
**Prerequisite programmes on food
safety —**

**Part 5:
Transport and storage**

Programmes prérequis pour la sécurité des denrées alimentaires —

Partie 5: Transport et stockage
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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.

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 17, *Management systems for food safety*.

A list of all parts in the ISO 22002 series can be found on the ISO website.

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

The storage system and the transportation network are integral elements in the food chain.

Supply chain actors, such as growers and food processors, rely on proper storage and transportation practices to ensure that their products arrive safely at the final destination and in good condition. The role of organizations involved in the transportation network is to protect the foods, ingredients, raw materials and packaging in their custody during transport and storage.

ISO 22000 sets out specific food safety management system requirements for organizations in the food chain. One such requirement is that organizations establish, implement and maintain prerequisite programmes (PRP) to assist in controlling food safety hazards. This document is intended to be used to support management systems designed to meet the requirements specified in ISO 22000 and sets out the detailed requirements for those programmes related to transport and storage.

This document does not duplicate requirements given in ISO 22000 and is intended to be used in conjunction with ISO 22000.

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Prerequisite programmes on food safety —

Part 5: Transport and storage

1 Scope

This document specifies requirements for establishing, implementing and maintaining prerequisite programmes (PRPs) for transport and storage in the food chain to assist in controlling food safety hazards.

This document is applicable to all organizations, regardless of size or complexity, that are involved in transport and storage activities across the food supply chain and that wish to implement PRPs in such a way as to address the requirements specified in ISO 22000.

This document is neither designed nor intended for use in other parts of the food supply chain or in isolation.

In this document, transport and storage is aligned with ISO/TS 22003:2013, Annex A, Category G. This document includes all food and feed products and food packaging and packaging materials.

Live animals are excluded from the scope of this document except when intended for direct consumption, e.g. molluscs, crustaceans and live fish.

2 Normative references

[ISO/TS 22002-5:2019](https://www.iso.org/standards/sist/902f732e-dc83-422c-ba9e-580a888539c5/iso-ts-22002-5-2019)

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 22000, *Food safety management systems — Requirements for any organization in the food chain*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 22000 and the following 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 calibration

set of operations that establish, under specified conditions, the relationship between values of quantities indicated by measuring instruments or measuring systems, or values represented by a material or reference material to corresponding values realized by standards

3.2 cleaning

removal of soil, food residue, dirt, grease or other extraneous matter

3.3
cleaning in place
CIP

cleaning (3.2) of equipment by impingement or circulation of flowing chemical solutions, cleaning liquids without disassembling

3.4
cleaning out of place
COP

cleaning (3.2) of equipment by disassembling and cleaning in a tank or in an automatic washer by circulating a cleaning solution

3.5
cross-docking

process by which *goods* (3.7) are unloaded, sorted, consolidated, loaded and shipped to the next destination

3.6
disinfection

reduction, by means of chemical agents and/or physical methods, of the number of microorganisms in the environment, to a level that does not compromise food safety

3.7
goods

food, feed, animal food and packaging *transported* (3.17) and *stored* (3.14) within the food chain

3.8
hazardous substance

solid, liquid or gas that is radioactive, flammable, explosive, corrosive, oxidizing, asphyxiating, pathogenic or allergenic, including, but not restricted to, detergents, sanitizers, pest control chemicals, lubricants, paints, processing aids and biochemical additives, which, if used or handled incorrectly or in increased dosage, could cause harm to the handler and/or consumer

3.9
identifier

mark, tag, label or accompanying document, either assigned by the organization itself or by another organization upwards in the food chain that formed the *logistic unit* (3.10), uniquely identifying *goods* (3.7)

3.10
logistic unit

unit used to *transport* (3.17) or *store* (3.14) *goods* (3.7)

Note 1 to entry: The term includes, but is not limited to, cases, pallets, containers, vessels and silos.

3.11
unpacked goods

goods (3.7) that are unwrapped or not *stored* (3.14) in self-contained packaging, including large-scale *logistic units* (3.10) such as vessels or road tankers

EXAMPLE Fresh produce in crates, shellfish in a mesh bag.

3.12
packed goods

goods (3.7) that are wrapped in a self-contained manner that prevents deterioration by external influences and maintains the integrity of goods, including goods in packaging that are intended for sale to consumers

EXAMPLE Carton boxes, drums, cans.

3.13**withdrawal/recall**

removal of nonconforming *goods* (3.7) from the market, trade and warehouses, distribution centres and/or customer warehouses because they are (potentially) unsafe for consumption

3.14**storage**

safekeeping of *goods* (3.7) in a depository (e.g. a warehouse)

3.15**temperature control**

process by which the temperature of a space (and objects collectively there within) is measured, maintained and adjusted to achieve a specified temperature range

3.16**transshipment**

shipment of *goods* (3.7) or containers to and from an intermediate destination

Note 1 to entry: One possible reason for transshipment is to change the means of *transport* (3.17) during the journey (e.g. from ship transport to road transport), known as “transloading”.

3.17**transport**

movement (including loading and unloading) of *goods* (3.7) by road, rail, air, water or other shipping means

3.18**waste**

any substance or object that the organization discards, intends to discard or is required to discard

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4 Prerequisite programmes for transport and storage

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4.1 General requirements

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The organization shall establish its PRPs relevant to the product category based on recognized industry codes of practice. Some examples are given in ISO 22000 for food safety management systems.

When establishing the PRPs for transport and/or storage, the product groups can be categorized as follows:

- a) unpacked goods, not temperature- and/or other condition-controlled;
- b) unpacked goods, temperature- and/or other condition-controlled;
- c) packed goods, not temperature- and/or other condition-controlled;
- d) packed goods, temperature- and/or other condition-controlled.

The practices applied by the organization during the transport and storage of goods shall be designed, documented and implemented to maintain appropriate storage conditions and integrity of goods. Goods shall be loaded, transported and unloaded under conditions suitable to prevent physical damage, cross-contamination and spoilage, including, but not limited to:

- microbiological contamination and/or growth (e.g. bacterial growth resulting from the temperature abuse of goods that require temperature control);
- physical contamination (e.g. glass contamination from broken lights, wood splinters from pallets, dust, pests);
- chemical contamination (e.g. allergens, product tainting, cleaning chemicals).

Food transport and storage operations are diverse in nature and not all of the requirements specified in this document apply to an individual site or process. Where exclusions are made or alternative measures implemented, these shall be justified. Any exclusions or alternative measures adopted shall not affect the ability of the organization to conform to these requirements.

4.2 Facilities

4.2.1 External layout

Sites shall be designed, constructed and maintained in a manner appropriate to the nature of the transport and storage operations to be carried out, and to minimize the likelihood of contamination.

The site boundaries shall be clearly identified. The site shall be maintained in good order. Vegetation shall be tended or removed. Roads, yards and parking areas shall be drained to prevent standing water and shall be maintained.

Loading areas shall be constructed so as to protect goods during adverse weather conditions, be easy to clean and to deter birds and other pests.

Consideration shall be given to potential sources of contamination from the local environment e.g. odour, dust, radiation.

Where potentially harmful substances could enter the goods, effective measures shall be taken to protect against potential contamination. The measures in place shall be reviewed periodically for effectiveness.

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4.2.2 Internal layout and workspace (standards.iteh.ai)

4.2.2.1 Internal design, layout and traffic patterns

Internal layouts shall be designed, constructed and maintained to facilitate good hygiene practices and to minimize the likelihood of contamination (e.g. leakage). The movement patterns of goods and people, and the layout of equipment, shall be designed to protect against potential sources of contamination.

The site shall provide adequate space or separation by time, with a logical flow of goods and personnel, and physical separation proportionate to the risk of (cross-)contamination.

Openings intended for transfer of goods shall be designed to minimize the entry of foreign matter and pests. All openings shall be closed when not in use.

4.2.2.2 Internal structures and fittings

Walls and floors shall be cleanable. The materials used to construct the premises shall be suitable for the cleaning system to be used.

External opening windows, roof vents or fans in areas where goods can be stored, shall be insect screened. External opening doors shall be closed or screened when not in use.

4.2.2.3 Drains and drainage

If present, internal and external drains shall be designed, constructed and located so that the risk of contamination of goods is avoided. Any drain in the facility shall be readily accessible for cleaning and repair.

4.2.3 Utilities

4.2.3.1 General requirements

The provision and transportation routes for utilities to and around transport and storage areas shall be designed or arranged to allow for the segregation of goods to minimize the risk of contamination.

Maintenance and service activities shall be organized to ensure that food safety is not compromised.

4.2.3.2 Water supply

The supply of water shall be suitable for the intended use and shall be sufficient to meet the needs of the process(es). Facilities for storage, transportation and, where needed, temperature control of the water shall be suitable to achieve the specified requirements.

Non-potable water shall have a separate supply system that is clearly identified and not connected to the potable water system to prevent mixing. Measures shall be taken to prevent non-potable water refluxing into the potable system.

Where canteen and toilet facilities are provided, potable water shall be provided for drinking water and hand washing.

Where the organization treats the water supply (e.g. chlorination), checks shall ensure that the water is suitable for the intended use.

Non-potable water may be used, for example, for washing down warehouse surrounds, washing down external pumps and external drains, the automatic fire fighting system, flushing toilets and urinals, the cooling tower and the condenser.

4.2.3.3 Chemicals and processing aids

Chemicals and processing aids shall be:

- a) identified;
- b) suitable for the intended use;
- c) stored in a separate, secure (locked or otherwise access-controlled) area when not in immediate use.

4.2.3.4 Air quality and ventilation

Ventilation systems shall be designed and constructed in a manner that prevents air to flow from contaminated areas to clean areas. Specified air pressure differentials shall be maintained. The systems shall be accessible for cleaning, filter changing and maintenance.

Ventilation (natural or mechanical) shall be adequate to remove excess or unwanted steam, dust and odours, and to facilitate drying after wet cleaning.

When working with vulnerable unpacked goods, the air supply shall be controlled to minimize risk from airborne contamination.

Exterior air intake ports shall be examined periodically for physical integrity. Systems shall be cleaned and maintained as required.

4.2.3.5 Gases and compressed air

Gases and compressed air intended for food contact (including those used for transporting, blowing or drying goods or equipment) shall be from a source approved for food contact use, and filtered to remove dust, oil and water.