TECHNICAL SPECIFICATION

ISO/TS 22984

First edition
2021-12

Transport packaging — Cleaning and sanitation methods of reusable transport items for distribution purpose

Emballages de transport — Méthodes de nettoyage et d'assainissement des articles de transport réutilisables à des fins de distribution

Reference number
ISO/TS 22984:2021(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

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 122, *Packaging*.

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

Reusable transport items are used from the point of manufacture in the handling, transportation, storage and display of food and non-food products. Proper cleaning is essential to keep the reusable shipping packaging material clean and hygienic during the time of intended use. The cleaning and hygienic sanitation procedures for reusable transport items described in this document can be used by all stakeholders (e.g. suppliers, emptiers, packers and fillers) involved in the reusable container loop system.

Transport packaging — Cleaning and sanitation methods of reusable transport items for distribution purpose

1 Scope

This document provides guidelines for the cleaning and sanitation procedures for the sanitary operation of reusable transport packaging, which are used in the fields of handling, transport, storage and display of food and non-food products.

It is applicable to all reusable transport items including reusable rigid plastic distribution boxes defined in ISO 18616-1.

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 18616-1, *Transport packaging — Reusable, rigid plastic distribution boxes — Part 1: General purpose application*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 18616-1 and the following apply.

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

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

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

3.1
hazard analysis
process of collecting information on the potential causes of biological, chemical and physical hazards which can occur in all stages of the food manufacturing process and assessing the significance and degree of hazards

3.2
critical control point
CCP
step in the process at which control measure(s) is (are) applied to prevent or reduce a significant food safety hazard to an acceptable level, and defined critical limit(s) and measurement enable the application of corrections

[SOURCE: ISO 22000:2018, 3.11]

3.3
critical limit
criterion which separates acceptability from unacceptability

3.4
monitoring
conducting a planned sequence of observations or measurements to assess whether the *critical limit* (3.3) for a *critical control point* (3.2) is under control and operating as intended

[SOURCE: SOURCE*:* ISO 22000:2018, 3.27, modified]

3.5
verification
confirmation, through the provision of objective evidence, that specified requirements have been fulfilled

[SOURCE: ISO 22000:2018, 3.45]

3.6
cleaning
process of removing impurities, dried-on substances, dust from the surface of a product

3.7
sanitation
process of keeping places and/or product clean and disinfected

3.8
ATP
adenosine tri-phosphate, an active chemical present in living bacteria

[SOURCE: ISO 16784-2:2006, 3.1, modified — The Note has been deleted]

4 Establishing the cleaning and sanitation procedures

In order to demonstrate that reusable packaging is safe and clean, it is recommended to implement a suitable safety management system for reusable packaging. Basic principles can be found for example in ISO 22000 that describes a food safety management system applicable to all processes in the food chain, including packaging.

The following points list the key activities that should be reviewed prior to establishing the cleaning and sanitation procedures of reusable transport items.

a) A team should be appointed to formulate, implement, manage and control the plan for cleaning and sanitation procedures of reusable transport items.

b) The potential biological, chemical and physical hazards which can occur during reusable transport packaging manufacturing and distribution stages should be analysed through the communication among suppliers, emptiers, packers and fillers of reusable transport items.

c) Critical control point should be established for the prevention of hazards associated with reusable transport items.

d) Critical limit should be established to determine the acceptability or unacceptability of cleaning and sanitation procedures of reusable transport items.

e) Continuous or frequent monitoring should be conducted on whether the critical limit is in control.

f) Action plan for unsafe items should be established regarding treatment measures, corrective measures and product recovery measures.

g) Assessment and verification should be provided to validate the effectiveness of cleaning and hazard analysis of reusable transport items.

h) Documented procedures should be established for all the activities stated above.

Annex A gives a checklist that can be used to identify issues and verify the procedures.

5 Cleaning and sanitation procedures

5.1 General

Generally, the sanitation process for reusable transport items involves cleaning, but cleaning may not include sanitation. This process can vary depending on the purpose of use (e.g. whether the product is food or non-food) and the conditions of the reusable transport items, and may be performed simultaneously or separately. The cleaning and sanitation procedures of reusable transport items are described in 5.2 and 5.3, respectively.

5.2 Cleaning procedures

The procedures can be established separately through an agreement among stakeholders including suppliers, emptiers, packers and fillers so that reusable transport items can be cleaned at an agreed level.

Cleaning procedures of reusable transport items should include the following points.

a) Prior to the cleaning process, any problem with the quality or function of the reusable transport items should be identified. Label residues and other contaminants should be removed.

b) Cleaning of reusable transport items can be done manually or by using semi-automatic or automatic cleaning machines as needed.

c) Temperature for cleaning and rinsing transport packaging can be adjusted according to the material characteristics and/or a mutual agreement between service providers and customers. Ideally, temperature should be recorded every hour and when the actual temperature is low, the operation of the cleaning machine should be stopped immediately and readjusted.

d) Detergent should be used appropriately according to the instructed method. Any safety issue should be recorded. Specifications provided by the detergent manufacturer and directions for the use of detergents should be documented. The amount of detergent should be adjusted to meet the requirement of the cleaning machine. Emergency measures should be implemented immediately when a problem occurs.

e) The cleaning machine should be rinsed regularly in order to remove remaining water, labels, residues and other dirts. Water should be restored after rinsing the cleaning machine. Cleaning should be resumed after the temperature reaches the desired temperature level.

f) The adhesive part of the labels used in reusable transport items should be made of material that is easily removable and of which debris does not remain after cleaning.

g) Cleaning facility of reusable transport items should be kept clean. Maintenance of the cleaning facility and waste management may need to conform to specific applicable requirements (e.g. regulations).

h) Quality management procedures related to the cleaning of reusable transport items should be documented.

i) Reusable transport items after completion of the cleaning procedures should be inspected as needed according to the sanitation procedures (see 5.3).

5.3 Sanitation procedures

The procedures can be established separately through an agreement among stakeholders including suppliers, emptiers, packers and fillers by analysing hazards that can threaten sanitation safety of reusable transport items.

Sanitation procedures of reusable transport items should include the following points.

a) Raw materials of reusable transport items should meet the requirements of safety and integrity to demonstrate the agreed level of quality and absence of contamination by toxic or hazardous substances.

b) Machinery, instruments and supplementary facilities used in the manufacturing and processing of reusable transport items should be maintained and controlled sanitarily at all times.

c) Reusable transport items should not be made in a structure in which the contents can be easily contaminated physically or chemically.

d) Facilities or equipment that enable adequate cleaning or disinfection of reusable transport items should be prepared.

e) When attempting to recover and reuse reusable transport items that come in direct contact with food products, reusable transport items should be used after impurities are removed by cleaning them with appropriate methods (e.g. provided by the relevant regulations).

f) Printing, plating and material used for manufacturing or repairing, all as parts of reusable transport items that come in contact with food products should conform to the relevant applicable requirements (e.g. provided by regulations).

g) Materials used for manufacturing reusable transport items that come in direct contact with food products should conform to the common manufacturing procedures, residual specifications by material and migrant specifications (e.g. provided by the relevant regulations).

h) Standard procedures for sanitation, prevention or elimination of hazardous substances, monitoring and verification should be documented.

6 Storage and distribution procedures

Storage and distribution procedures of reusable transport items should include the following points.

a) Reusable transport items should be handled and sold cleanly. They should not be stored, issued or sold from a dirty place.

b) Reusable transport items should be handled wherever possible in a location protected from inappropriate environmental factors such as excessive light, moisture and temperatures.

c) Reusable transport items should not be stored together with materials that are hazardous to human such as chemicals, pesticides and poisons.

d) Reusable transport items should be stored and distributed under safe operating conditions to avoid physical deterioration.

7 Microbial safety test

After cleaning procedures, reusable transport items used for food purposes may be tested for microbial safety, if necessary. ATP test, a process that quickly measures microorganisms that are actively growing by detecting ATP (Adenosine triphosphate), should be performed to ensure the microbial safety of the reusable transport item.

The specimen for ATP test should be collected from four corners and a bottom of centre of the test sample. ATP test should be carried out at least once a month. The recommended ATP level should be less than 1,000 RLU (relative light units) after cleaning and less than 3,000 RLU before releasing.

A typical microbial safety inspection process with ATP test is shown in Figure 1.

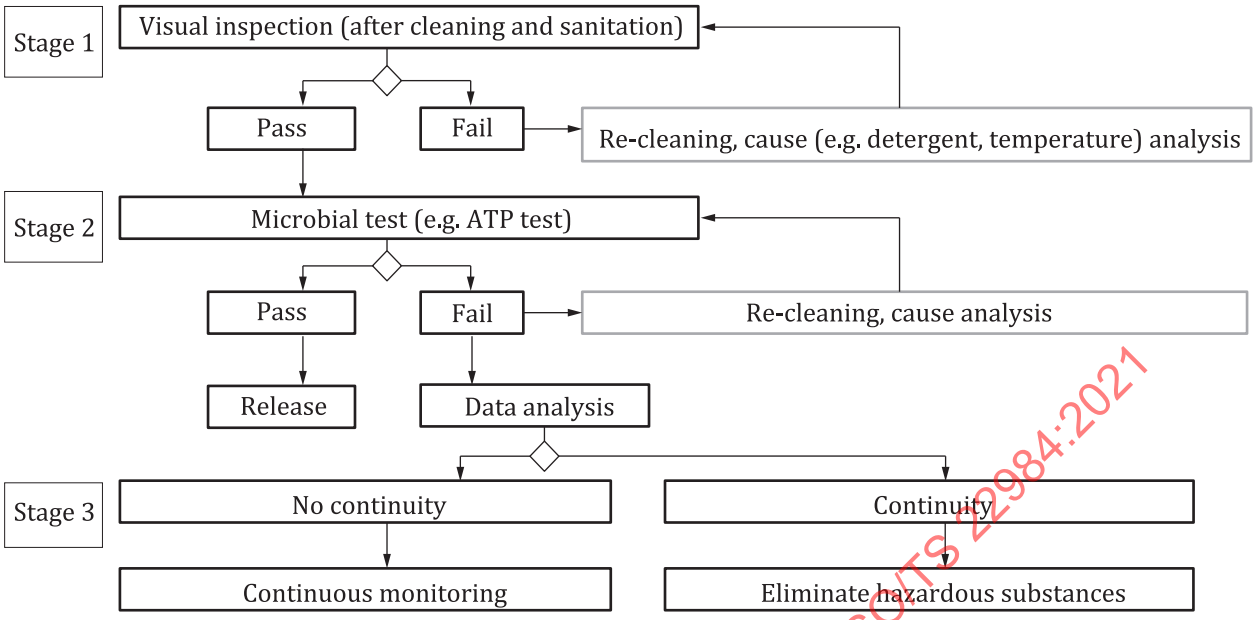

Figure 1 — Example of microbial safety inspection process of reusable transport items