
International Standard



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Cultivated mushrooms — Guide to cold storage and refrigerated transport

Champignons de couche — Guide pour l'entreposage et le transport réfrigérés

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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 7561 was developed by Technical Committee ISO/TC 34, *Agricultural food products*, and was circulated to the member bodies in September 1982.

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

Austria	Israel	South Africa, Rep. of
Czechoslovakia	Kenya	Spain
Egypt, Arab Rep. of	Korea, Dem. P. Rep. of	Sri Lanka
Ethiopia	Malaysia	Turkey
France	Mexico	USA
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India	Philippines	Yugoslavia
Iran	Portugal	
Iraq	Romania	

The member body of the following country expressed disapproval of the document on technical grounds:

Ireland

Cultivated mushrooms — Guide to cold storage and refrigerated transport

1 Scope and field of application

This International Standard describes methods for obtaining conditions for the successful cold storage and long distance refrigerated transport of cultivated mushrooms (*Agaricus bisporus* L.), intended either for direct consumption or for industrial processing.

2 Reference

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

3 Conditions of harvesting and packing

3.1 Harvesting

Cultivated mushrooms should be harvested at a stage of development corresponding to the quality requirements (see 3.2), because the veil under the cap soon opens, thus reducing the quality. Mushrooms should be harvested daily during the main period of cultivation and if grown in rooms with high temperatures (16 to 20 °C). Towards the end of the cultivation period and in rooms with lower temperatures (10 to 20 °C), they can be harvested every second day.

Cultivated mushrooms easily discolour, even at low temperature, as a result of pressing or rubbing. They should, therefore, be carefully handled between harvesting and consumption. The fruit body should be removed from the bed by twisting so that the stem is not broken and the least amount of covering soil and mycelium is removed. Residues of broken stones should be rubbed off the stem. If soil is used as the covering material, the end of the stem should be cut off with a sharp knife at right angles to the length of the stem. To maintain the quality of cultivated mushrooms, it is recommended that they be placed, after harvest, in a package where they can remain until consumption or processing.

The mushrooms may be washed, if necessary, but they should be dried within a few minutes with spongy absorbents, as persistent surface moisture causes brown discoloration or mucosity. Forced ventilation is not suitable for drying mushrooms because it favours wilting.

3.2 Quality requirements

The mushrooms should be carefully handled, and should be fresh, of good quality, and of uniform white, cream or light buff colour, according to the variety. The cap should be spherical or hemispherical. The veil under the cap should be closed or open, according to market requirements. The stem should be plump, and the end may be cut or whole. The body should be elastic, free from abnormal surface moisture and should be free from mechanical damage, spoilage and holes caused by insect attack.

3.3 Grading and packing

The mushrooms should be graded according to the quality standards of the country concerned or, in the case of international trade in accordance with accepted international standards. The best results are obtained by using packages that have rigid sides. The mushrooms should be tightly packed without being compressed. A loose pack leads to abrasion from movement, and excessively tight packing results in pressure bruises. Both types of damage lead to discoloration and loss of quality.

Mushrooms may be packed in wooden boxes or fibreboard containers lined with silk-paper, and on trays of fibreboard or plastics placed in wooden boxes. The packages should be covered with perforated film or plastic stretch film in order to avoid loss of moisture. Packages and other materials used for this purpose should be new, clean and made of a material which will not affect the product, either internally or externally.

4 Optimum conditions for storage and transport

4.1 General

Cultivated mushrooms are the most sensitive to storage of all horticultural products. They should be consumed as soon after harvesting as possible and only stored in special cases. If storing or transporting cultivated mushrooms, however, precooling of the product, immediately after harvesting and before packaging, to a temperature which should not drop below 2 °C, is recommended.

4.2 Temperature

The temperature depends on the duration of storage and transport. Mushrooms can be stored for 4 to 5 days at + 2 °C and for 2 to 3 days at + 5 °C.