INTERNATIONAL STANDARD

ISO 18603

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Packaging and the environment — Reuse

Emballage et environnement — Réutilisation

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 18603 was prepared by Technical Committee ISO/TC 122, *Packaging*, Subcommittee SC 4, *Packaging and environment*.

Introduction

Packaging plays a critical role in almost every industry, every sector and every supply chain. Appropriate packaging is essential to prevent loss of goods and, as a result, decrease impact on the environment. Effective packaging makes a positive contribution towards achieving a sustainable society by, (e.g.):

a) meeting consumers' needs and expectation for the protection of goods, safety, handling and information;

b) efficiently using resources and limiting environmental impact;

c) saving costs in the distribution and merchandising of goods.

An environmental assessment of packaging may include the manufacturing and distribution system, the wastage of packaging material and goods, the relevant collection systems, as well as recovery or disposal operations. This group of ISO standards and supporting reports provides a set of procedures which aim to:

d) reduce environmental impact;

e) support innovation in products, packaging and the supply chain;

f) avoid undue restrictions on the use of packaging;

g) prevent barriers and restrictions to trade.

Packaging is designed to provide a number of functions for users and producers such as: containment, protection, information, convenience, unitization, handling, delivery or presentation of goods. A major role of packaging is prevention of damage to or loss of goods. (See ISO 18601, Annex A for a list of the functions of packaging.)

ISO 18601 defines the interrelationships within the family of ISO standards which cover the environmental impact of packaging throughout its life cycle (see Figure 1). These standards will help define whether the selected packaging can be optimized and whether the packaging needs to be modified to ensure it can be reused or recovered after use.

Demonstration that the requirements of these standards are met can be performed by a first party (manufacturer or supplier), a second party (user or purchaser), or by the support of a third party (independent body).

Public claims on the environmental attributes of packaging may be addressed by different methods. Some of these are technical aspects on reuse or recovery, others relate to access by the population to reuse or recovery systems or the amount of packaging placed on the market for recovery. This series of standards addresses the technical aspects of the packaging. It does not address the requirements of ISO 14021 needed to support a claim or label.

This International Standard does not use the term "and/or" but, instead, the term "or" is used as an inclusive disjunction, meaning one or the other or both.

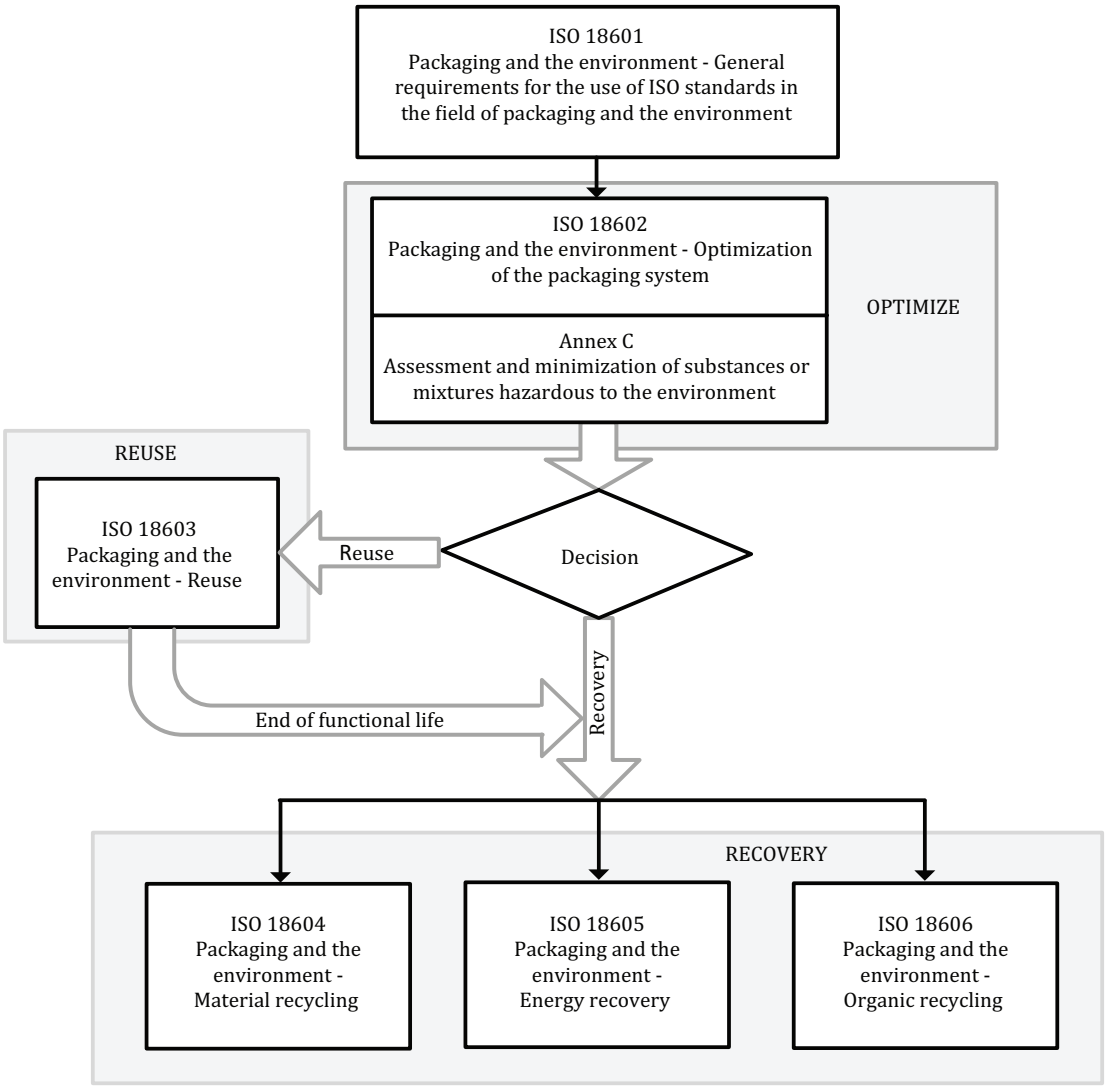

Figure 1 — Relationship of the Packaging and environment standards

Packaging and the environment — Reuse

1 Scope

This International Standard specifies the requirements for a packaging to be classified as reusable and sets out procedures for assessment of meeting the requirements, including the associated systems. The procedure for applying this International Standard is contained in ISO 18601.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 18601, *Packaging and the environment — General requirements for the use of ISO standards in the field of packaging and the environment*

ISO 21067, *Packaging — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 18601 and ISO 21067 and the following apply.

3.1
reuse
operation by which packaging is refilled or used for the same purpose for which it was conceived, with or without the support of auxiliary products present on the market enabling the packaging to be refilled

Note 1 to entry: Non reusable items that support packaging reuse, such as labels or closures, are considered to be part of that packaging.

3.2
reusable packaging
packaging or packaging component which has been designed to accomplish or proves its ability to accomplish a minimum number of trips or rotations in a system for reuse

3.3
trip
transfer of packaging, from filling/loading to emptying/unloading

Note 1 to entry: See Annex A.

3.4
rotation
cycle undergone by reusable packaging from filling/loading to filling/loading

Note 1 to entry: See Annex A.

3.5
packaging used for the same purpose
packaging which, having completed a rotation, is subsequently reused with the original conception, in a system for reuse

EXAMPLE Reuse of pallets, loaded originally with dairy products and now loaded with house bricks is reuse for the same purpose.

Note 1 to entry: Attention should be paid to the intended use and function of the packaging, in order to verify whether it is being reused for the same purpose or a secondary use. In the latter case the packaging is not considered as reusable packaging for the purpose of this document.

3.6
systems for reuse
established arrangements (organizational, technical or financial) which ensure the possibility of reuse

Note 1 to entry: Within the Scope of this document, the "systems" currently recognized are listed below (see Clause 6 for further information.)

3.6.1
closed loop system
system in which packaging is reused by a company or a co-operating group of companies

3.6.2
open loop system
system in which packaging is reused amongst unspecified companies

3.6.3
hybrid system
system consisting of two parts:

a) packaging, remaining with the end user, for which there exists no redistribution system leading to commercial refilling;

b) packaging, used as an auxiliary product to transport the contents to the reusable packaging

3.7
auxiliary product
products used to support the refilling/loading of reusable packaging

Note 1 to entry: Auxiliary products are one way products and are therefore not covered by this document. An example of an auxiliary product is a detergent pouch used to refill a container at home.

3.8
reconditioning
operations necessary to restore a reusable packaging to a functional state for further reuse

3.9
supplier
entity responsible for placing packaging or packaged goods on the market

Note 1 to entry: The term "supplier" in normal usage can relate to various points in a supply chain. For the purpose of this document, it relates to any point in the supply chain where a transaction relating to packaging or packaged goods takes place.

[SOURCE: ISO 18601:2012, definition 3.22]

3.10
emptier
a person or entity who empties a package

4 Methodology

4.1 Assessment confirmation

The relevant entities, which include packer, filler, supplier, emptier or others, shall ensure that the following enabling conditions are met in order to assess whether the packaging is appropriate for a claim of 'reusable' in the circumstances of its intended use:

a) that the design of the packaging enables the principal components to accomplish a number of trips or rotations in normally predictable conditions of use;

b) that the packaging is capable of being successfully reconditioned in accordance with the requirements of Annex B;

c) that a system, necessary to support reuse, is available in markets in which the packaging is placed, as appropriate.

4.2 Background conditions

The overall requirements of reusable packaging are determined by a combination of the demands placed on the packaging itself and the requirements of the reuse system in which it functions. In practice, this means that the detailed requirements of 'reusable' packaging may change from one application to another. Furthermore, the design process tends to be ongoing in response to operational experience in the reuse of the packaging concerned. The demands for durability can mean that reusable packaging design may incorporate more material than that intended for other uses.

To meet the requirements of this International Standard, documentary support and in particular the recording of the results of the assessment process are necessary. This International Standard requires that this be done in a formal way by a statement recording the fulfilment of all the conditions identified as enabling reuse.

With regard to matters affecting the health and safety of persons employed in the reuse process, e.g. in refurbishment or cleaning of packaging, existing legislation in all countries provides specific and comprehensive requirements and it is not considered appropriate to develop separate requirements solely for packaging.

5 Requirements

5.1 Initial conditions

For each packaging type placed on the market:

a) The packer, filler, supplier, emptier or other relevant entities concerned shall be able to demonstrate that the packaging is capable of reuse for the application intended in normally predictable conditions of use;

b) The packer, filler, supplier, emptier or other relevant entities concerned shall be able to demonstrate that a system for reuse, including reconditioning, exists.

NOTE This information may be obtained, for example, directly from the packaging supplier, emptier or by reference to an established standard, recognized organization, or commercial operator. Documented practical experience from existing applications can be a valid source of supporting data.

In the case of packaging intended for use as part of a hybrid system, only 5.1 a) applies.

5.2 Verification procedure

The concerned entity shall, for each of the packaging types placed on the market and at the earliest practicable stage, establish and record:

a) the intention with regard to the reusability of the packaging, giving due consideration to the particular circumstances in which reuse may occur;

b) that the design of the packaging enables the principal components to accomplish a number of trips or rotations in normally predictable conditions of use ;

c) that the packaging can be emptied/unloaded without significant damage, beyond that which can be viably repaired;

d) that the packaging can be reconditioned by proper method and to certain level may be required, the packaging maintaining its ability to perform its intended function and without risk to the health and safety of those responsible for doing so;

e) that any reconditioning process within his control is managed in a manner that takes into account its impact on the environment;

f) that any reconditioning process meets the essential relevant elements for that packaging defined in Annex B;

g) that the packaging can be refilled/reloaded without risk to the integrity of the product or to the health and safety of those responsible for doing so;

h) that a reuse system is available in those markets on to which the supplier is responsible for placing the packaged goods, so as to make reuse possible;

i) that the reuse system identified as appropriate, in the actual circumstances of use, comply with one of the specifications from Clause 6.

j) that the packaging no longer to be reused shall be recoverable in meeting the requirements of one or more of ISO 18604, ISO 18605 or ISO 18606

Annex C (normative) identifies the required content for the recording of responses and declaring the overall result of an assessment of meeting the requirements with this International Standard. Annex C also illustrates a recommended format for its presentation.

5.3 Application

The application of this International Standard to any particular packaging shall be as specified in ISO 18601.

6 Specification of reuse systems

6.1 Types of system

Three types of system are provided for within the terms of this International Standard, as follows:

— closed loop system (6.2);

— open loop system (6.3);

— hybrid system (6.4).

The packer, filler, supplier, emptier or other relevant entities shall identify the most appropriate system for reuse for any particular packaging, taking into account the particular circumstances of its intended use, and ensuring that all the criteria applicable to the identified system are met, as follows.

6.2 Criteria for a closed loop system (see Figure 2)

a) Reusable packaging is owned or managed by a company or a co-operating group of companies;

b) the packaging is circulated by a company or a co-operating group of companies;

c) design of the packaging is fixed in accordance with a mutually acceptable specification or performance standard;

d) the packaging is used in accordance with mutually acceptable procedures;

e) collection, reconditioning and redistribution systems are in place. Packaging materials no longer to be reused and therefore removed from the system shall be recoverable in meeting the requirements of one or more of ISO 18604, ISO 18605 or ISO 18606;

f) the company is, or the group of companies are, obliged to take the reusable packaging back if it has been used in accordance with the specification;

g) the packer, filler, supplier, emptier or other relevant entities provides information on how to handle and where to leave the packaging for the purpose of reuse;

h) a control system, ensuring that re-use is enabled, is in use based on the specification.

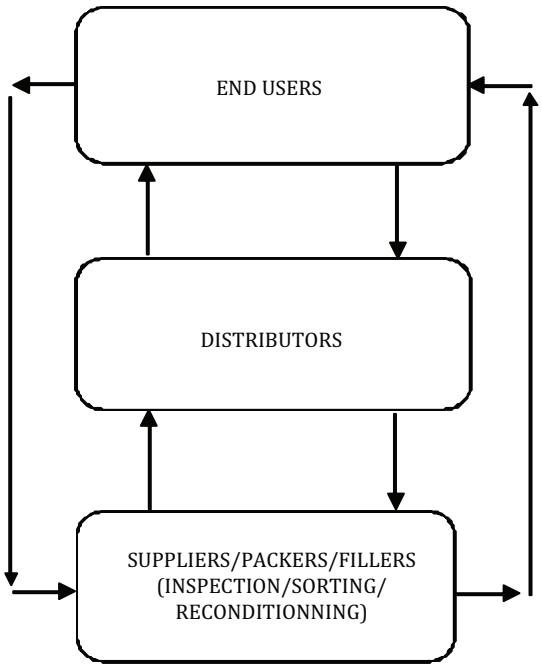

Figure 2 — Closed loop system

6.3 Criteria for an open loop system (see Figure 3)

a) the reusable packaging is owned by each user at the time the packaging is in his possession;

b) design of the packaging is fixed in accordance with a generally accepted specification or performance standard;

c) the packaging is used in accordance with a specification or performance standard agreed or accepted by the participants in the system;

d) after reusable packaging is used by the emptier/user, they decide whether to reuse the packaging or to pass it to a third party for reuse;

e) redistribution systems are in use for that packaging and are generally available;

f) the packer, filler, supplier, emptier or other relevant entities provides information on how to treat and where to leave the packaging for the purpose of reuse;

g) packaging materials no longer to be reused and therefore removed from the system shall meet the requirements of one or more of ISO 18604, ISO 18605, or ISO 18606;

h) reconditioning can be undertaken by a packer/filler or is available on the market as part of the system and meets the essential elements defined in Annex B.

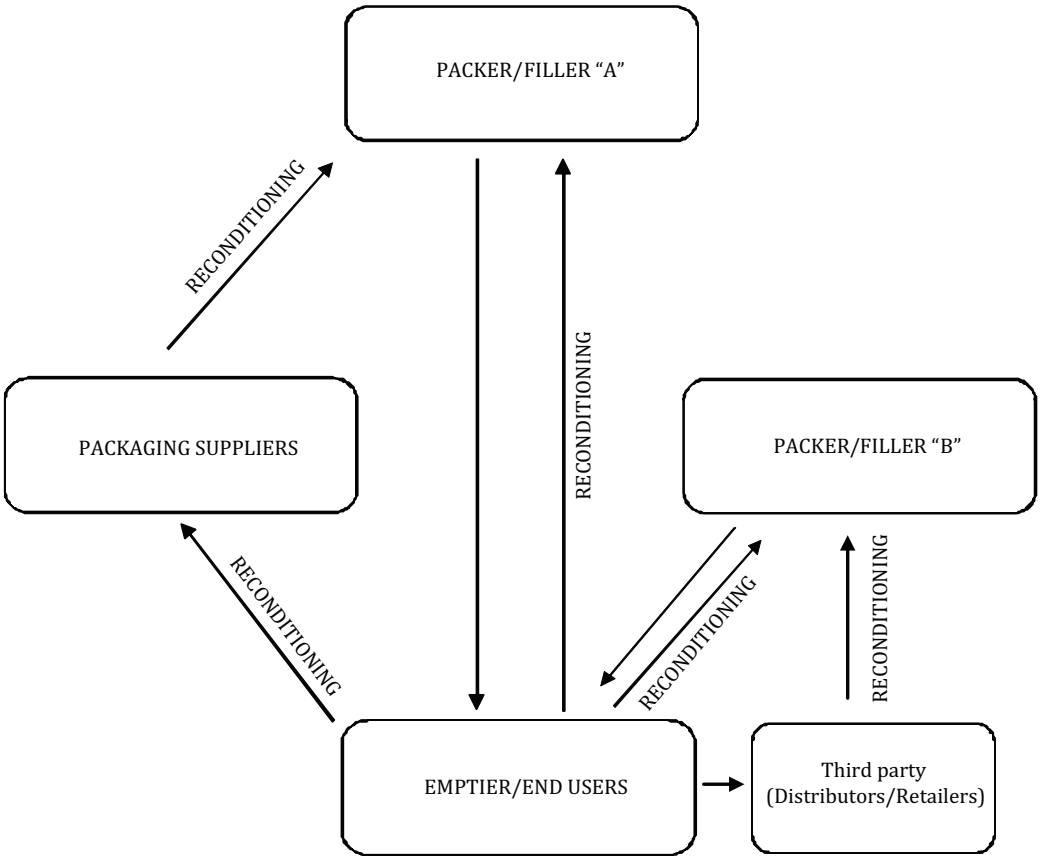

Figure 3 — Open loop system

6.4 Criteria for a hybrid system (see Figure 4)

a) Reusable packaging stays with the end user and is refilled with the support of an auxiliary product;

b) the reusable packaging is owned by the emptier;

c) the emptier is the refiller;

d) the reusable packaging is only placed on the market if the auxiliary product is readily available;

e) the packer, filler, supplier, emptier or other relevant entities provides information on how to refill the reusable packaging;

f) the reusable packaging and the auxiliary product shall meet the requirements of one or more of ISO 18604, ISO 18605, or ISO 18606.

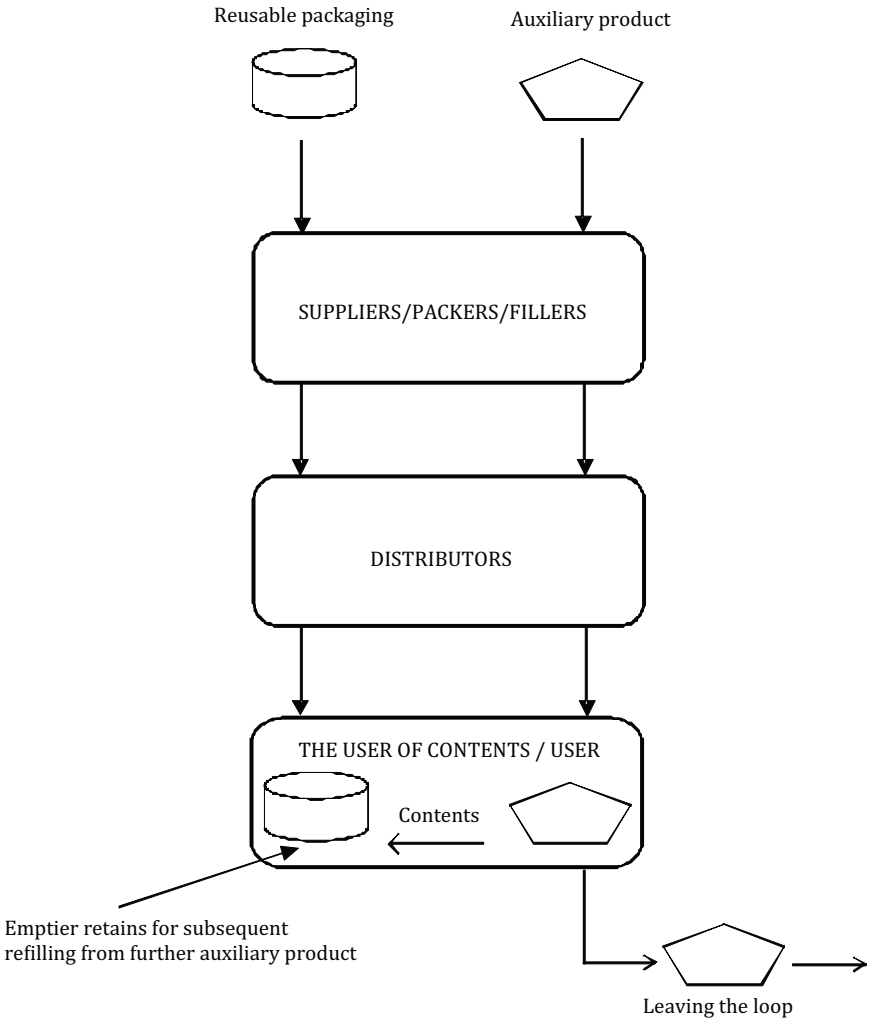

Figure 4 — Hybrid system

Annex A
(informative)

The overall concept of reuse systems

This Annex is intended to clarify the overall concept of reuse systems. For this reason, it includes Figure A.1 flows associated with reuse.

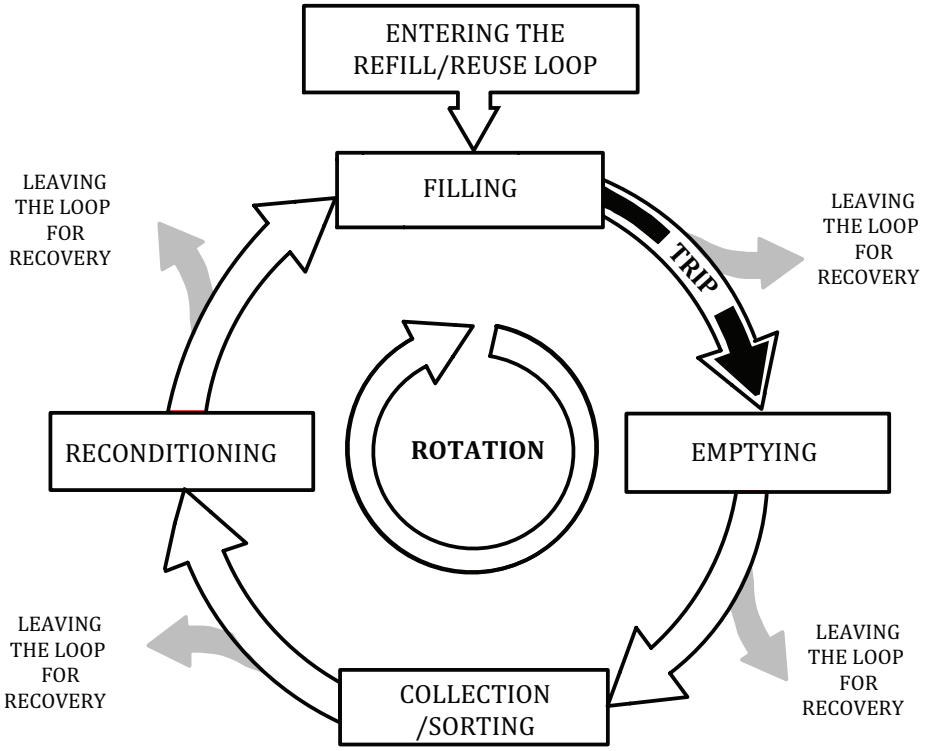

Figure A.1 — Reuse process flow chart

NOTE 1 The size of flows does not correspond to the volumes of the flows.

NOTE 2 Losses can occur anywhere in the loop.

NOTE 3 This flow chart is introduced to clarify the terms “Trip” and “Rotation”.

Annex B
(normative)

Elements of a reconditioning system

A reconditioning system classified as appropriate to reusable packaging shall contain the relevant elements from the list below, applied as appropriate to the packaging type and the use to which the packaging is put.

EXAMPLE For packaging that is not repaired, step e) is omitted.

a) assessment of condition of packaging;

b) removal of damaged or non-reusable components;

c) replacement of damaged or non-reusable components;

d) cleaning or washing according to relevant conditions;

e) repairing of packaging, when required;

f) inspection and assessment of fitness-for-purpose;

g) re-entry into reuse system.

NOTE 1 The cleaning/washing process can be applied at differing stages and can be repeated.

NOTE 2 The sequence of presentation of required elements above, although it has a generally relevant logic, need not necessarily be the sequence of application.

NOTE 3 For certain packaging types, testing may be a requirement.

Annex C
(normative)

Assessment of whether the requirements of this International Standard have been met

The availability of supporting references from relevant sources is a requirement of this International Standard and a list of them shall accompany any statement of meeting the requirements.

NOTE The format of the presentation is a matter of example only and persons or organizations for meeting the requirements with this International Standard may, therefore, use alternative forms of presentation provided all the relevant information including that required for traceability, is present.

Table C.1 — Example of statement of meeting the requirements of this International Standard

Packaging identification	**Assessment reference**	
Identification of significant materials used		
Enabling criteria	**Yes/no**	**References and source**
Taking into account the particular circumstances/location of use, the packaging is to be reused.		
The design of the packaging enables the principal components to accomplish a number of trips or rotations in normally predictable conditions of use.		
The packaging can be emptied/unloaded without significant damage, beyond that which can be viably repaired.		
The packaging can be reconditioned according to Annex B (cleaned, washed, repaired) by whatever method and to whatever level may be specified, whilst maintaining its ability to perform its intended function.		
Any reconditioning process within the control of the packer/filler is managed in a manner that takes into account its impact on the environment.		
A reconditioning process is available and is applicable to reusable packaging, incorporating all essential elements listed in Annex B of this International Standard.		
The packaging can be refilled/reloaded without risk to the integrity of the product or to the health and safety of those responsible for doing so.		
In the circumstances and locations of intended use, the arrangements (organisational, technical, financial) are in place and available to make reuse possible.		
The reuse system identified as appropriate, in the actual circumstances of use, complies with one of the specification or required performances from Clause 6.		
In the light of the responses recorded above, this packaging is deemed to be reusable within the terms of ISO 18603.		
Name and address of Packer, filler, supplier, emptier or other relevant entities:		
Signature:	Date:	

Table C.2 — An example of statement of meeting the requirements of this International Standard (A 1.8L bottle for shochu)

Packaging identification		Assessment reference
Identification of significant materials used		
Enabling criteria	**Yes/no**	**References and source**
Taking into account the particular circumstances/location of use, the packaging is to be reused.	*Yes*	*Cf.*[a] *specifications of the bottle concerned*
The design of the packaging enables the principal components to accomplish a number of trips or rotations in normally predictable conditions of use.	*Yes*	*Cf.*[a] *Specifications of a bottle maker made and properties of matter test result*
The packaging can be emptied/unloaded without significant damage, beyond that which can be viably repaired.	*Yes*	*Cf.*[a] *specifications of the bottle concerned*
The packaging can be reconditioned, cleaned, washed and repaired by whatever method and to whatever level may be specified, whilst maintaining its ability to perform its intended function.	*Yes*	*Specifications of a bottle maker made and properties of matter test result*
Any reconditioning process within the control of the packer/filler is managed in a manner that takes into account its impact on the environment.	*Yes*	*Cf.*[a] *work procedure book*
A reconditioning process is available and is applicable to reusable packaging.	*Yes*	*Cf.*[a] *Specifications of a bottle maker made and properties of matter test result*
The packaging can be refilled/reloaded without risk to the integrity of the product or to the health and safety of those responsible for doing so.	*Yes*	*Cf.*[a] *work procedure book*
In the circumstances and locations of intended use, the arrangements (organisational, technical, financial) are in place and available to make reuse possible.	*Yes*	*We utilize an existing system to use the bottle of the normal type.*
The reuse system identified as appropriate, in the actual circumstances of use, complies with one of the specifications from Clause 6.	*Yes*	*We meet the standard of the open loop system.*
In the light of the responses recorded above, this packaging is deemed to be reusable within the terms of ISO 18603.		
Name and address of Packer, filler, supplier, emptier or other relevant entities:		
Signature:	Date:	
[a] "cf." in citations indicating the reader should compare a statement with that from the cited source.		

Bibliography

[1] ISO 18602, *Packaging and the environment — Optimization of the packaging system*

[2] ISO 18604, *Packaging and the environment — Material recycling*

[3] ISO 18605, *Packaging and the environment — Energy recovery*

[4] ISO 18606, *Packaging and the environment — Organic recycling*

[5] ISO 21067:2007, *Packaging — Vocabulary*

[6] EN 13429:2004, *Packaging — Reuse*

[7] EN 14182:2002, *Packaging Terminology — Basic terms and definitions*

[8] EN 13193, *Packaging — Packaging and the environment — Terminology*

[9] CEN/TR 14520, *Packaging — Reuse — Methods for assessing the performance of a reuse system*

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