

# INTERNATIONAL STANDARD

ISO  
8683

First edition  
1988-06-15



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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION  
ORGANISATION INTERNATIONALE DE NORMALISATION  
МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

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## **Lettuce — Guide to precooling and refrigerated transport**

*Laitues — Guide pour la prérefrigération et le transport réfrigéré*

**iTeh STANDARD PREVIEW**  
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ISO 8683:1988

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Reference number  
ISO 8683:1988 (E)

## 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 8683 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*.

Annex A is for information only.

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# Lettuce — Guide to precooling and refrigerated transport

## 1 Scope

This International Standard gives general guidance on the precooling and refrigerated transport of lettuce (*Lactuca sativa* Linnaeus).

## 2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 2169 : 1981, *Fruits and vegetables — Physical conditions in cold stores — Definitions and measurement.*

## 3 Harvest

**3.1** It is recommended that lettuce intended for storage and transport be harvested when the head is well-shaped and turgid, but before the development of the floral stalk.

**3.2** Harvesting should be carried out in dry weather, and, if possible, 2 days after irrigation or rainfall.

**3.3** The heads should be cut close to the base of the outer leaves. The cut should be complete and smooth.

## 4 Quality requirements

**4.1** It is recommended that varieties with medium or coarse leaves, which form well-developed heads and which have a

good capacity for maintaining their quality, be chosen for storage and transport.

**4.2** Heads should be of good quality, whole, clean, sound, turgid, free from abnormal external moisture, and free from foreign smell and taste.

They should be fully mature, as indicated by their being firm (hard or heavy heads deteriorate more rapidly than do firm heads, and soft heads may be uneconomic to harvest).

## 5 Conditions of packing

Remove yellow or withered outer leaves from the heads. Pack the heads using one of the following procedures.

a) In the field immediately after harvesting — heads are packed in cardboard, wooden, polystyrene or rigid plastic-foam boxes.

b) In a designated packing area located in the field — heads are wrapped individually in perforated polyethylene bags, in non-shrink perforated polyethylene film, in semi-permeable non-perforated film, in polypropylene “crispy bags” or in heat-shrunk polystyrene and then packed in cardboard boxes, which are untreated, or lined with perforated polyethylene or have a waxed interior.

c) In the conditioning room into which the lettuce is transported, immediately after harvesting, for conditioning and sorting according to category — heads are wrapped individually in perforated polyethylene bags, in non-shrink perforated polyethylene film, in semi-permeable non-perforated film, in polypropylene “crispy bags” or in heat-shrunk polystyrene and then packed in cardboard boxes, which are untreated, or lined with perforated polyethylene or have a waxed interior.

## 6 Precooling

**6.1** Elimination of the ambient heat of the field retained by the lettuce is obligatory.

**6.2** The precooling operation should be carried out as soon as possible after harvesting, by vacuum cooling or by forced air cooling, at between 0 °C and + 2 °C for 25 min to 30 min.

## 7 Storage and refrigerated transport (see ISO 2169)

**7.1** To maintain the quality of lettuce after harvest, the following conditions should be observed in stores or in transportation vehicles :

- a) the temperature shall be uniform throughout the storage area and controlled accurately at 0 °C to + 1 °C;

b) the relative humidity of the air should be greater than 95 %.

c) the lettuce should not be placed close to the evaporator;

d) the lettuce should not be stored with crops which emit ethylene (even low levels of ethylene cause injury to the lettuce).

**7.2** If the conditions indicated in 7.1 are observed, the quality of lettuce can be maintained for 1 week to 2 weeks, according to the variety.

## 8 Operations following storage or transport

On account of the perishability of the lettuce, it is necessary to ensure refrigerated conditions during marketing to maintain the quality of the heads.

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Annex A  
(standards.iteh.ai)  
(informative)

ISO 8683:1988

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### Bibliography

International Institute of Refrigeration, *Recommended conditions for land transport of perishable foods*, 2nd edition, 1979.

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UDC 635.52 : 664.8.037

Descriptors : agricultural products, refrigerated products, vegetables, green salad, storage, transportation.

Price based on 2 pages

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