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Packaging information:

Bulk Kernel Handling & Storage

Australian Macadamia kernel is the finest quality and is grown, processed and packaged under the best possible conditions. If stored in its original, unopened package in a cool, dry environment, it will normally retain that quality for at least a year from its package date. For longer shelf life, the product should be stored under cold storage with low relative humidity.

Macadamia kernels can easily deteriorate during handling and repackaging unless certain principles are kept in mind. Unlike other edible nuts, the macadamia kernel requires a storage environment, which is very **low in moisture and oxygen**. This is best achieved by a combination of gas flushing with food grade carbon dioxide or nitrogen, and **partial vacuumising** before **hermetically sealing** the pouch. Only then will a satisfactory shelf life be attained. The partial vacuum also helps to stop the kernels rubbing during transit and to prevent puncturing of the protective film.

Once the package is opened and the kernels are exposed to the atmosphere for several hours they will absorb moisture and begin to lose their "crunch". Even an increase in moisture from 1.5% to 1.8% makes a significant difference to the texture. If stored open to the air the kernel moisture will continue to rise and the eating quality will decrease markedly. If stored under these conditions at room temperature for several weeks their taste will change as rancidity slowly develops.

Customers who use small amounts of trade packs should store opened packs in a **food grade air tight container at or near 0°C** to minimise the absorption of air and moisture. Remove quantities required for processing from the airtight container and reseal the container to protect the stored macadamia kernel.

Deterioration may also occur if kernel is packaged in poor quality packaging materials e.g. polythene or cellophane bags. The shelf life of kernel packed under these conditions may be considerably less than a month before there is a discernible loss of eating quality.

Contact your supplier/processor for advice on long-term storage.



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Retail Packaging

The macadamia industry recommends that the following materials be used in the retail packaging of macadamia kernel (raw, roasted, honey roasted, etc.):

- Hermetically sealed metal cans or glass jars.
- High barrier flexible packaging as described below.

Short-term shelf life products may be packaged in a number of different laminates provided the Best Before Date is adjusted according to the oxygen and moisture barrier resistance of laminates. Therefore, if it were expected that the product would have a quick consumption turnover (i.e. one where a long shelf life is not required) then less stringent packaging properties would be acceptable.

3 Months Storage Period Maximum

Water vapour max. transmission 1.0g/m²/24 hrs at 25°C, 75% R.H. and 1 atm.

Oxygen max. transmission 1.0cc/m²/24 hrs at 25°C, 75% R.H. and 1 atm.

6 Months Storage Period Maximum

Water vapour max. transmission 0.3g/m²/24 hrs at 25°C, 75% R.H. and 1 atm.

Oxygen max. transmission 0.3cc/m²/24 hrs at 25°C, 75% R.H. and 1 atm.

12 Months Storage (or longer) in cold store

Water vapour max. transmission 0.1g/m²/24 hrs at 25°C, 75% R.H. and 1 atm.

Oxygen max. transmission 0.1cc/m²/24 hrs at 25°C, 75% R.H. and 1 atm.

The most commonly used material is aluminium foil laminate.

For bulk packs with **flexible packaging materials**, the recommended procedure is to use a combination of gas flushing followed by the drawing of a moderate vacuum. The residual oxygen levels should not be greater than 5% and the vacuum should be about 50 kPa. For retail packs gas flushing only is satisfactory and a residual oxygen level not greater than 2% is recommended. Use of flexible packaging materials with a water vapour/oxygen barrier inferior to these specifications would cause rapid deterioration of the product and potentially dissatisfied consumers – and a poor image for the world's best nuts.

Macadamia kernel packed in **cans or glass jars** or in flexible pillow packs may suffer damage during transit due to excessive vibration, rough handling, etc. Very careful handling and low vibration transportation is recommended for these packs.

Suppliers/Packers of other species of nuts, dried fruit, etc. should be aware that **mixing macadamia kernel** with these products may affect the kernel's crunchy texture and delicate flavour, as these products usually have a higher moisture content and different flavours and odours than macadamias. However, macadamia kernel can be successfully used as an exquisite ingredient in cooking to complement other ingredients' flavour and add to their texture.

We strongly recommend that you contact your packaging materials supplier to ensure that your packaging meets the above criteria.