TC 34

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Tomatoes — Guide to storage

Tomates — Guide pour l'entreposage

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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 5524 was developed by Technical Committee ISO/TC 34, *Agricultural food products*, and was circulated to the member bodies in February 1976.

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

Australia	India	Poland
Austria	Iran	Romania
Czechoslovakia	Ireland	South Africa, Rep. of
Egypt, Arab Rep. of	Israel	Turkey
France	Netherlands	Yugoslavia
Hungary	New Zealand	

No member body expressed disapproval of the document.

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Tomatoes — Guide to storage

1 SCOPE AND FIELD OF APPLICATION

This International Standard sets out conditions allowing more or less prolonged keeping of tomatoes in storage.

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

2 REFERENCES

OECD *"Documentation in agriculture and food"*, Document No. 54, *"International standardization of fruits and vegetables"*, chapter V : *"Standard No. 2 : Tomatoes"* (ref. E.C.E. AGRI/WP. 1 EUR STAN 2).

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

ISO 3659, *Fruits and vegetables — Ripening after storing by refrigeration.*

3 CONDITIONS OF HARVESTING AND PUTTING INTO STORE

3.1 Harvesting

The tomatoes shall be harvested in dry weather, at the moment when their colour corresponds to the respective group in the colour chart given in Standard No. 2 of OECD Document No. 54, with due regard to the intended duration of storage, the duration and conditions of transportation and the intended use of the tomatoes.

3.2 Quality characteristics for storage

The tomatoes shall be selected carefully, and it is recommended that they be size graded. They shall be whole, sound, clean, firm and free from excessive surface moisture.

The presence of the peduncle is optional; it depends on the intended use of the tomatoes and does not represent an absolute condition of good storage, although tomatoes free from the peduncle are more stable for keeping.

The degree of ripeness of the tomatoes of any one lot shall be as uniform as possible; differences in colour shall not exceed two adjacent degrees of the colour chart (see 3.1).

3.3 Putting into store

The fruit shall be put into the store as soon as possible after harvesting.

It is recommended that only varieties that are considered compatible and are at the same stage of development be stored in one place.

3.4 Method of packaging and storage

Tomatoes may be stored in different types of packages, provided that the pressure exercised on the fruits does not impair their quality in the period following ripening. In general, to achieve this condition the total depth of the layers of fruit in a package of unripe tomatoes should not exceed 30 cm.

The tomatoes shall be handled carefully.

Packages shall contain vent-holes. When stacking, attention should be given to the necessity of ensuring ventilation through the load.

4 OPTIMUM STORAGE CONDITIONS[1]

4.1 Temperature

The optimum storage temperature depends on the degree of ripeness of the tomatoes and on the intended duration of storage and distribution. In general, riper fruit can withstand lower storage temperatures. According to the degree of ripeness as defined in the colour chart (see 3.1), it is recommended that the storage temperature be not lower than :

+12 to + 13 °C for tomatoes of the "Turning" group Nos. 1 and 2 in the colour chart;

+ 10 to + 12 °C for tomatoes of the "Turning" group No. 3 and the "Pink (pink orange)" group No. 4;

+ 8 to + 10 °C for tomatoes of the "Pink (pink orange)" group Nos. 5 and 6.

If it is necessary to complete the ripening of the tomatoes[2] it is recommended that they be kept at a temperature of at least 18 °C.

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

2) See ISO 3659.

4.2 Relative humidity

The relative humidity shall be maintained between 85 and 95 %.

4.3 Air circulation

The air in the storage area shall be well mixed in order to maintain the temperature and relative humidity as uniform as possible. There shall be a device for renewing the atmosphere by the introduction of outside air.

4.4 Storage life

Storage life in the conditions of temperature and relative humidity prescribed above varies according to the variety, degree of ripeness of the tomatoes, and storage temperature. It is generally reckoned to be between 7 and 21 days.

4.5 Operations during and at the end of storage

It is recommended that regular inspections be made of the tomatoes for quality during the storage period.

After storage, the tomatoes will be sorted according to their degree of ripeness and commercial categories.

ANNEX

LIMITS OF APPLICATION

This International Standard provides guidance of a very general nature only. Because of the variability of the fruit according to the time and place of cultivation, local circumstances may make it necessary to specify other conditions of harvesting or other physical conditions in the store.

This International Standard does not apply unreservedly, therefore, to all varieties in all climates, and each specialist will himself decide any modifications to be made.

Moreover, this International Standard does not take into account the role played by horticultural factors, and wastage during storage is not dealt with. The importance of these two subjects has not been forgotten, but the influential factors (i.e. ecological or agrotechnical factors) are not very well understood; moreover, the origin of many of the most frequent physiological disorders is still uncertain, as are often the appropriate means of combating them. It has therefore seemed difficult to prepare International Standards on these two points.

Subject to all possible restrictions arising from the fact that fruits are living material and may vary considerably, the application of the recommendations contained in this International Standard should enable much wastage in storage to be avoided and satisfactory storage to be achieved in most cases.