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Artichokes — Specification and test methods

Artichauts — Spécifications et méthodes d'essai

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 3, *Fruits and vegetables and their derived products*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Artichoke plants are herbaceous perennial plants, members of the *Asteraceae* family of plants, a group that includes thistles, dandelions and sunflowers. They are short-lived perennials in warmer climates but are normally grown as annuals in cooler regions. Artichokes are usually grown for the edible flower buds, which are harvested before the flowers open. The unopened bud has overlapping rows of spine-tipped green bracts enclosing the actual flower parts. At the base of the bud is the tender, flavourful artichoke "heart," which is the part that is cooked and eaten.

Artichokes — Specification and test methods

1 Scope

This document specifies requirements and test methods for fresh artichokes, including their hearts and bottoms, of the following groups:

— *cynara cardunculus* Scolymus Group;

— *cynara cardunculus* Cardoon Group, syn. *C. cardunculus* var. *altilis* DC.

It does not apply to processed artichokes.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO 751, *Fruit and vegetable products — Determination of water-insoluble solids*

ISO 762, *Fruit and vegetable products — Determination of mineral impurities content*

ISO 874, *Fresh fruits and vegetables — Sampling*

ISO 1842, *Fruit and vegetable products — Determination of pH*

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

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
artichoke
edible portion of the vegetables included in the *Cynara cardunculus* Scolymus Group and *Cynara cardunculus* Cardoon Group, syn. *C. cardunculus* var. *altilis* DC

3.2
bract
modified or specialized leaf, especially associated with a reproductive structure such as a flower, inflorescence axis or cone scale

3.3
heart
central part of the head of the *artichoke* (3.1) without thorns and devoid of peduncles and outer *bracts* (3.2), leaving only the receptacle and tender inner sepals

3.4
bottom
receptacle of the head of spiny *artichokes* (3.1), completely devoid of *bracts* (3.2) and flowers in formation, remaining only the receptacle

4 Classification and requirements

4.1 General

Artichokes shall be divided into different types according to their botanical structure (see 4.2.1), divided into classes according to their quality characteristics (see 4.2.2) and divided into classes according to their size and characteristics (see 4.3.2).

4.2 Classification

4.2.1 Types

Artichokes are divided based on their botanical structure into:

— globe artichokes, which are rounder in shape;

— elongated artichokes, which are longer.

4.2.2 Classes

Based on the quality characteristics of the two types of artichokes, these are divided into four classes as follows:

— Extra class;

— Class I;

— Class II;

— No class.

4.3 Requirements and recommendations

4.3.1 General

The head of the artichoke should not:

— have defects that affect its appearance or texture;

— show loss of humidity in this tissue;

— have a surface that appears dry or decoloured;

— show signs of pest damage or disease.

The development and condition of the artichoke shall allow the following characteristics:

— it shall be durable for handpicking, packaging and transportation;

— it shall be in a favourable condition to meet the market demands when it reaches its destination.

4.3.2 By class

4.3.2.1 Extra class

Artichokes in this class shall be whole and compact. They shall not be dehydrated or show any signs of pest damage or disease. The length of the heart diameter should be between 3,5 cm and 5 cm. The length of the bottom diameter should be between 7 cm to 9 cm.

Artichokes in this class shall be of high quality. The variety and/or commercial type shall have its own unique characteristics. Medium bracts shall be tightly closed and free of defects. Symptoms of becoming fibrous at the receptacle portion shall not have started. The colour should be completely green without being pale.

4.3.2.2 Class I

Class I artichokes have the same characteristics as Extra class artichokes but are larger in size. The length of the heart diameter should be between 5,1 cm and 8 cm. The length of the bottom diameter should be between 9,1 cm and 11 cm.

Artichokes in this class shall be of high quality. They shall have characteristics of the variety and/or commercial type. The middle part of the bract shall be tightly closed. The receptacle portion shall not have become fibrous.

There shall not be any defects except for very slight outer surface defects that do not affect the overall appearance of the product and the presentation of the packaging.

Mild frost damage (cracks), very slight bruising and very mild defects of the product's overall appearance may be present without affecting the quality and presentation in the package.

4.3.2.3 Class II

Class II artichokes may show slight dehydration, with slight pest or disease damage that could compromise the interior head.

Artichokes not included in other classes but fitting the general characteristics are included in this class. Mild deformities, frost defects, mild bruises, slight browning on the surface, becoming fibrous at the receptacle portion and a slight opening at the middle of the bracts are allowed.

4.3.2.4 No class

No class artichokes are those that do not demonstrate any of the features for Extra class, Class I or Class II.

5 Tolerances

5.1 General

Tolerances in respect of quality and size shall be allowed in each package for produce not satisfying the requirements of the class indicated.

5.2 Class tolerances

5.2.1 Extra class

Artichokes not meeting the requirements of this class but fitting into Class I (except the tolerance of Class I) should constitute at most 5 % in number.

5.2.2 Class I

Artichokes not meeting the requirements of this class but fitting into Class II (except the tolerance of Class II) should constitute at most 10 % in number.

5.2.3 Class II

Artichokes not meeting the requirements and general properties of this class but suitable for marketing and consumption should constitute at most 10 % in number.

6 Sampling

Samples are taken from the lot. Artichokes with the same type, class, length, packaging and inspection time are considered as a lot. It is important that the laboratory receives a sample that is truly representative and has not been damaged during storage and transportation.

Sampling shall be done in accordance with ISO 874 and ISO 2859-1.

7 Test methods

7.1 General

The organoleptical and visual inspections, sniffing, tasting, weighing and measuring of the artichokes should be done upon the request of the customer.

If necessary, analyses given in 7.2 to 7.6 should also be done.

7.2 Determination of titratable acidity

The titratable acidity value of the samples shall be determined in accordance with ISO 750.

7.3 Determination of water-insoluble solids

The water-insoluble solids of the samples shall be determined in accordance with ISO 751.

7.4 Determination of mineral impurities content

The mineral impurities content of the sample shall be determined in accordance with ISO 762.

7.5 Determination of pH

The pH value of the samples shall be determined in accordance with ISO 1842.

7.6 Determination of soluble solids content

The soluble solids content of the samples shall be determined in accordance with ISO 2173.

8 Packaging and marking

8.1 Packaging

Artichokes shall be packed in clean, sound and dry containers made of materials that do not affect the product. If wooden boxes are used, they shall be lined with a suitable paper.

For direct consumption, small consumer packages may be used. A suitable number of such small packages shall be placed in large wooden or cardboard cases.

The size of the packages and the number of small packages packed in a case shall be subject to agreement between the purchaser and vendor. However, the mass of the large containers or cases shall not be more than 25 kg.

Glue, ink or paint used for marking shall be of food grade.

8.2 Marking

The container and case shall be marked or labelled with the following:

a) the name of the product or variety, and the trademark or brand name, if any;

b) the name and address of the producer or packer;

c) the code or batch number;

d) the net mass or gross mass (according to the request of the importing country);

e) the class of product;

f) the producing country;

g) the expiry date (optional);

h) any other marking required by the purchaser, such as the year of harvest and date of packing (if known);

i) a reference to this document, i.e. ISO 20980 (optional);

j) the storage conditions.

9 Storage and transportation

For the measurement of the physical quantities affecting storage, see ISO 2169.

The optimum temperature for the storage and transport of artichokes is between +10 °C and +15 °C.

Artichokes are highly perishable and therefore they should be stored and transported for the shortest time possible. The quality should be maintained for about 15 days at the optimum temperature of +10 °C to +15 °C and at 80 % to 90 % relative humidity.

During storage and transport, the circulation of air should be ensured so that a constant temperature and relative humidity are maintained.

Artichokes packed in wooden crates or fibreboard boxes may be placed in a precooled cold store in stacks, according to the load-bearing capacity of the containers. Refrigeration of the artichokes should be maintained during transport. For this purpose, ice-refrigerated or mechanically refrigerated railway trucks or refrigerated lorries may be used.

For the transport of the containers or crates, covered vehicles should be used that have previously been disinfected and that are exclusively used for the transport or compatible agricultural produce.