



ISO Standards on Packaging and the Environment

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Early History

European Parliament and Council Directive 94/62/EC of 20 Dec 1994 (last amended 7 Feb 2013) on packaging and packaging waste

Objectives:

- Harmonize the management of packaging and packaging waste
- Prevent the production of packaging waste
- Reduce the final disposal of such waste by reuse, recycling and other forms of recovery

A myriad of countries followed suit. Over 28 today.

History (continued)

CEN European Harmonized Standards 2000

- EN 13427 General umbrella requirements
- EN 13428 Prevention (design and limits for source reduction)
- EN 13429 Reuse
- EN 13430 Material recovery (recycling)
- EN 13431 Energy recovery (combustion & min. caloric gain)
- EN 13432 Organic recovery (composting & biodegradation)

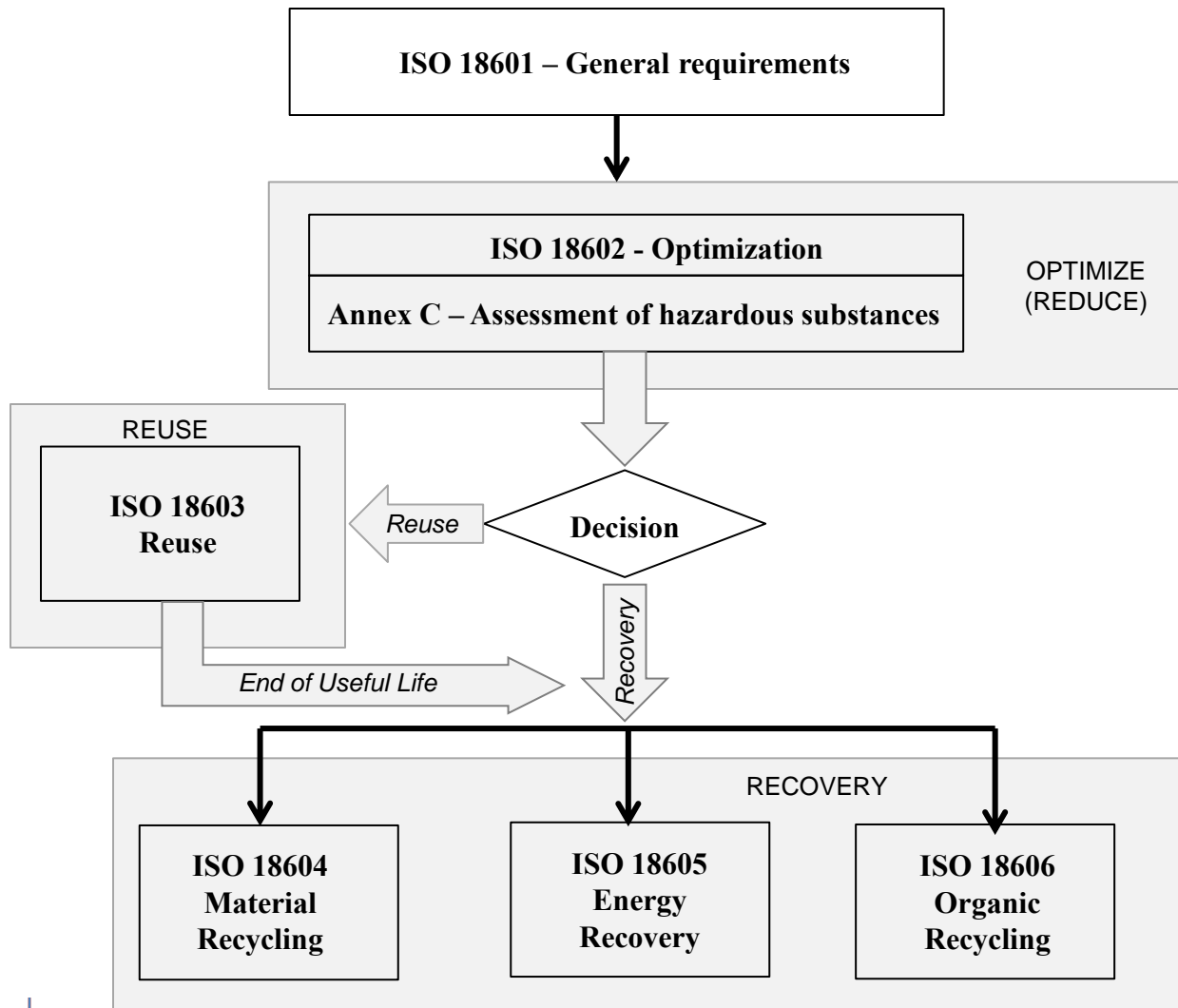
ISO/TC 122/SC 4

Packaging and the Environment

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ISO 18601:2012	General requirements
ISO 18602:2012	Optimization
ISO 18603:2012	Reuse
ISO 18604:2012	Material recycling
ISO 18605:2012	Energy recovery
ISO 18606:2012	Organic recycling

Relationship of Packaging and Environmental Standards



ISO 18601 General Requirements

- General principles using the flow chart
- Selection of appropriate assessment procedures
- Assessment for heavy metals and other substances hazardous to the environment
- Documentation of assessment data
 - Conformance to requirements statement

ISO 18602 Optimization for the Packaging System

Scope:

Specifies requirements and a procedure for assessment of packaging to ensure that the *weight or volume of its material content is optimized* consistent with the functions of packaging

Methodologies and procedures for:

- a) determining the amount and minimization of substances or mixtures hazardous to the environment
- b) determining the amount of four heavy metals (lead, cadmium, mercury, hexavalent chromium) in the packaging

ISO 18602 Packaging Assessment

- Determine the critical area(s) that will govern packaging optimization (minimum packaging)
 - Protection of goods
 - Packaging manufacturing process
 - Packaging/filling process
 - Logistical (transport, warehousing and handling)
 - Presentation and marketing of goods
 - User/consumer acceptance
 - Information
 - Safety
 - Legislation
 - Other issues

- Appendix A provides guidance and examples of each critical area

Annex A

Critical Areas to Optimization

■ Protection of goods

Protected against damage, loss and deterioration from the point of packaging until their use which may consist of protection against vibration, compression, humidity, light, oxygen, microbiological infection, pests, off-taste etc.

■ Packaging manufacturing process

The manufacturing processes operated by packaging manufacturers (suppliers) influence the range of characteristics of the packaging available to the designer, such as bottle wall thickness distribution and corrugated flute orientation.

Annex A

Critical Areas to Optimization

■ Packaging/filling process

The packaging/filling process influences the range of options available to the designer in order to minimize the waste of goods and packaging. Limitations may include line speed and efficiency, heat resistance, minimum head space, stability in conveying, etc.

■ Logistics (including transport, warehousing and handling)

Packaging should be suitable for the expected logistics, transport and handling systems and maintain adequate protection of goods and safety for those exposed to the handling and use of the packaged goods.

Annex A

Critical Areas to Optimization

■ Presentation and marketing of goods

The packaging should enable proper identification of the packaged goods by the user/consumer as well as stimulate purchase. Requirements may consist of: identity and brand recognition, aesthetics, labeling, compatibility with retail display systems, compatibility with refill systems, pilfer resistance, etc.

■ User/consumer acceptance

The packaging should satisfy user/consumer needs and expectations in terms of unit size and convenience as well as ergonomics associated with handling, opening, reclosing, storing, disposal, etc.

Annex A

Critical Areas to Optimization

■ Information

The packaging should be capable of providing any necessary information regarding use and care of goods as well as other useful instructions. Information about the packaged goods, instructions for storage, application and use, bar codes, best before date apply here.

■ Safety

The packaging should be capable of meeting the requirements associated with user/consumer and product safety throughout the distribution system. Requirements may consist of: design for safe handling, child resistance, tamper evidence, hazard warnings, clear identification of content, safe opening device, etc.

Annex A

Critical Areas to Optimization

■ Legislation

The packaging has to meet the issues covered by legislation, regulations and international trade agreements.

■ Other issues

If the relevant criterion for achieving minimum adequate weight/volume of the packaging is not covered by the preceding nine critical areas but is an existing quality requirement for packaging, it should be detailed under "other issues". These other issues may address economic, social or environmental implications.

ISO 18603 Reuse

- **Scope**
 - Specifies requirements for packaging to be classified as reusable
 - Procedures for assessment of meeting the requirements
- **Definitions**
 - Reuse* – operation by which packaging is refilled or used for the same purpose for which it was conceived...
 - Reusable packaging* – packaging or packaging component which has been designed...for a minimum number of trips in a system of reuse
- **Requirements include verification procedures and Criteria for Reuse Systems (i.e. closed loop, open loop, hybrid system)**

ISO 18604 Material Recycling

■ Scope

Requirements for packaging to be classified recoverable in the form of material recycling.

Procedures for assessment to meet requirements

■ Definitions

Material Recycling – reprocessing...of a used packaging material into a product, a component incorporated into a product or a secondary (recycled) raw material (excludes energy recovery and use as a fuel)

Recyclable – characterization of a product, packaging, or associated component that can be diverted from the waste stream through available processes and programs and can be collected, processed and returned in the form of a raw material or product

Material Recycling Annexes

- Annex A (normative) Procedures to evaluate packaging recoverable by material recycling
- Annex B (normative) Procedure for assessing recyclability criteria
- Annex C (informative) Examples of statements to determine the percentage of a packaging unit recyclable
- Annex D (informative) Examples of declaration of the percentage by weight of a packaging unit which can be recycled

ISO/TR 17098:2012(E)

Report on substances and materials which may impede recycling

- Examples, guidelines and common industrial practices for materials and substances which cause problems in the recycling operations of each of the main packaging materials:

Table 1 Aluminum

Table 2 Glass

Table 3 Paper and Paperboard

Table 4 Plastic

Table 5 Steel

Table 6 Wood

ISO 18605 Energy Recovery

■ Scope

Requirements for packaging to be classified as recoverable in the form of energy recovery
Assessment procedures for fulfilling this standard

■ Definitions

Energy recovery – production of useful energy through direct and controlled combustion

■ Annexes

Annex A (informative) Determining net calorific gain and specifying theoretical minimum net calorific value
Annex B (informative) Minimum net calorific value in a real industrial system
Annex C (informative) Packaging not suitable for energy recovery process
Annex D & E (informative) Examples

ISO 18606 Organic Recycling

■ Scope

Procedure and requirements for packaging to be suitable for organic recycling. Packaging is considered as recoverable only if all the individual components meet the requirements.

Four aspects must be addressed for each component

- biodegradation
- composting
- negative effects on the composting process
- negative effects on the quality of the resulting compost

■ Definitions

Organic recycling – through microbial activity, the controlled biological treatment of the biodegradable components which produces compost

Note: landfilling and littering are not considered as organic recycling

ISO 18606 Organic Recycling

- Assessment includes:

- Characterization
- Biodegradation
- Disintegration
- Compost quality
- Recognisability

- Annexes

- Annex A (normative) - Maximum concentrations of regulated metals and other hazardous substances

- Annex B (normative) - Determination of ecotoxic effects to higher plants

- Annexes C, D & E (informative) - Assessment flow chart, checklist and examples suitable for organic recycling

How does this affect me?

- Voluntary or mandatory?
- A new dimension to package design and development?
- How will you classify your packaging after optimization?
- Declaration of conformity requires documentation

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**DON'T SHOOT THE
MESSENGER...BUT I'LL TRY**