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Cauliflowers — Guide to cold storage and refrigerated transport

Choux-fleurs — Guide pour l'entreposage et le transport réfrigérés

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 949 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*.

This second edition cancels and replaces the first edition (ISO 949 : 1978), the scope of which has been expanded to include the refrigerated transport of cauliflowers.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Cauliflowers — Guide to cold storage and refrigerated transport

1 Scope and field of application

This International Standard describes methods for obtaining conditions for the successful cold storage and long-distance refrigerated transport of cauliflowers of various varieties derived from *Brassica oleracea* Linnaeus var. *botrytis* Linnaeus subvar. *cauliflora* A.P. Decandolle, intended either for direct consumption or for industrial processing.

2 References

ISO 2169, *Fruits and vegetables — Physical conditions in cold stores — Definitions and measurement.*

ISO 6661, *Fresh fruits and vegetables — Arrangement of parallelepipedic packages in land transport vehicles.*

3 Conditions of harvesting and packing

3.1 Harvesting

Cauliflowers intended for storage shall be harvested before maximum development of the curds. They shall preferably be harvested in the morning.

The date of harvesting shall be determined according to the state of maturity of the curds. In hot weather, a delay of even one day in harvesting may cause yellowing, splitting and spreading of the curds.

3.2 Quality requirements

The curds shall be fresh in appearance, whole, sound, clean, free from defects such as evidence of attack by rodents or insects, and free from visible signs of disease, frost damage or bruising. Curds showing blemishes from any source shall be excluded. As far as possible, the cauliflowers shall be free from surface water.

It is not recommended that the cauliflowers are washed before storage but it is recommended that they are trimmed to leave a few protective leaves and that the stalk is cut short.

3.3 Packages

The most common type of package is a wooden crate of open construction but waxed corrugated paperboard cartons are also used successfully.

Parchment paper or plastics wraps (polyethylene, polyvinyl chloride, etc.) may be used to retard the loss of moisture. These materials may be used to line the boxes, to wrap individual heads or to cover a stack of crates. The packages used shall protect the product but have adequate air vents to provide for product cooling during transport and storage.

4 Optimum storage and transport conditions¹⁾

4.1 Putting into store

The cauliflowers shall be precooled as soon as possible after harvesting because even after 48 h at a temperature of 15 °C, the curds begin to yellow and changes due to bacteria or fungi become evident. These changes are irreversible. If transport between the place of harvesting and the cold store requires several days, the cauliflowers shall be cooled before transport.

4.2 Temperature

The optimum temperature for storage and transport of cauliflowers is in the range 0 to 4 °C. Temperatures below 0 °C lead to changes due to frost. The temperature chosen shall be kept constant throughout the whole period of storage and transport to avoid surface condensation.

4.3 Relative humidity

It is recommended that the relative humidity is in the range 90 % to 95 %. Lower relative humidities lead to withering of the curds and the leaves, and consequently to a shorter storage life. Certain packages may help to reduce loss of moisture from the product (see 3.3).

1) For definitions and measurement of the physical conditions affecting storage, see ISO 2169.