SLOVENSKI STANDARD
SIST-TP CEN/TR 13688:2008

01-oktober-2008

Nadomešča:
SIST CR 13688:2001

Embalaža - Snovno recikliranje - Poročilo o zahtevah za snovi in materiale za preprečevanje trajnih ovir za recikliranje

Packaging - Material recycling - Report on requirements for substances and materials to prevent a sustained impediment to recycling

Verpackung - Stoffliche Verwertung - Bericht über Anforderungen für Substanzen und Materialien zur Verhinderung einer andauernden Behinderung der stofflichen Verwertung

Emballages - Recyclage matière - Rapport sur les exigences relatives aux substances et aux matériaux destinés à éviter tout obstacle durable en recyclage

Ta slovenski standard je istoveten z: **CEN/TR 13688:2008**

ICS:

13.030.50	Recikliranje	Recycling
55.040	Materiali in pripomočki za pakiranje	Packaging materials and accessories

SIST-TP CEN/TR 13688:2008 **en,fr,de**

TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CEN/TR 13688

July 2008

ICS 13.030.50; 55.020

Supersedes CR 13688:2000

English Version

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This Technical Report was approved by CEN on 1 June 2008. It has been drawn up by the Technical Committee CEN/TC 261.

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Ref. No. CEN/TR 13688:2008: E

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Foreword

This document (CEN/TR 13688:2008) has been prepared by Technical Committee CEN/TC 261 “Packaging”, the secretariat of which is held by AFNOR.

This document supersedes CR 13688:2000.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This report has been prepared by CEN/TC 261 SC 4 WG 3 in support of the Standards Mandated in M200 Rev 3, in particular the Principal Standard EN 13430 "Packaging - Requirements for packaging recoverable by material recycling".

Introduction

The Packaging and Packaging Waste Directive states the essential requirements that must be satisfied for packaging to be placed on the market, and includes the requirements for that packaging to be considered recoverable. Recovery by material recycling is largely influenced by the materials used for packaging and the condition in which they arrive at the recycling operations. The materials and substances used in their manufacture and also the products contained can and will influence the collection, sorting and recycling operations. This report provides examples covering the main packaging materials and can be used as a guide for taking into account substances and materials that may be incorporated in packaging and which may, or do, inhibit subsequent operations related to recycling.

The Mandate M200 Rev 3 sets out the requirements for a number of principal standards and supporting reports. For Material Recycling, the mandate states the requirement for :

— the standard intended to give presumption of conformity with the essential requirements for packaging recoverable in the form of material recycling shall be in line with Annex 2, Clause 1, indent 1, 2 and 3 and Annex 2 Clause 3.(a) of the Directive.

— The requirements shall take into account :

  — substances or materials that are liable to create problems in the recycling process ;

  — materials, combinations of materials or designs of packaging, that are liable to create problems in collecting and sorting before material recycling ;

  — the presence of substances or materials that are liable to have a negative influence on the quality of the recycled material.

The standard EN 13430 sets out the basis on which packaging may be classified as recoverable by recycling. This is one of the routes for the recovery of used packaging, with the inter-relationship between the various routes being covered in the standard EN 13427.

The standard EN 13430 requires that the design, choice of materials and the manufacturing operations of packaging take into account the activities through which the used packaging will go when processed through the expected recovery operations. In particular that standard deals with the need to take into account the collection, sorting and recycling of the materials.

A good standard should be clear and unambiguous, readily and easily understood and enable the determination of whether the activity/product conforms to the requirements. As far as possible it must also be such that it has a longevity, by not being outdated by failing to cover all the issues that fall within its intended scope, or by the inevitable developments - technical and commercial - which are stimulated by the legal requirements, and even by the standard itself.

It is not appropriate for a standard to list "substances and materials that create problems...” as this will lead to the failure to satisfy the above requirement of a good standard, in that such a list may never be complete, and if a substance or material is not on the list it could justifiably be considered as fully acceptable. Also, technology is constantly being developed, and the so called problem materials may become no longer a problem.

A standard needs to avoid being prescriptive with the resultant fundamental principle that it is not the role of a standard to provide definitive lists, but rather to provide the basis on which any such defined lists are controlled/assessed or measured.

In practice, the recycling of used products is determined not only by the collection, sorting and recycling process, but also by the application in which the recycled material is expected to be used. The requirements of the application in which the recycled materials are to be used can have a far greater effect on the decision on whether a "substance or material" will cause a problem in the recycling process. Therefore the Mandate is right in requiring the standard to “take account of substances and materials that are liable to cause problems”, and not to establish a list, which for the above reasons could never be correct.

This report therefore provides some examples of the substances, materials and components that need to be considered in the design and control of the packaging as defined in the standard EN 13430.

1 Scope

This Report provides some examples of substances and materials that may cause a sustained impediment in the recycling activities, and is intended to assist in the assessment requirements set out in the standard EN 13430.

It describes substances or materials which cause problems or inhibit the recycling process, or which have a negative influence on the quality of recycled material, and for which it is considered that technological solutions will not be developed in the near future.

These examples are however qualified by the fact that the recycling operations can vary from region to region and state to state, that technology is constantly changing, and that the use to which the recycled material is put will also determine whether such substances and materials are a problem.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 643, *Paper and board – European list of standard grades of recovered paper and board*

EN 13193, *Packaging – Packaging and the environment – Terminology*

EN 13427, *Packaging – Requirements for the use of European Standards in the field of packaging and packaging waste*

EN 13430, *Packaging – Requirements for packaging recoverable by material recycling*

EN 13437, *Packaging and material recycling – Criteria for recycling methods – Description of recycling processes and flow chart*

3 Definitions

For the purpose of this document, the terms and definitions given in EN 13193 apply.

4 Recycling

The European Standard EN 13437 provides a general description of the material flows from manufacture and use of packaging and the recovery by recycling for a reuse of the materials for either packaging or other applications. The document also provides a brief description of the main recycling operations for each of the main material sectors. The description underlines that recycling technology is being constantly developed with new techniques emerging, and recycling needs can vary significantly from country to country due to the form in which the packaging arrives in the waste stream, and also the applications in which the recycled materials will be used.

Whilst there may be similarities in packaging materials and recycling activities across the member states, there is no automatic and common position that can be predicted from one country to another. An example of this can be seen in the recycling of glass. The specification for the segregation of coloured glass varies. For example in the UK only very low levels of cross contamination of colour can be accommodated as the manufacture of new glass bottles is fairly evenly divided between clear (flint), amber and green. In France however, green bottles dominate, and as green is more tolerant of colour mixing, less segregation of colours in the collected waste is required. However, this position could be expected to change as collection and recycling increases to a level beyond that accommodated by the green fraction of new production.

Thus in presenting the data in this report, the information can only be considered as examples of the issues that should be considered in the design of packaging, and the need to take into account the effect that the materials and construction may have in the subsequent recycling operations.

In providing examples of substances and materials that may cause problem in recycling, a number of issues need to be considered. These include:

— the range of packaging materials ;

— the form in which the packaging exists ;

— the collection/sorting and recycling operations available in the location where the packaging completes its functional life ;

— the use to which the recycled material is to be put.

The following examples include data from current and typical specifications associated with used packaging supplied for recycling on a commercial and practical basis. It should be noted that these specifications can also vary from location to location.

The largest single classification of problem substances is not with the substances, materials and components that make up the packaging to be recovered, but with those associated with contamination of the packaging. This contamination comes from the residues of the contents, from other external contamination resulting from the use of the packaging, or from the collection and sorting processes. The contamination may usually be very small in quantity but, either through a hazardous nature of the contamination, or an inhibition in the use to which the recycled material can be put, can result in a disproportionate level of problem.

5 Material examples

Packaging is produced from a wide range of materials, and combinations of materials, selected according to the functional requirements of the packaging application. Though all these materials are readily recyclable, they can provide a major impediment to the recycling operation if they become mixed. Glass packaging in a plastic recycling operation, metals in a glass recycling operation, excessive plastic in a paper recycling operation, etc. are examples where fully acceptable materials and substances can lead to problems in recycling other materials.

In the following tables examples of materials and substances which cause problems in the recycling operations of each of the main packaging materials are given. These materials and substances may be integral with the packaging, they may arise from other packaging or other impurities becoming mixed in the collection operations, or from contamination associated with the contents, or externally from the use of the packaging.

The tables are as follows :

— Table 1 Aluminium ;

— Table 2 Glass ;

— Table 3 Paper and Board ;

— Table 4 Plastic ;

— Table 5 Steel ;

— Table 6 Wood.

Table 1 - Aluminium

Packaging recoverable by material recycling		
Reference to standard EN 13430		
B.2 Design Criteria **NOTE 3**	**Materials and substances integral with the packaging**	**Comments**
i) Separability of components	- Beverage and food cans require no separation as the lids, tabs and body are in similar alloying elements. - Composite containers should easily be separated to allow source separation by the user or separation during the collection and sorting stage. - Semi-rigid and flexible aluminium foil packaging can be separated at source by the user. - Foil laminates require specifically adapted separation and recovery processes which allow for material recycling and/or incineration with energy recovery.	The majority of aluminium rigid and semi-rigid packaging is single material of similar alloying elements, which ensures that closed loop (can-to-can recycling) or open loop recycling (into other aluminium products) is feasible. Non aluminium components or substances are effectively removed during the collection and sorting processes, at the input side to the recycling process, or during processing. Separation normally involves the recovery of the aluminium fraction using a thermal process which results in the destruction of the laminating ply, with an associated energy or by-product recovery. Small aluminium packaging items are increasingly collected and recycled from the bottom ashes in incinerators. New sorting techniques including optimised eddy current separation allow for the collection of even the smallest fraction.
ii) Compatibility of material compositions or material combinations with the recycling process.	- Material compositions are uniform in respect of the major aluminium components of the packaging/packaging system i.e. similar alloying elements. - Non-aluminium components, printing inks, lacquers and any sealants are accepted as easily removable during the recycling process.	
Acceptable tolerances for non-compatible elements or substances in the recycling process.	- Acceptable tolerances are determined by the individual recycling process plant and its design.	

"to be continued"

Table 1 – Aluminium (*continued*)

Packaging recoverable by material recycling		
B.5 Guidelines	**Materials and substances external to the packaging**	**Comments**
Compatibility with the collection and sorting systems.	Materials which require separation in the collection and sorting system, and are not acceptable in the recycling process. — Steel — Lead — Iron — Plastics — Paper — Sand — Glass — Dirt — Food residues — Grease — Any other foreign substances — Excessive moisture	No aluminium packaging is made of alloying elements including lead. However, occasionally lumps of lead can be found inside beverage cans to make these heavier and therefore more attractive for cash for cans weight-based collection schemes. Sorting centres either don't accept unspecified bales of used beverage cans or carry out extra controls to detect the lead with x-ray machines and subsequently remove it.