
INTERNATIONAL STANDARD



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Table grapes — Guide to cold storage

Raisins de table — Guide pour l'entreposage réfrigéré

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

International Standard ISO 2168 was drawn up by Technical Committee ISO/TC 34, *Agricultural food products*, and circulated to the Member Bodies in October 1970.

It has been approved by the Member Bodies of the following countries :

Australia	Hungary	Portugal
Bulgaria	Iran	Romania
Chile	Ireland	Thailand
Czechoslovakia	Israel	Turkey
Egypt, Arab Rep. of	Netherlands	United Kingdom
France	Poland	U.S.S.R.

The Member Bodies of the following countries expressed disapproval of the document on technical grounds :

Austria
South Africa, Rep. of

Table grapes — Guide to cold storage

1 SCOPE AND FIELD OF APPLICATION

This International Standard describes methods for obtaining conditions for the more or less prolonged keeping, by cold storage, of certain varieties of table grape, originating from *Vitis vinifera* Linnaeus.

The limits of application of this guide are given in annex A.

2 REFERENCE

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

3 CONDITIONS OF HARVESTING AND COLD STORAGE

3.1 Varieties

A list containing some examples of varieties proposed for long-term storage in certain countries is given in annex B.

3.2 Harvesting

The grapes should be harvested ripe, since they do not develop during the storage period. When the grapes are harvested late, their storage life is short, with the exception of grapes cultivated under glass and harvested in dry weather. Nevertheless, if the harvesting has taken place at the end of a period of rain, a shorter storage life is to be expected.

The means most frequently used for checking the state of ripeness are as follows :

- organoleptic criteria peculiar to the varieties;
- refractive index of the pressed juice (as an indication, about 13 to 20 according to the variety and region of cultivation);

$$\text{— ratio } \frac{\text{total sugars, expressed in grams of glucose per litre of juice}}{\text{acidity, expressed in grams of anhydrous tartaric acid per litre of juice}}$$

(as an indication, this ratio is about 18).

The bunches should be picked with care, and should preferably be packed direct in their storage packaging.

3.3 Quality characteristics for storage

The bunches should be sound, free from any visible signs of fungal attack, clean and free from traces of water in the liquid state.

The grapes should be spaced as uniformly as possible on the stalk and practically covered with bloom. The stalk should be really green and turgid.

It is not advisable to store bunches with aborted fruit, or bunches having grapes which are too close together or abnormally arranged on the stalk ("clear stalk"). Pruning may be carried out, provided that it does not produce too great a cleared area.

3.4 Disinfection

The cold store and, where applicable, the packages should be disinfected beforehand by a suitable method.

It is often recommended that the grapes be given a treatment of antifungal agents immediately after harvesting, if their use is permitted (see clause 5).

3.5 Cold storage

The bunches shall be put into cold storage as soon as possible after harvesting.

If the location of the cold store makes immediate storage impossible, the grapes shall be stored in a cool place protected from sunlight for a maximum of 24 h. It is recommended that as effective a pre-refrigeration as possible be employed immediately after harvesting.

If this pre-refrigeration is carried out before the packaging of the grapes, it is necessary to do it in such a manner that the condensation of moisture *on the grapes* is avoided, so that the grapes will not be handled while wet.

3.6 Method of storage

It is recommended that the bunches be packed in a single layer. The contents of each package should be uniform, in order to facilitate checking during storage. The bunches should not be packed together too tightly in the packages. For separating them, fresh foils, made of plastics material which is not harmful to foodstuffs for human consumption, are recommended. In cases where these foils are used as a covering or as a package for sale to the consumer, or in