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Citrus fruits — Guide to storage

Agrumes — Guide pour l'entreposage

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FOREWORD

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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 3631 was developed by Technical Committee ISO/TC 34, *Agricultural food products*, and was circulated to the member bodies in October 1977.

It has been approved by the member bodies of the following countries :

Australia	India	Romania
Austria	Iran	South Africa, Rep. of
Bulgaria	Israel	Spain
Czechoslovakia	Kenya	Thailand
Egypt, Arab Rep. of	Korea, Rep. of	Turkey
Ethiopia	Netherlands	U.S.A.
France	New Zealand	U.S.S.R.
Germany, F.R.	Poland	Yugoslavia
Hungary	Portugal	

No member body expressed disapproval of the document.

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Citrus fruits — Guide to storage

0 INTRODUCTION

Citrus fruits are divided into five groups which differ from each other in their behaviour during transport and should therefore be considered separately from the point of view of storage conditions. The groups are the following :

- oranges;
- mandarins (tangerines) and their hybrids;
- lemons;
- grapefruits and their hybrids;
- limes.

Citrus fruits undergo little change after harvesting. They have no climacteric phase, and should therefore be harvested ready for consumption.

Peel colour is not always an indication of maturity; there is not necessarily a direct relation between colour and degree of ripeness.

The keeping life of the fruit depends on several factors, including the following :

- ecological conditions;
- agrotechnical factors (nature of rootstock, size of fruits, method of pruning, etc.);
- harvesting conditions (time of picking, condition of fruit at harvest);
- degree of maturity and treatments during storage;
- keeping temperature;
- relative humidity of the store.

The longer the fruits remain on the trees after they have reached edible condition, the shorter the time they can be kept after harvest. However, growth regulators can be used to enhance the keeping quality of late harvest fruit.

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies the conditions required for good keeping of the following groups of citrus fruits during their storage with or without refrigeration, in stores or in various transport equipment (such as containers, railway cars, trucks or ships) :

- oranges : *Citrus sinensis* (Linnaeus) Osbeck;
- mandarins : *Citrus reticulata* Blanco;
- Lemons : *Citrus limon* (Linnaeus) N.L. Burman;
- grapefruits : *Citrus paradisi* Macfadyen;
- limes : *Citrus aurantifolia* (Christmann) Swingle.

Detailed information concerning cultivars in these different groups is given in annexes A and B.

2 REFERENCES

ISO/R 750, *Fruit and vegetable products — Determination of titratable acidity.*

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

ISO 2173, *Fruit and vegetable products — Determination of soluble solids content — Refractometric method.*

3 CONDITIONS OF HARVESTING AND PUTTING INTO STORE

3.1 Varieties (Cultivars)

This International Standard concerns fresh fruit intended for storage and belonging to the varieties listed in annex A.

3.2 Harvesting

The fruits should be harvested when they have reached the stage of maturity that makes them fit for consumption. Harvesting may be temporarily interrupted when weather conditions (rain, etc.) are likely to have an adverse influence on the keeping qualities.

Fruit collected from the ground is often infected with *Phytophthora*, and it is therefore recommended that dropped fruit should not be harvested.

The maturity criteria usually considered are the following :

- juice content, expressed as a percentage by mass (the juice content may vary slightly as a result of the conditions and duration of storage);
- flavour;
- acidity and/or the ratio :

$$\frac{\text{soluble solids content (ISO 2173)}}{\text{acidity expressed as anhydrous citric acid (ISO/R 750)}}$$

The values to be adopted for these last two criteria depend on the varieties under consideration, and on ecological