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The European Organization for  
Packaging and the Environment

# Understanding the **CEN Standards** on Packaging and the Environment: Some Questions and Answers

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EUROPEN – *The Cross Sectoral Voice for Packaging and Packaged Goods* –  
is an industry and trade organization open to any company with an  
economic interest in packaging. It presents the opinion of its  
members on issues of packaging and the environment.

Understanding the CEN Standards on Packaging and the Environment  
Some Questions & Answers  
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#### **EUROPEN**

The European Organization for Packaging and the Environment  
Le Royal Tervuren  
Avenue de l'Armée 6 Legerlaan  
1040 Brussels, Belgium  
Phone: +32 2 736 3600  
Fax: +32 2 736 3521  
packaging@europen.be  
[www.europen.be](http://www.europen.be)

# THE CEN 'HARMONISED' STANDARDS ON PACKAGING AND THE ENVIRONMENT

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## INTRODUCTION

Under the “New Approach”, the EU institutions speed up agreement on technical harmonisation issues by agreeing “Essential Requirements” which define the results to be attained and the risks to be dealt with, and delegate to CEN (the European Committee for Standardization) or CENELEC (the European Committee for Electrotechnical Standardization) the task of specifying the technical solutions needed.

Thus Annex II to Directive 94/62/EC on packaging and packaging waste lays down Essential Requirements which all packaging placed on the market within the European Economic Area<sup>1</sup> must comply with. These Essential Requirements can be summarised as follows:

- Packaging weight and volume should be minimized to the amount needed for safety and acceptance of the packed product;
- Noxious and other hazardous constituents of packaging should have minimum impact on the environment at end of life; and
- Packaging should be suitable for material recycling, energy recovery or composting, or for reuse if reuse is intended.

The EU Commission mandated CEN to draw up a set of standards and reports which would be “useful for the application of the Directive”, and standards on packaging prevention, reuse, material recovery, energy recovery and organic recovery were adopted in 2000.

To meet the requirements of the Commission and the member states, CEN began revising the standards in 2001, and updated versions were adopted in 2004. On 19 February 2005 the Commission published the references to the full set of standards in the Official Journal as recognition of their status as “harmonized standards”.

This means that packaging which complies with the standards is deemed to be in conformity with the Essential Requirements, and cannot be denied access to any country in the European Economic Area on grounds of non-conformity with the Directive. In other words, the burden of proof has been reversed. Before the references were published, a producer who had been challenged by the enforcement authorities had to prove conformity with the Essential Requirements; now it is up to the enforcement authorities to prove that the packaging has not been produced in conformity with the relevant standards.

By providing practical guidelines on how the Essential Requirements can be interpreted and implemented, the CEN standards on packaging and the environment will ensure that packaging designers and specifiers keep potential environmental improvements under continuous scrutiny, as well as giving added value in developing the European Internal Market for packaging and packaged goods.

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<sup>1</sup> The EU member states plus Iceland, Liechtenstein and Norway.



## SOME QUESTIONS AND ANSWERS

### Q1 What is the legal status of the standards?

These texts have been adopted as “harmonized standards” by the national standardization bodies in the 25 EU member states, plus Iceland, Norway and Switzerland.

Use of the standards is voluntary, but the Packaging and Packaging Waste Directive provides that there is a presumption of conformity with the Essential Requirements when packaging has been produced in accordance with harmonized standards whose references have been published in the *Official Journal of the European Communities*. The references were published in OJ C 44 of 19 February 2005.

This means that if packaging complies with the standards, the burden of proof is reversed. The packaging cannot be denied access to any country in the European Economic Area on grounds of non-conformity with the Directive, unless the enforcement authorities can prove that the packaging has *not* been produced in conformity with the relevant standards.

### Q2 What was the legal status of the standards before the references were published?

When the original standards were adopted in 2000, CEN requested publication of the references in the Official Journal, but the EU decided that most of these standards were not fully in line with the Essential Requirements. The Commission published<sup>2</sup> the references to two of the standards (one with a comment that it did not fully cover certain of the relevant Essential Requirements), and gave CEN a new mandate to carry out the further work needed to ensure that the references to the full set of standards could be published.

Since publication of the references to two of the standards in 2001, member states have been obliged to presume that

- packaging produced in conformity with EN 13428:2000 (the standard on prevention by source reduction) is in compliance with the Essential Requirements as regards minimisation of the weight and volume of the pack. This meant that there could be no challenge to it in this respect. However, the standard did not then guarantee compliance in respect of the minimization of noxious and other hazardous constituents of packaging – which it now does;
- packaging produced in conformity with EN 13432:2000 (the standard on organic recovery) is in compliance with the relevant Essential Requirement and must be accepted as compostable and biodegradable. This standard was the only one not to be revised, so there is no change in its status.

### Q3 The enforcement authorities do not appear to have been checking up on compliance with the Essential Requirements up to now, so what has really changed?

It is true that up to now, only three member states have had an enforcement regime in place. The others have done no more than transpose the text of the Essential Requirements more or less word-for-word with no indication of how they should be enforced.

*France and the UK* have been enforcing the Essential Requirements since the late 1990s and have adopted detailed regulations explaining what companies must do to comply. Both made it clear that the use of the full set of standards was an appropriate way for business to demonstrate compliance.

So far there have been three successful prosecutions in the UK. British officials have explained that products are selected for testing for compliance through a mixture of specific complaints received; routine inspections for compliance with this and other legislation; and specific sampling projects based on trade sectors, taking account of which types of pack have the largest impact on waste.

Similarly, French officials have said that some inspections are part of overall company controls and others are targeted, with special attention to cases where large quantities are produced. So companies are at particular risk

<sup>2</sup> Commission Decision 2001/524/EC of 28 June 2001 (OJ no. L 190, 12.7.2001).

if ordinary consumers see what they regard as excessive packaging and feel strongly enough about it to make a complaint. So far, however, all cases have been settled without the need for action in the courts.

Officials in both countries have made it clear that the real aim is not to notch up successful prosecutions but to encourage a change in company culture to bring about packaging minimization. Prosecutions of particularly flagrant abuses will certainly help improve awareness of the legislation, and EUROOPEN regrets that more of such prosecutions have not been brought, but the real measure of success is how well companies are respecting the Essential Requirements.

In *the Czech Republic*, Act No. 477/2001, which transposed the Packaging and Packaging Waste Directive, said that manufacturers and importers may not place packaging or packaged goods on the Czech market unless the packaging conforms with the Essential Requirements. They had to prepare a written declaration of compliance for their customers, and this declaration was to be made available to the authorities on request. In practice this was a condition of customs clearance.

Before the Czech Republic entered the EU, however, these provisions were amended by Act 94/2004. Customs officers are no longer allowed to block the importation of packaging or packaged goods at the frontier if they suspect that it does not comply with the Essential Requirements – they must allow it in, and then inform the environmental inspection authorities.

The reluctance of the other member states to comply with their legal obligation to ensure that packaging is placed on the market only if it complies with all Essential Requirements is probably due to a belief that the Essential Requirements as currently drafted are unenforceable.

It remains to be seen whether any of them will now start to test the workability of the standards, or whether they will wait for the Commission's progress report on implementation of the Directive, which will be accompanied by an evaluation of the effectiveness, implementation and enforcement of the Essential Requirements. The Commission's report will probably appear in autumn 2005. When the member states start to debate the Commission's findings, some of them may well call for a tightening up of the Essential Requirements in order to make them more prescriptive and leave less freedom for companies to make their own decisions.

## Q4 So are the standards unenforceable?

No – but it is fair to say that enforcement officers cannot look at a range of products on a supermarket shelf and say “this one complies with the Essential Requirements, that one doesn't.” If enforcement is to be effective, they have to go into the issues a little more deeply.

The standards apply to all sorts of packaging, from chocolate bar wrappers, beer cans and ready-meal cartons to bottle-tops, labels, corrugated boxes, plastic crates and wooden pallets. In view of the enormous range of packaging types and recovery and disposal possibilities to be taken into account, the CEN experts opted for a management system approach aimed at ensuring a continuous effort to improve the environmental profile of packaging placed on the market.

To comply with the standards, packaging designers and specifiers must work methodically through a checklist to ensure that their decisions take account of the often conflicting social, environmental and economic factors affecting the choice of packaging, and find a solution that is right for the product, for the distribution system and for how it will eventually be stored and used.

The standards do contain a few pass/fail criteria. For instance,

- packaging fails the reuse standard unless the producer can ensure not only that the packaging is capable of being reused, but also that a reuse system is available in the markets where the pack is used;
- the material recycling standard lays down various procedures which must be followed before the pack can be assessed as recyclable;
- the energy recovery standard defines certain types of packaging as recoverable in the form of energy as these packs are known to provide calorific gain – other types pass the standard only if calorific gain can be determined by calculation using the methodology laid down in the standard;



- the organic recovery standard lays down criteria for packaging to be regarded as organically recoverable which relate not only to the biodegradability of the materials but also to the absence of negative effects on the biological waste treatment process and on the quality of the resultant compost.

However it is true that the issue that has received most attention, the avoidance of over-packaging, can only be tested by ensuring that the producer has set up and operated a system to ensure that he asks himself all the right questions and that he has documented the answers.

The enforcement authorities verify compliance with the prevention standard by asking the producer to demonstrate the steps that have been taken to identify the “critical area” that prevents further source reduction.<sup>3</sup> If this cannot be done, the packaging fails the standard.

## Q5 Is it only British, Czech and French companies that are using the standards?

No. This has been shown by the results of two surveys, one commissioned by the UK Department of Trade and Industry<sup>4</sup> and the other by EUROOPEN.<sup>5</sup> The British study examined implementation in the UK by 22 large and medium-sized businesses, while the EUROOPEN study reviewed implementation across Europe by 17 production units from ten international companies in membership of EUROOPEN.

In the EUROOPEN survey, 65% of respondents were using the CEN prevention standard or procedures based on it, and 12% were using internal procedures not based on the CEN standard. The DTI study found that 55% of respondents were using the standard, but in the UK there is also the INCPEN/BRC Responsible Packaging Code,<sup>6</sup> and only 27% were using neither the standard nor the Code. This was remarkably close to the 24% non-users identified by the EUROOPEN study, but all but one of the operations which EUROOPEN found not to have assessment compliance procedures were based in countries which did not join the EU until May 2004.

The EUROOPEN study demonstrated that the Essential Requirements are not only having an effect in countries where they are being enforced. Also, the DTI’s consultants asked respondents whether their method of implementation of the Essential Requirements was specific to the UK or pan-European. Most were operating the same system across Europe, or even worldwide in some cases, though two distributors and four packer/fillers had systems designed specifically for the UK. Two of the packer/fillers with UK-specific systems were foreign-owned.

As both consultancies noted, compliance is not confined to Europe. Companies from the US, Asia and the Arab world have been seeking guidance on practical interpretation of the Essential Requirements and the CEN standards, and Visy, one of the largest packaging companies in Australia, uses the CEN standards “to help guide packaging design towards more environment-friendly and recyclable outcomes.”<sup>7</sup> The CEN standards are becoming *de facto* world standards.

Nevertheless, many companies whose operations are confined to countries where the Essential Requirements are not being enforced may not be using the standards, and may not even be aware of their existence. This is one reason why EUROOPEN is keen to see an equal standard of enforcement across the entire European Economic Area.

## Q6 When should my company start using the standards?

As soon as possible!

Companies selling packaging materials or components, finished packaging or packaged goods which end up on the British, Czech or French markets may either be directly asked to demonstrate compliance with the Essential Requirements, or may be asked to do so by a customer further along the supply chain.

The UK enforcement authorities, for instance, says that packer/fillers, brand owners and importers must show that they have taken ‘all reasonable steps’ to ensure their packaging complies with the Essential Requirements. They

<sup>3</sup> The critical area concept is explained in the answer to Q13 and in Appendix II.

<sup>4</sup> Perchards: *Impacts of the Packaging (Essential Requirements) Regulations – a brief survey*, Department of Trade and Industry, October 2003. Downloadable from <http://www.dti.gov.uk/sustainability/packagingfinalreport.pdf>.

<sup>5</sup> Ffact Management Consultants: *Compliance with the Packaging and Packaging Waste Directive’s Essential Requirements for Source Reduction – a survey of best practices of EUROOPEN member companies*, EUROOPEN, December 2003. Downloadable from <http://www.europen.be/whats/bestprac.doc>.

<sup>6</sup> Responsible Packaging – Code of Practice for optimizing packaging and minimising waste, 2nd edition, INCPEN, March 2003.

<sup>7</sup> The Visy report 2003/04 – National Packaging Covenant, Environment and Community.

must *have a system of control* appropriate to their business which covers all regulatory requirements, *operate the system properly, document it, and identify all reasonable steps and take them*. Packer/fillers cannot pass on responsibility for compliance. To demonstrate 'due diligence' in the UK, companies need to audit suppliers' quality systems and undertake random testing of packaging materials. Due diligence means not only documenting why further minimisation is not possible but also having regard to ongoing developments which might alter this decision.

Thus companies will protect themselves against possible prosecution by demanding written evidence that suppliers are respecting the Essential Requirements – retailers and importers will demand evidence from suppliers of packaged goods, packers and fillers will demand evidence from packaging suppliers, and packaging manufacturers will demand evidence from component and raw materials suppliers. In addition, use of the standards will facilitate a continuous improvement process for the design of packaging.

In the Netherlands, the Sub-Covenant for packer/fillers and importers – part of the voluntary agreement which stands as an alternative to compliance with the Dutch Packaging Regulations – focuses strongly on packaging prevention, and one of the questions on the checklist issued for guidance is, "if your product is not manufactured in the Netherlands, have you convinced those in charge of production of the need to respect the requirements of the Dutch Packaging Covenant?" The standard on prevention by source reduction offers an excellent way of meeting these requirements.

Where the Essential Requirements are enforced, companies need to justify decisions on packaging design and procurement which may have been made a long time ago. The people who made those decisions may have left the company, and files may have been destroyed. The sooner companies set up internal procedures in line with the standards, the easier it will be ensure that the relevant evidence is available if the enforcement authorities ask for it.

## **Q7** How practicable is it to produce a justification for types of packaging which have been on the market for years?

The purpose of the exercise is not simply to justify the legality of the pack to the enforcement authorities, but to ensure that packaging is subjected to a process of continuous improvement through repeated re-evaluations as circumstances change. As technology develops, it may be possible to reduce the weight of the pack, or perhaps make it more easily recyclable.

The enforcement authorities in France and the UK recognise that it will not be possible for companies to carry out assessments of their entire packaging range overnight. The recommended course of action is to set up a system so that all new types of pack or packaging changes are assessed as they are introduced, and that assessments are gradually carried out on packs already on the market. Priority should be given to pack types sold in large volumes and to packs which have been in use for a long time, where there may be particular potential for improvement.

## **Q8** Using the standards looks as if it may be arduous. Is there another way of demonstrating conformity with the Essential Requirements?

Once an internal management system has been set up to follow the standards, it is unlikely that companies will find them too difficult to deal with. In any case, the systematic evaluation of packaging minimisation which the prevention standard (EN 13428:2004) requires, may quickly pay for itself if the user company is able to identify source reduction opportunities that had previously been missed.

But use of the CEN standards will always be voluntary, and companies are free to find alternative ways of satisfying the enforcement authorities that their packaging complies with the Essential Requirements. This may be done by adapting the procedures in the CEN standards to make them fit better with the company's existing management systems, or it may be done by finding a completely different way of demonstrating conformity with the Essential Requirements.

The danger of deviating from the standards is that there is a legal obligation to satisfy the enforcement authorities in all 28 member states of the European Economic Area (a number that will grow with further enlargement of the EU), and a commercial need to satisfy customers that other compliance methods really are equivalent to the CEN

standards. If customers, whether packer/fillers or importers, are not confident that suppliers who do not use the standards can provide the necessary assurances, they are likely to seek alternatives.

And, of course, if the standards are not being used, the burden of proof falls on the producer to prove that his packaging is in conformity with the Essential Requirements. Where the standards *are* being used, it is up to the enforcement authorities to prove that they have not been applied correctly.

Never forget that companies which cannot satisfy the national enforcement authorities that they are complying with the Essential Requirements risk having their packaging banned from the market.

## Q9 Where can I find help on using the standards?

EUROPEN has published a Guide to using the standards<sup>8</sup>. This includes detailed notes, and a free supporting summary assessment record which companies can copy and use as part of their routine. The Guide can be ordered directly from the EUROPEN website ([http://www.europen.be/whats/whats\\_details.html](http://www.europen.be/whats/whats_details.html)).

UK policy has been developed in considerable detail. Although the guidance on interpretation of the UK Regulations produced by LACORS, the organisation responsible for coordination of enforcement, is no longer publicly available, it has been summarized in the Status Reports on European packaging and packaging waste legislation which EUROPEN publishes for its members.

In France, LNE (*Laboratoire National d'Essais*) has published a *Practical Guide of Conformity Assessment* aimed principally at compliance with the French legislation. This is available in French and English.

In Sweden, STFI-Packforsk has published the OPTI-PACK guide<sup>9</sup>, a joint project of the Nordic countries – Denmark, Finland, Iceland, Norway and Sweden – which was funded by the Nordic Innovation Centre.

## Q10 What practical benefits do the standards bring?

Packaging designers and specifiers across Europe now have access to consistent expert guidance on how to integrate environmental considerations into their decision-making.

Major distributors and packer/fillers insist that their suppliers implement effective quality management systems, and increasingly they refuse to purchase from those which have not. To secure competitive advantage, good suppliers are keen to demonstrate that they have adopted best practice. There are second-run effects when less demanding customers receive the benefits of purchasing from quality suppliers, whether they have demanded best practice or not; and then the remainder of industry has to follow suit in order to avoid losing market share. In this way quality improvements gradually permeate throughout industry.

## Q11 Which of the standards should I use?

The "Umbrella Standard" (EN 13427:2004) guides users through the documents, indicating which standards are applicable to each type of pack:

- All packs must be assessed against the standard on prevention by source reduction and on heavy metals and other dangerous substances (EN 13428:2004);
- Where reuse is claimed, those responsible must ensure that the conditions laid down in the reuse standard (EN 13429:2004) are complied with; and
- Packs must be assessed against at least one of the three recovery standards: material recovery (EN 13430:2004), energy recovery (EN 13431:2004) or organic recovery (EN 13432:2000). Packs may be assessed against more than one of the recovery standards if appropriate.

<sup>8</sup> *Essential Requirements for Packaging in Europe: A Practical Guide to Using the CEN Standards*, EUROPEN, 2005.

<sup>9</sup> *Process-oriented environmental assessment of packaging regarding compliance with the Essential Requirements of EU Directive 94/62/EC*, STFI-Packforsk, 2005 (downloadable from [www.opti-pack.org](http://www.opti-pack.org)).

Having identified the appropriate standards, producers must then work through a series of checklists to ensure that all relevant factors have been taken into account in the design of the packaging *system*. In terms of product protection there may be trade-offs between the primary packaging and the transport packaging (outer cases and wrappings, pallets etc). This part of the assessment can be carried out only by the packaged goods manufacturer.

## **Q12** Will this automatically lead to all packaging except that which is best for the environment being forced off the market?

What is “best for the environment” will vary from case to case. In the Low Countries, where landfill is scarce, solid waste minimisation is a high environmental priority; in the Mediterranean countries, where rainfall is low, water conservation is very important. Recycling is a good way of conserving materials and reducing the burden on the waste disposal system, but easily recyclable packaging, and packaging made with recycled materials, may be heavier and therefore require more energy in production and distribution than packaging which is less easily recycled.

The availability of recycling facilities varies from place to place; although there may seem to be little point in designing for recycling if recycling facilities for the pack in question do not exist in the target market, things may change as recycling systems develop and in any case packaging is often designed to be used Europe-wide.

What is “best for the environment” also has to be balanced against functional considerations. If the packaging does not protect the contents adequately, then not only are the contents added to the waste stream, but all the energy and raw materials used to manufacture and distribute the contents have been wasted.<sup>10</sup>

Having made their decisions on how to balance these various and conflicting considerations, producers must review them regularly. Over time, the demands of customers change. Technology develops, and new materials, packaging designs, manufacturing processes and distribution systems appear, all of which may change the balance of advantage. Recycling technologies advance, and recycling infrastructure is expanding. Energy recovery facilities are also being developed, and their environmental standards are improving. Hence the need for a good management control system rather than a simple pass/fail standard.

## **Q13** If the producer needs freedom to make his own decisions in the light of the particular functional demands placed upon his packaging, how can the enforcement authorities be assured that packaging has been reduced to a minimum as laid down in the Essential Requirements?

The source reduction standard requires the producer to examine each of the ten listed performance criteria and identify the “critical area” which governs the achievable limit for source reduction. If no critical area has been identified, there may be scope for further source reduction.

If tests show that further source reduction will result in an unacceptable increase in the packaging failure rate, the critical point has already been reached. An “unacceptable” failure rate must be a matter of commercial judgement – it may be different for a high-value packaged product than for a low-value item, and for products where leakage could endanger people or property – and this judgement must be shared between the producer, the customer and possibly the end-user.

The packaging manufacturing or packing/filling process also has to be taken into account. It may be possible for the producer to reduce his packaging further, but only by purchasing new machinery. It may however not be environmentally desirable for the existing equipment to be scrapped before it reaches the end of its life. In addition, it may not be economically practicable either.

If the packaging is source-reduced to the point where the packaged product is unacceptable to the consumer, it will not sell, and there is no point producing it. Consumer acceptability is listed among the Essential Requirements. Consumer acceptability may be demonstrated initially by reference to consumer research and by other sales and marketing data, including data on market share with competing packs.

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<sup>10</sup>For everyday household products, the energy and raw materials needed to manufacture the contents are typically ten times those required for the packaging – so under-packaging is much worse for the environment than over-packaging.

The enforcement authorities can verify compliance with the standard by asking the producer to demonstrate the steps that have been taken to identify the “critical area”. If this cannot be done, the packaging fails the standard.

## **Q14** What are the penalties for failure to comply with the standards?

There are no penalties for failing to comply with any standard: standards are always voluntary. However if a producer chooses not to comply with the standards, or is deemed not to be in compliance with them, he must demonstrate that he has taken alternative measures to fulfil the Essential Requirements. The Directive obliges member states to ensure that packaging may be placed on the market only if it meets the Essential Requirements.

## **Q15** What do the standards contribute towards a reduction in the use of heavy metals and other noxious and hazardous substances which may cause problems in disposal or in recycling?

The Directive lays down limits for heavy metals content and CEN has provided test methods. The standards do not contain a ‘negative list’ of substances as this would quickly become out of date and would never be universally applicable. Much depends on the concentrations of substances and materials rather than the substances and materials themselves, and this cannot be known in advance by the producer.

Users of the standard must determine whether dangerous substances or preparations which have been used in the manufacturing process are present in the packaging placed on the market. If any are present, the user must evaluate the possibility of their release into the environment. If there is a risk of this, the user must document the substances or preparations identified and demonstrate that they are used to the minimum necessary for achievement of the performance criteria listed in the standard.

## **Q16** These standards seem to demand that legislators place a great deal of trust in industry.

This is true. The purpose of standards is to help industry make better products. This involves judgement, and continuous adaptation to the demands of the market-place and of changing technology. If legislators can identify particular substances, materials, products or processes which they believe should be eliminated, it is up to them to adopt legislation which will drive them off the market.

Legislation sets a basic minimum level below which products must not fall; management system standards provide a mechanism to promote continuous improvement. “New Approach” Directives offer a combination of the two. Legislation encourages adherence to the standards by requiring producers either to follow the standards or else find some other way of complying with the Essential Requirements. Since the latter approach involves some uncertainty that the steps taken will be acceptable to the authorities, and since it also involves a great deal of original work rather than simply implementing the procedures already developed by the CEN experts, an alternative to the standards is bound to be more onerous.

Environmental impacts are complex and packaging design challenges many and varied. The CEN standards offer the necessary degree of flexibility in dealing with this complexity. We believe that they are already contributing to reducing the environmental impact of the packaging placed on the European market. If, once the standards are in full operation the approach does not provide an acceptable level of environmental improvement, then further changes could always be considered – but at this stage we urge the legislators to support the CEN approach to give it every possible chance of success. Both the environment and the Internal Market will benefit.



## **APPENDIX**

## APPENDIX I

Annex II to the Directive lays down the following *Essential Requirements specific to the manufacturing and composition of packaging*:

- Packaging shall be so manufactured that the packaging volume and weight be limited to the minimum adequate amount to maintain the necessary level of safety, hygiene and acceptance for the packed product and for the consumer.
- Packaging shall be designed, produced and commercialised in such a way as to permit its reuse or recovery, including recycling, and to minimise its impact on the environment when packaging waste or residues from packaging waste management operations are disposed of.
- Packaging shall be so manufactured that the presence of noxious and other hazardous substances and materials as constituents of the packaging material or of any of the packaging components is minimised with regard to their presence in emissions, ash or leachate when packaging or residues from management operations or packaging waste are incinerated or landfilled.

Essential Requirements specific to the *reusable nature of packaging* are that

- the physical properties and characteristics of the packaging shall enable a number of trips or rotations in normally predictable conditions of use, *and*
- possibility of processing the used packaging in order to meet health and safety requirements for the workforce *and*
- fulfil the requirements specific to recoverable packaging when the packaging is no longer used and thus becomes waste.

*Packaging recoverable in the form of material recycling* must be manufactured in such a way as to enable the recycling of a certain percentage by weight of the materials used in the manufacture of marketable products, in compliance with current standards in the EU. The establishment of the percentage may vary, depending on the type of material of which the packaging is composed.

*Packaging recoverable in the form of energy recovery* shall have a minimum inferior calorific value to allow optimisation of energy recovery.

*Packaging recoverable in the form of composting* shall be of such a biodegradable nature that it should not hinder the separate collection and the composting process or activity into which it is introduced.

*Biodegradable packaging* shall be of such a nature that it is capable of undergoing physical, chemical, thermal or biological decomposition such that most of the finished compost ultimately decomposes into carbon dioxide, biomass and water.



## APPENDIX II

### The CEN “umbrella standard” (EN 13427:2004)

The “umbrella standard” (*Standard on Requirements for Use of European Standards in the Field of Packaging and Packaging Waste*) guides users through the texts, indicating which standards are applicable to each type of pack.

To comply with the Essential Requirements, the supplier will have to carry out up to seven assessment procedures before placing the packaging or packed product on the market. These procedures are not all necessarily applicable to the same unit of packaging, so the “umbrella standard” has been introduced to establish an overall methodology:

- *all packs must be assessed against the standard on prevention by source reduction and the report on heavy metals and other dangerous substances;*
- *where reuse is claimed, packs must be assessed against the standard on reuse; and*
- *packs must be assessed against at least one and if appropriate all of the standards on material recovery, energy recovery, and organic recovery.*

Usually a number of components will be brought together to form a functional unit of packaging and these may in turn be brought together in a complete packaging system which could comprise primary, secondary and tertiary packaging:

- *packaging components should be assessed for prevention of noxious and hazardous substances;*
- *the minimum functional unit of packaging should be assessed for reuse, material recovery, energy recovery and/or organic recovery (as appropriate);*
- *any complete packaging system should be assessed for prevention by source reduction.*

Having identified the appropriate standards, suppliers must work through a series of checklists to ensure that all relevant factors have been taken into account in the design of the packaging system. For instance in terms of product protection there may be trade-offs between the primary packaging and the transport packaging. An important element in selecting and applying the standards will be to determine the most appropriate balance between them for any particular application.

By applying the requirements of the selected standards to the packaging he places on the market, the supplier is to ensure that:

- *the packaging system contains the minimum adequate amount of the chosen material;*
- *the packaging components contain less than the maximum permitted levels of heavy metals and other noxious and other hazardous substances, and only the minimum amount when used for functional purposes; and*
- *the functional packaging is reusable, recoverable by material recycling, recoverable in the form of energy and/or compostable in accordance with the relevant standards.*

A summary of the assessment results must be prepared. Records of the assessments and supporting documents must be retained by the supplier for at least two years after the relevant packaging has been placed on the market. These records must be available for inspection.

Users of the standard must

- *establish a system to ensure, as far as practicable, that information with regard to any relevant legislation concerning the presence of noxious and other hazardous substances deliberately introduced into packaging is kept up to date; and*
- *ensure that where a constituent containing noxious or other hazardous substances is included in the packaging for functional purposes, only the minimum adequate amount of that constituent is applied. When this is outside his direct control, he should ensure that his specifications and orders require this action by his own suppliers and that appropriate evidence of conformity is provided.*

The “umbrella standard” recognises that optimisation of the effect of one procedure may require moderation in the application of others. A significant element of selecting and applying the standards will be to determine the most appropriate balance between them for any particular application.

The supplier is recommended to apply these principles as an integral part of his formal management system in order to improve the environmental performance of his operation and to provide the opportunity for continuous improvement.

The introduction to the standard stresses that suppliers need to co-operate with all other entities in the packaging chain to ensure that the Essential Requirements are respected. Since there is a notional conflict between French law, which places the legal responsibility (as opposed to operational responsibility) on the packaging supplier, and British law, which imposes legal responsibility on the packer/filler, it is useful to remind standards users that these legal duties cannot be fulfilled without co-operation within the packaging chain.

### **The CEN standard on prevention(EN 13428: 2004)**

This text (*Packaging – Requirements specific to manufacturing and composition – Prevention by source reduction*) consists of two parts. The first covers “prevention by source reduction” (minimising the weight and/or volume of the packaging) and the second “qualitative prevention” (minimising the presence of noxious and hazardous substances in packaging).

The standard is based on a self-assessment approach similar to the approach in systems standards such as the EN ISO 9000 and EN ISO 14000 series. It could be used by any producer, user or distributor as a methodology for demonstrating that the minimum amount of weight and/or volume of the finished packaging has been reached taking into account the relevant performance criteria.

The basis for complying with the first part of the standard is identification of the “critical area” which governs the achievable limit for source reduction. That is to say, if the packaging is reduced further, it will fail to meet the listed performance criteria:

- *product protection;*
- *packaging manufacturing process;*
- *packing/filling process;*
- *logistics (including transport, warehousing and handling);*
- *product presentation and marketing;*
- *user/consumer acceptance;*
- *information;*
- *safety;*
- *legislation;*
- *any other relevant issues.*

If no critical area is identified, the packaging is not in compliance with the standard and the potential for (further) source reduction is to be investigated. If on the other hand tests show that further source reduction will result in an unacceptable increase in the packaging failure rate, the critical point has already been reached.

The company responsible for compliance must prepare a statement of conformity with the assessment procedures and determination of critical area, together with supporting documentation, based either on their internal documentation or on a checklist. In either case all listed performance criteria must be covered.

An Annex sets out guidelines on the use of the standard. It can be used in the assessment of existing packaging or as an aid in the normal dialogue between supplier and customer in agreeing a specification for new packaging. The Annex

- *describes the different phases of the assessment process;*

- *reviews the ten specific performance criteria and lists typical requirements in order to help users of the standard identify the important and decisive requirements applicable to the packaging under assessment; and*
- *gives examples of completed assessment checklists and their supporting reports together with explanatory documents which support the completion of the checklists.*

The supplier must also be able to demonstrate that only the minimum adequate amount of any substance dangerous to the environment has been used in the packaging or packaging component, with a view to minimising its presence in ash, emissions or leachate from landfills. The methodology for this is fully explained in the CEN report CR 13695-2:2004 (Packaging – Requirements for measuring and verifying heavy metals and other dangerous substances present in packaging, and their release into the environment – Part 2: Requirements for measuring and verifying dangerous substances present in packaging and their release into the environment).

Users must determine, with the aid of Safety Data Sheets, whether dangerous substances or preparations which have been used in the manufacturing process are present in the packaging placed on the market. Dangerous substances or preparations are those classified “N” in the relevant EC Directives. If any are present, the user must evaluate the possibility of their release into emissions, ash or leachate. If this is possible, the user must document the substances or preparations identified and demonstrate that they are used to the minimum necessary for achievement of the performance criteria listed in the standard. An appendix provides a decision tree for minimisation of dangerous substances or preparations and demonstration of conformity.

#### **The CEN standard on reusable packaging (EN 13429:2004)**

This standard (*Packaging – Requirements for relevant materials and types of reusable packaging*) contains a checklist by which the packer or filler can assess ‘reusability’. For a pack to qualify as reusable,

- *reusability of the packaging must be a deliberate objective;*
- *the design of the packaging must enable the principal components to accomplish a number of trips or rotations in normally predictable conditions of use;*
- *the packaging must be capable of being successfully reconditioned in accordance with the requirements laid down in the standard;*
- *the packaging must be capable of being refilled or reloaded;*
- *an appropriate system, necessary to support reuse, must be available in markets onto which the packer/filler is responsible for placing the packed product.*

The standard requires packer/fillers to obtain written confirmation from their supplier(s) that the packaging is capable of reuse, and confirmation from their customers that they intend to place the packaging into a reuse circuit.

The text includes a nine-point verification procedure relating to the existence of a reuse system, and the suitability of the packaging for that system.

Auxiliary products (e.g. a detergent pouch intended for replenishment of a reusable box kept at home) are one-way products and are **not** covered by this standard, but non-reusable items which support the reusable packaging in its function (e.g. labels or closures) are considered part of that packaging.

Packaging materials which have been withdrawn from the reuse system because of damage or customers’ failure to return them, must be recoverable in conformity with one or more of the standards on material recovery (EN 13430:2004), energy recovery (EN 13431:2004), and organic recovery (EN 13432:2000).

#### **The CEN standard on material recycling (EN 13430:2004)**

This standard (*Packaging – Requirements for packaging recoverable by material recycling*) formalises a procedure by which design, production and use of packaging can be checked against the requirements of various material recycling systems.

For material recyclability to be claimed, those responsible for placing packaging and/or packaged products on the market must

- *ensure that packaging design takes account of the recyclability of the materials from which it is produced;*
- *control selection of raw materials used in production/ packing/filling operations and where practicable collection/sorting operations to ensure that they do not adversely affect recycling processes;*
- *ensure that the design of packaging makes use of materials or combinations of materials which are compatible with known and relevant recycling technologies whilst also recognising the interrelationship of the various standards supporting Directive 94/62*

*(The standard recognises that it takes time to develop and expand processes to recycle new packaging materials and systems, and it says that provided such development is being demonstrably pursued, it may be appropriate for such innovative packaging to be classified as recyclable during this period);*

- *establish a system to ensure that new developments in relevant recycling technologies are monitored and recorded and that such records are made available to the design function; and*
- *take account of the potential change in releases to the environment that will result from introducing the used packaging to the recycling process.*

The procedure for assessing recyclability criteria is as follows:

*Design should ensure that the packaging is compatible with the specifications of related recycling technologies, enables a certain percentage by weight of materials to be recycled, and takes into account*

- *substances or materials liable to create technical problems in the recycling process (see CR 13688, a CEN report on Requirements for substances and materials to prevent a sustained impediment to recycling);*
- *materials, combinations of materials or designs of packaging liable to create problems in collecting and sorting before material recycling; and*
- *the presence of substances or materials liable to have a negative influence on the quality of the recycled material.*

*As regards production criteria,*

- *ensure that any changes in packaging raw material sourcing/manufacture, conversion and filling can be managed so that they cannot adversely affect the compatibility of the packaging with the recycling process;*
- *ensure that materials selected in the design stage as causing no significant problems for recycling technologies, are not changed during the process so as to adversely affect compatibility with the specification of the recycling process (this also applies to changes in other constituents such as adhesives, inks and coatings and to components such as labels, closures and other sealing materials).*

*Utilisation criteria are to*

- *ensure that the construction is without prejudice to the conformance with other Essential Requirements, and the requirement that it meets the safety, hygiene and consumer needs of the packaging;*
- *ensure that the design of the primary packaging (e.g. its shape, design and location of the opening, etc) will enable emptying of the packaging so that the used packaging is compatible with the recycling process;*
- *ensure that where the packaging comprises more than one material component which need to be separated to be compatible with the collection system linked to the recycling process, the packaging is constructed so that the end-user can carry out the separation under normal and foreseeable circumstances;*

- ensure, as far as practicable, that information has been sought regarding any particular requirements of the expected and relevant collection and sorting process and that the design and construction of the packaging takes these into account. (The standard recognises that this may be impracticable if the packaging does not have a specific destination, since there are significant differences in systems available within and between the member states).

The standard also explains that the CEN report, *Packaging – Marking and material identification system*, recommends that any material identification should be recognisable to its target groups, so as to facilitate clear and unambiguous identification of the predominant material. Identification of the predominant material may help the packaging user by indicating a disposal option, or may facilitate collection and sorting, or the aggregation of materials into recycling streams. However the nature of some materials is clear without the need for applied identification, and recognition may also be assisted by means such as colour or container shape.

The standard requires the supplier to declare the percentage by weight of the functional unit available for recycling and identify the material recycling stream(s) intended. The supplier must examine each component separately, and indicate its weight and whether it is suitable for recycling. Anything likely to cause problems in collecting and sorting or in the recycling process, or liable to have a negative influence on the quality of the recycled material, is to be classified as material not available for recycling.

By adding together the weights of the components in the recyclable and non-recyclable categories, the standards user can calculate the overall percentage by weight of the pack which is recyclable. For example, if a beverage container consists of a recyclable PET bottle (85% of the total weight of the pack), a recyclable PP closure (10% of the weight) and a foil label (5%) for which no recycling stream exists, the standards user can declare that the pack is 95% recyclable.

#### The CEN standard on energy recovery (EN 13431:2004)

This standard (*Packaging – Requirements for packaging recoverable in the form of energy recovery, including specification of minimum inferior calorific value*)<sup>11</sup> sets out the requirements for packaging to be considered as suitable for energy recovery and identifies the necessary procedures for a supplier placing packaging on the market to claim conformity with these requirements. The scope is limited to factors under the control of the supplier.

Packaging claimed to be suitable for energy recovery must be combustible and capable of providing calorific gain, as determined by the method specified. In addition,

- packaging composed of over 50% by weight of organic materials (e.g. wood, cardboard, paper and other organic fibres, starch, plastics) provides calorific gain and **shall be** considered recoverable in the form of energy;
- packaging composed of over 50% by weight of inorganic material (e.g. ceramic, glass, clay, metals) **may be** declared recoverable in the form of energy when supported by evidence of the calorific gain;
- thin gauge aluminium foil (up to 50 mm thick) **shall be** considered recoverable in the form of energy.

Calorific gain is assumed to be fulfilled when the net heat of combustion exceeds the amount of energy required to raise the temperature of the post-combustion substances from ambient temperature to the specified final temperature, without heat entering or leaving the system. The standard provides a formula for calculating the net calorific value of a packaging consisting of different constituents.

Compliance assessment by the supplier shall be supported by records, providing as and when required the following information as a minimum:

- composition by main materials with particular reference to whether it may be considered organic or inorganic; and
- the calorific gain, when appropriate.

An appendix covers substances and materials liable to have a negative influence on the energy recovery process, and materials, combinations of materials or design of packaging liable to create problems during energy recovery.

<sup>11</sup> As the standard makes clear, "inferior calorific value" is synonymous with "net calorific value".

### The CEN standard on organic recovery (EN 13432:2000)

This standard (*Requirements for packaging recoverable through composting and biodegradation – Test scheme and evaluation criteria for the final acceptance of packaging*) defines the requirements for packaging to be considered as recoverable through composting and biodegradation.

A pack is deemed organically recoverable when each pack, packaging material or packaging component fulfils the following criteria:

- *they are inherently and ultimately biodegradable as demonstrated in laboratory tests, and to the criteria and pass levels laid down in the standard; and*
- *they disintegrate in a biological waste treatment process to the criteria and pass levels laid down, without any observable negative effect on the process; and*
- *when submitted to a biological waste treatment process, no negative effect on the quality of the resulting compost is recorded.*

Packaging or packaging components intended for the biowaste stream must be recognisable by the end-user as compostable or biodegradable.

The standard covers the compostability of the packaging itself but does not address regulations that may exist regarding the compostability of any residual contents.

The standard is only intended to obtain information on the processing of packaging in controlled waste treatment plants, and does not take into account packaging waste which may end up in the environment through littering or other uncontrolled means.

Each packaging material under investigation must be identified and characterised prior to testing, including at least

- *information on, and identification of, the constituents of the packaging materials;*
- *determination of the presence of hazardous substances (e.g. heavy metals); and*
- *determination of the organic carbon content, total dry solids and volatile solids of the packaging material used for biodegradation and disintegration tests.*

Constituents known to be or expected to be harmful to the environment during the biological treatment process, in excess of the limits laid down, may not be introduced into packaging or packaging materials intended to be designated as suitable for organic recovery.

If a packaging material is demonstrated to be organically recoverable in a particular form, the same packaging material in another form, having a smaller mass to surface ratio or wall thickness, is also regarded as organically recoverable. Chemically unmodified packaging materials of natural origin (e.g. wood, wood fibre, cotton fibre, paper pulp or jute) can be accepted as biodegradable without testing, but have to be chemically characterised and must fulfil the criteria for disintegration and compost quality.

The results of each assessment or test undertaken must be recorded on an assessment checklist and their combined outcome used to determine whether a packaging material or a pack is biologically treatable and therefore suitable for organic recovery. The checklist, together with any externally sourced data or other information needed to support the conclusions reached in the assessments, must be retained and made available for inspection as required. The standard includes a recommended format for a conformity assessment checklist.

The evaluation criteria laid down include pass levels for Zn, Cu, Ni, Cd, Pb, Hg, Cr, Mo, Se, As and F. It is assumed that 50% of the original weight of the packaging or packaging material will remain in compost after biological treatment together with 100% of the original amount of hazardous substances.

## APPENDIX III

### WHERE TO BUY THE CEN STANDARDS

The CEN standards may be obtained, in the relevant language or languages, from the following national standards bodies:

#### Austria

Österreichisches Normungsinstitut (ON)  
tel: +43 1 213 00  
fax: +43 1 213 00 650  
infostelle@on-norm.at

#### Belgium

Institut Belge de Normalisation (IBN)  
Belgisch Instituut voor Normalisatie (BIN)  
tel: +32 2 738 01 11  
fax: +32 2 733 42 64  
info@ibn.be

#### Cyprus

Cyprus Organization for the Promotion of Quality (CYS)  
tel: +357 22 867 100 / 409 313  
fax: +357 22 754 103  
mccys@cytanet.com.cy

#### Czech Republic

Czech Standards Institute (CSNI)  
tel: +420 2 218 02 100  
fax: +420 2 218 02 311  
info@csni.cz

#### Denmark

Dansk Standard (DS)  
tel: +45 39 96 61 01  
fax: +45 39 96 61 02  
dansk.standard@ds.dk

#### Estonia

Estonian Centre for Standardisation (EVS)  
tel: + 372 605 50 50  
fax: + 372 605 50 70  
info@evs.ee

#### Finland

Suomen Standardisoimisliitto r.y. (SFS)  
tel: +358 9 149 93 31  
fax: +358 9 146 49 25  
info@sfs.fi

#### France

Association Française de Normalisation (AFNOR)  
tel: +33 1 41 62 80 00  
fax: +33 1 49 17 90 00  
norminfo@afnor.org

#### Germany

Deutsches Institut für Normung e.V. (DIN)  
tel: +49 30 26 01 0  
fax: +49 30 26 01 12 31  
postmaster@din.de

#### Greece

Hellenic Organization for Standardization (ELOT)  
tel: +30 1 212 01 00  
fax: +30 1 228 62 19  
info@elot.gr

#### Hungary

Hungarian Standards Institution (MSZT)  
tel: + 36 1 456 68 00  
fax: + 36 1 456 68 84  
isoline@mszt.hu

#### Iceland

Icelandic Council for Standardization (STRI)  
tel: +354 520 71 50  
fax: +354 520 71 71  
stri@stri.is

#### Ireland

National Standards Authority of Ireland (NSAI)  
tel: +353 1 807 38 00  
fax: +353 1 807 38 38  
nsai@nsai.ie

#### Italy

Ente Nazionale Italiano di Unificazione (UNI)  
tel: +39 02 70 02 41  
fax: +39 02 70 10 61 06  
uni@uni.unicei.it

#### Latvia

Latvian Standards Ltd (LVS)  
tel: + 371 7 371 308  
fax: + 371 7 371 324  
stand@lreml.gov.lv

#### Lithuania

Lithuanian Standards Board (LST)  
tel: + 370 5 212 62 52  
fax: + 370 5 212 62 52  
lstboard@lst.lt

#### Luxembourg

Service de l'Énergie de l'État (SEE)  
tel: +352 46 97 46 1  
fax: +352 46 97 46 39  
see.normalisation@eg.etat.lu

#### Malta

Malta Standards Authority (MSA)  
tel: + 356 24 24 20  
fax: + 356 24 24 06  
info@msa.org.mt

#### Netherlands

Nederlands Normalisatie-instituut (NEN)  
tel: +31 15 269 03 90  
fax: +31 15 269 01 90  
info@nen.nl

#### Norway

Norges Standardiseringsforbund (NSF)  
tel: +47 22 04 92 00  
fax: +47 22 04 92 11  
info@standard.no

#### Poland

Polish Committee for Standardization (PKN)  
tel: + 48 22 55 67 755  
fax: + 48 22 55 67 416  
info@cobro.org.pl

#### Portugal

Instituto Português de Qualidade (IPQ)  
tel: +351 21 294 81 00  
fax: +351 21 294 82 22  
ipq@mail.ipq.pt

#### Slovakia

Slovak Standards Institute (SUTN)  
tel: + 421 2 60 29 44 74  
fax: + 421 2 65 41 18 88  
ms\_post@sutn.gov.sk

#### Slovenia

Slovenian Institute for Standardization (SIST)  
tel: +386 1 478 30 13  
fax: +386 1 478 30 94  
sist@sist.si

#### Spain

Asociación Española de Normalización y Certificación (AENOR)  
tel: +34 91 432 60 00  
fax: +34 91 310 40 32  
info@aenor.es

#### Sweden

Standardiseringsen I Sverige (SIS)  
tel: +46 8 610 2000  
fax: +46 8 30 77 57  
info@sis.se

#### Switzerland

Schweizerische Normen-Vereinigung (SNV)  
tel: +41 1 254 54 54  
fax: +41 1 254 54 75  
info@snv.ch

#### United Kingdom

British Standards Institution (BSI)  
tel: +44 208 996 90 00  
fax: +44 208 996 74 00  
info@bsi.org.uk



The European Organization for Packaging and the Environment  
Le Royal Tervuren  
Avenue de l'Armée 6 Legerlaan  
1040 Brussels, Belgium  
Phone: +32 2 736 3600  
Fax: +32 2 736 3521  
packaging@europen.be  
[www.europen.be](http://www.europen.be)