygiene standards, which are audited by the Australian government.

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