



Department
for Business
Innovation & Skills

**PACKAGING (ESSENTIAL
REQUIREMENTS) REGULATIONS**

GOVERNMENT GUIDANCE NOTES

OCTOBER 2015

About this guidance

This guide is addressed to those involved in the placing of packaged goods on the market.

This guidance cannot cover every situation and, of course, it may be necessary to carefully consider the relevant legislation to see how it applies in your circumstances. However, if you do follow the guidance it will help you to understand how to comply with the law.

This is the October 2015 edition of the guidance. The guidance is updated on a regular basis as necessary.

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The Regulations

1. The Packaging (Essential Requirements) Regulations 2015 (SI 2015/1640) ("the Regulations") consolidates and revokes all earlier Regulations.
2. The Regulations implement those provisions of the European Parliament and Council Directive on Packaging and Packaging Waste (94/62/EC) ("the Directive") that relate to the essential requirements for packaging. The Regulations also implement relevant provisions of EU instruments amending the Directive: Directives 2004/12/EC, 2013/2/EU and (EU) 2015/720 and Commission Decisions 1999/177/EC, 2001/171/EC, 2006/340/EC and 2009/292/EC.

Requirements

3. The main requirement of the Regulations is that no one who is responsible for packing or filling products into packaging or importing packed or filled packaging into the United Kingdom, may place that packaging on the market unless it fulfils the essential requirements and is within the heavy metal concentration limits. The Regulations do not apply to packaging that is packed or filled for export outside the EU.
4. The Regulations do not affect the application of existing quality or labelling requirements for packaging, including those regarding safety, the protection of health and hygiene of the packed products, existing transport requirements or those on hazardous waste. In other words, existing legislation on these matters must be complied with. Packaging is defined in regulation 3(2) and an indicative list set out in a Schedule 5.

The single market

5. Free movement of goods, in this case packaging, lies at the heart of the single market. 'New Approach' Directives set out the essential requirements, usually written in general terms, which must be met before products may be placed on the market. The European Commission's 'Blue Guide' 2014 (see p8) sets out the key principles. A Commission Communication on "beverage packaging, deposit systems and free movement of goods" published may also provide a helpful explanation of the applicable legal framework.
6. "Placing on the market" is not defined in the Regulations, but is generally taken to refer to when a product is made available for the first time. This is considered to take place when the assembled (i.e. packed/filled) packaging is first transferred from the stage of manufacture with the intention of sale, distribution or use on the EU market, including the EEA market. The concept of placing on the market refers to each individual product, not to a type of product, and regardless of whether or not it was manufactured as an individual unit or in series.
7. The reuse of packaging, for the same purpose for which it was intended is not considered to be a further placing on the market. Therefore such reused packaging already in circulation is not covered by these Regulations. Reusable packaging must fulfil the essential requirements and other requirements in the Regulations when it is first made available, i.e. placed, on the market. Where packaging has been reconditioned, remanufactured, repainted or altered for a

different use it will be considered “new” packaging and would need to meet the requirements of the Regulations when placed on the market. For example, this could apply to either reusable steel drums which transport chemicals or to refillable soft drink bottles.

Obligation

8. The responsible person is obliged to ensure that all packaging covered by the Regulations complies with the essential requirements and heavy metal limits, in addition to the other provisions of the Regulations. The responsible person is usually the packer/ filler or importer of packed or filled packaging. In circumstances where the packaged product is marked with a brand or trade mark or other distinctive mark, the person so identified would normally be considered the packer/filler. It follows that, for an own-label product where the brand owner is not the packer/filler, the obligation to demonstrate compliance would normally be considered to fall upon the brand owner rather than the packer/filler.

Essential Requirements

9. The essential requirements are, in summary:
 - i) Packaging volume and weight must be the minimum amount to maintain the necessary levels of safety, hygiene and acceptance for the packed product and for the consumer.
 - ii) Packaging must be manufactured so as to permit reuse or recovery in accordance with specific requirements.
 - iii) Noxious or hazardous substances in packaging must be minimised in emissions, ash or leachate from incineration or landfill.
10. This is not considered to indicate a preference between material types (e.g. glass versus plastics) or packaging systems (e.g. single trip versus reusable), although consideration of the overall environmental impact of the packaging system used would be encouraged.
11. There are specific requirements for recoverable and reusable packaging. These are detailed in the Regulations.

Heavy metal limits

12. The aggregate heavy metal limits apply to cadmium, mercury, lead and hexavalent chromium in packaging or packaging components and require that the total by weight of such metals should not exceed 100 ppm (subject to some exemptions).
13. A packaging component is defined as any part of the packaging that can be separated by hand or by using simple physical means - for example a bottle top. This does not include permanent coatings or pigments, which would be regarded as a constituent of the packaging (or of the packaging component) and would thus be part of any calculation, but not required to meet the heavy metal limits independently. For example, a steel drum coated in lead chromate based paint would only exceed the limit if the lead chromate was greater than the limit in relation to the mass of the drum and the paint taken together.

14. The heavy metal limits do not apply to packaging which consists entirely of lead crystal glass.
15. There are two specific derogations from the heavy metals limits detailed in the Regulations:
 - i) A derogation for plastic pallets and crates provided they fulfil a number of conditions and are in a controlled distribution and reuse system as detailed in the Regulations.
 - ii) A derogation for glass packaging if it fulfils a number of conditions as detailed in the Regulations.
16. Testing is not specifically required nor defined in the Regulations. Compliance with the heavy metal limits is further addressed in Annex B.

Enforcement

17. It is the statutory duty of the following organisations to enforce the Regulations within their area:
 - a) In England and Wales, weights and measures authorities (the trading standards departments of local authorities);
 - b) In Northern Ireland, the Department of Enterprise, Trade and Investment;
 - c) In Scotland, weights and measures authorities (the trading standards departments of local authorities); prosecutions against infringement of the Regulations are brought by the Procurator Fiscal.
18. Enforcement practice is based around the Home Authority Principle. This means that any guidance given to a business by a 'home authority' (usually the one covering the area where the headquarters of the business is based) will be recognised by all Trading Standards Departments. The principle is designed to promote good practice and thereby protect the consumer and encourage fair trading, consistency and common sense.
19. For businesses that trade across council boundaries, they can form a partnership with one council, called their Primary Authority, that acts as a single source of advice and co-ordinates all inspection, sampling and compliance activity by other local authorities.
20. Enforcement Officers may assess the compliance of any packaging by requesting technical documentation on both the packaging essential requirements and the heavy metal limits. The responsible person must be able to supply technical documentation for a period of up to four years from the date on which the packaging is placed on the market. This documentation must be produced within **28 days** of the request being made.
21. It may be appropriate for the responsible person to refer to their suppliers for relevant information, such as test results or technical information, or to specify

requirements as part of the supply arrangements. However, it should be noted that such suppliers would normally only be able to provide information concerning those aspects of the essential requirements which are directly under their control and that legal responsibility remains with the responsible person. The umbrella standard (EN13427:2004) recommends the level in the supply chain at which the various assessments for conformity should be carried out.

22. Trade associations and materials organisations are encouraged to organise conformity testing or other supporting information covering their sectors to aid their members. For example, British Glass has agreed a procedure for demonstrating the compliance of UK-manufactured glass containers.
23. Full details of the enforcement powers and penalties are set out in Part 4 of the Regulations. A defence of 'due diligence' applies to certain offences. A person shall not be entitled to rely on the defence of "due diligence" unless they can show that in all the circumstances it was reasonable for them to have relied on the information. Where the commission of the offence is due to an act or default committed by some other person in the course of a business of theirs they shall be guilty of the offence and may be prosecuted. Where an offence by a corporate body is shown to have been committed with the consent, connivance or through neglect of any director, manager or similar officer of the corporate body, they shall be regarded as having committed the offence as well as the corporate body.

Standards

24. Design for all recovery routes is increasingly important in marrying disposed packaging from domestic and commercial waste streams with the collection and sorting infrastructure. Well-designed packaging which is easily recoverable or reused, minimises environmental impacts and usually saves costs.
25. A series of standards in relation to packaging were published by the European Committee for Standardisation (CEN). These provide framework methodologies for considering reduction, reuse, recyclability and recovery. Compliant packaging enjoys freedom of movement across the EU. The Standards provide a methodology that can also help inform decisions on packaging design, for example around material specification, maximising recyclability and recovery, minimising component parts, reducing wasted space and optimising pack size. See Illustrative Compliance Procedures in Annex A.
26. Use of the standards is voluntary and manufacturers are free to choose alternative means in order to demonstrate compliance.

Further sources of advice

Advisory Committee on Packaging (ACP)

Packaging in Perspective (ACP, 2008)

<http://www.defra.gov.uk/environment/waste/producer/packaging/acp/documents/packaginginperspective.pdf>

British Standards Institution (BSI)

Packaging Standards

<http://shop.bsigroup.com/en/Browse-by-Sector/Manufacturing/Packaging/Packaging>

European Commission

<http://ec.europa.eu/environment/waste/packaging/>

The 'Blue Guide' on the implementation of EU product rules (2014)

<http://ec.europa.eu/DocsRoom/documents/4942/attachments/1/translations/en/renditions/native>

Case law of the European Court of Justice with relevance to packaging and packaging waste

<http://ec.europa.eu/environment/waste/packaging/case-law.htm>

Communication on beverage packaging, deposit systems and free movement of goods (2009)

[http://eur-](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2009:107:0001:0009:EN:PDF)

[lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2009:107:0001:0009:EN:PDF](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2009:107:0001:0009:EN:PDF)

European Organisation for Packaging and the Environment (EUROPEN)

Understanding the CEN Standards on Packaging and the Environment: Some questions and answers (4th Edition, February 2006)(Free)

http://www.europen.be/download_protected_file.php?file=24

Essential Requirements for Packaging in Europe: A Practical Guide to using the CEN Standards (October 2005)(Price €150)

http://www.europen.be/?action=basket&add_item=39&backurl=%3Faction%3Donderdeel%26categorie%3D0%26item%3D29%26onderdeel%3D6%26titel%3DPublications

Industry Council for research on Packaging and the Environment (INCPEN)

The Responsible Packaging Code of Practice (March 2003, 2nd Edition)

<http://www.incpen.org/pages/data/CodeofPractice.pdf>

(Developed by INCPEN and endorsed by BIS, DEFRA and LGR)

Guidance on Packaging Essential Requirements Regulations (INCPEN/LGR, 1999)

<http://www.incpen.org/pages/data/LACORSGuidance.pdf>

Contacts

Enforcement enquiries

Businesses and consumers can contact local authority Trading Standards. Details of your local Trading Standards can be found by entering your postcode at: <http://www.tradingstandards.gov.uk> or calling Citizens Advice 08454 04 05 06.

Northern Ireland Trading Standards Service

Department for Enterprise, Trade and Investment (DETI)
176 Newtownbreda Road
BELFAST
BT8 6QS
Tel: 0845 600 6262
Email: tss@detini.gov.uk
<http://www.detini.gov.uk/>

Department for Business, Innovation and Skills (BIS)

Energy, Materials and Agri-tech
1 Victoria Street
LONDON
SW1H 0ET
Tel: 020 7215 5000
Email: env.regs@bis.gsi.gov.uk
<https://www.gov.uk/environmental-regulations#packaging>

British Standards Institution (BSI)

389 Chiswick High Road
LONDON
W4 4AL
Tel: 020 8996 9000
Email: cservices@bsi-global.com
<http://www.bsi-global.com/en/Standards-and-Publications/Industry-Sectors/Manufacturing/Packaging>

Annex A - Illustrative compliance procedures

Overview

To comply with the standards published in 2004, users must work through a methodology to ensure that their decisions on the specification for a particular piece of packaging takes account of often conflicting social environmental and economic factors, identifying a solution right for the product, distribution system and how it will eventually be stored/used. It is important to document the answers to provide evidence for compliance.

Design and review processes

Wherever possible, it is recommended that the concerns represented by the essential requirements and heavy metals limits are addressed in existing packaging design and review processes, particularly where formal quality or environmental management systems are in use.

Existing packaging lines

For existing packaging portfolios evidence of suitability for recovery processes may be found through primary evidence that such recovery does occur. In the case of other issues such as minimisation, supporting evidence as to the required minimum strength of the packaging may be available through monitoring transit damage and similar parameters.

Procedures

The following recommended procedures are written from the point of view of the design process. They can equally be applied to a review of an existing package.

In the procedures, packaging is considered as a packaging system made up of different functional units. Each functional unit may be a single packaging unit or made up of several packaging components, which in turn are made of packaging constituents or packaging materials. An example would be a packaging system for the transport of beverages. This could be a cardboard carton used to transport filled bottles. The cardboard carton and the filled bottles would be functional units, interacting within the system but separable without affecting the product. The bottle would be made up of components: the empty bottle, the bottle top and the label, for example. The packaging constituents would be the cardboard of the carton, the glass of the bottle, any inks or pigments used and the materials of the bottle top and the label.

The compliance procedure should be applied to a packaging system as follows:

- The packaging system should be minimised by weight and volume to take account of the system chosen and interaction between functional units where, for instance, a thinner bottle may require a stronger carton. Generally this will mean that you maximise functionality with minimum material overall.
- All packaging components should comply with the heavy metal limits currently in force.
- All packaging components should comply with the requirement that the presence of noxious and other hazardous substances be minimised as

constituents of the packaging material with regard to their presence in ash, emissions or leachate.

- Any reusable functional unit should comply with the reuse requirement, particularly if designing for reuse affects the criteria for minimisation by weight and volume.
- Each functional unit should comply with at least one recovery process, although different functional packaging in a packaging system may comply with different recovery processes.

Minimisation

It should be noted that the choice of packaging system and material does not fall within the compliance procedure. Once the system is chosen and materials specified, they should be the minimum required for the design criteria. The Directive does not require changes in material choices to reduce packaging volume or weight, however once chosen, that it be minimised to that required for the product to maintain necessary levels of safety, hygiene and consumer acceptance.

These design criteria should establish the minimum adequate volume and weight usable for the packaging without compromising its performance.

Performance criteria

A list of the relevant performance criteria should be produced in order to identify which criterion (called the critical area) prevents a further reduction in the quantity of material used. If it is not possible to identify a criterion preventing further reduction, then there is scope for further reduction until one of the criteria becomes the critical area.

Product protection

Examples include protection against vibration, compression, humidity, light, oxygen, microbiological contamination.

Packaging manufacturing process

Examples include container shape, thickness tolerances, size, tooling, specifications minimising production waste.

Packing/filling process

Examples include impact and stress resistance, mechanical strength, packing line speed and efficiency, stability, heat resistance, closing, minimum headspace, hygiene.

Logistics (including transport, warehousing and handling)

Examples include any handling requirement, space utilisation, palleting systems, damage resistance.

Product presentation and marketing

Examples include product identity, brand recognition, labelling, retail display system requirements, pilfer resistance.

Consumer acceptance

Examples include unit size, ergonomics, tamper evidence, child resistance, shelf life, dispensing methods, attractive presentation.

Information

Examples include product information, instructions, bar codes, expiry dates.

Safety

Examples include safe handling requirements, child resistance, hazard warnings, pressure release closures.

Legislation

Any requirements from national or international legislation or standardisation.

Other issues

Other economic, social or environmental implication not considered above relevant to weight or volume of packaging.

Examples questions

Questions (non-exhaustive) to consider when assessing packaging for the above criteria might include:

- **Minimisation:** Could the overall amount of packaging, primary or secondary, be reduced and still meet the demands of safety, hygiene and consumer acceptance? Have tests / research been undertaken to find the best solution? Is there a trade-off between primary and secondary packaging? Is thinner or lighter primary packaging compensated by sturdier, reusable secondary packaging? Or conversely does stronger primary packaging remove the need for secondary packaging? Is there evidence of resource savings?
- **Pack efficiency:** What is the shape of the packaging? For a given volume of product, different three-dimensional shapes need more or less surface material, i.e. what is the ratio of packaging surface area to volume? The more spherical or round the object is, the less material it uses for a given volume of product. The larger the packaging is, the lower the ratio is. However the efficiency of the overall packaging supply chain should be taken into account.
- **Consumer acceptance:** Can the packaging be resealed, if appropriate, to extend the shelf life of the product and thereby reduce other wastes? Are there opportunities to make this more efficient? Is there reasonable proof that consumers would not buy the product without certain levels of marketing and associated packaging?
- **Recovery:** How many different materials are there? Does it need so many or could they be reduced to fewer types (and less overall material) and still perform its proper function? e.g. Is a plastic window needed in the card box? This is also a question of enabling re-usability. For PET bottles there is a WRAP PET Bottle Categorisation Tool, see <http://www.wrap.org.uk/content/pet-bottle-categorisation-tool>

Simple advice on reuse and recyclability and best practice

- Could the product or packaging be reduced in size or weight, but keep its capacity?
- Could less material be used by modifying the volume, e.g. more units per box, larger portions?
- Could you reduce packaging by using an alternative material, or changing the shape/size of the contents?
- Are additional materials necessary e.g. intermediate layers, shrink wrap, adhesives and tapes?
- Could the distribution system be modified to reduce energy consumption or the amount of packaging?
- Could certain components be strengthened or weakened to reduce overall material use?

More detailed information can be found in WRAP's guide "Packaging Optimisation for SMEs" explains the basics of packaging optimisation and will help you develop an action plan <http://www.wrap.org.uk/content/packaging-optimisation-smes-0>

Noxious and hazardous substances

Noxious and hazardous substances must be 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. This implies that any noxious or hazardous substances should be reduced to the minimum level required for the effective functioning of the packaging. Where the presence of noxious or hazardous substances is included by design, the same procedure as presented for minimisation can be applied. This should be done by applying the procedure to the material containing the noxious or hazardous substance, although allowance should be made for the possible substitution, in part or full, of the noxious or hazardous substance by an alternative.

If the presence of noxious or hazardous substances is due to impurities then it may be appropriate to regard this as a quality control issue rather than a functional criterion.

As the Regulations do not define noxious or hazardous substances, it is taken to mean any substance described as such in national or international law.

Reuse

Packaging must conform to the reuse requirement only when design criteria for other requirements, particularly minimisation, are developed with the intention of reuse. In other words, where packaging has been designed for reuse, and is therefore stronger and uses more material than single trip packaging, it must comply with the reuse requirement.

The requirements for reuse are fulfilled if:

- The physical properties of the packaging are such that it can be reused. That is, it must be capable of being unpacked and then repacked (with or without reconditioning).

- A reuse system is in place enabling the packaging to be reused. The recognised reuse systems are closed loop, open loop or hybrid systems. These are defined as follows:
 - A closed loop reuse system is one where reusable packaging is circulated by a company or an organised group of companies.
 - An open loop reuse system is one in which reusable packaging circulates amongst unspecified companies.
 - A hybrid system consists of a reusable packaging item which stays with the end user with no redistribution, and one way packaging used to transport the contents to the reusable packaging, (this must fulfil the essential requirements in its own right). An example of such a system would be detergent pouches used to refill a reusable container that stays in the home.
- Reusable packaging is subject to the same requirement of recoverability as set out below.

Recovery

Each recovery option (i.e. material recycling, energy recovery, composting and biodegradation) has its own requirements and design issues. Packaging must be designed to comply with at least one recovery option in full.

Material recycling

To be considered to comply with this recovery process the packaging and its associated life cycle must be compatible with at least one specified recycling process. As such it depends on the criteria of the recycling process specified. The following is a general list of considerations common to recycling processes.

The considerations are:

- That raw materials in the combination used as packaging constituents should allow a positive contribution to the material reclaimed; that is, the packaging must contribute to the output of the recycling process;
- That effective emptying or residue removal is possible, to the extent that any remaining traces of product adhering to the packaging have no negative effect on the recycling process;
- That materials are separable if they may be required to undergo separate recycling processes (e.g. mixed plastics)
- That further aids or improvements to collection, sorting or recycling processes may be incorporated, (e.g. material identification markings, reduction in undesired materials).

For example for plastic drinks bottles consideration of polymer choice, use of colour, minimal adhesive, label and sleeve design, material and attachment, suitability for sink-float separation etc could be considered. You can also take advantage of existing agreed industry solutions, for example in this case the European PET Bottle Platform (<http://www.petbottleplatform.eu/>) design for recycling industry guide.

Composting and biodegradation

The conditions for composting and biodegradation are fulfilled when the packaging complies with the following:

- Packaging should be largely combustible solids; that is, the residue after incineration should be less than 50% of the packaging. This figure is taken as indicating the organic content.
- The organic materials should be inherently and ultimately biodegradable materials, which break down to carbon dioxide, mineral salts, biomass and water or methane. Chemically unmodified materials of natural origin such as wood, wood fibre, paper pulp and jute are accepted as biodegradable for these requirements.
- The packaging should disintegrate in the waste treatment process.
- The packaging should not retard or adversely affect the waste treatment process.
- The packaging should not degrade the quality of the resulting compost.

Packaging material demonstrated to be organically recoverable in a particular form shall be accepted as organically recoverable in any other form having a smaller mass to surface ratio or wall thickness.

Energy recovery

Packaging composed of >50% by weight organic materials (e.g. wood, cardboard, paper and other organic fibres and plastics) shall be considered to comply. Thin gauge aluminium foil up to 50 µm thick shall be considered to comply.

If packaging does not fall into the above description, it may still comply by the application of the methods below:

1. Any packaging which has a calculated net calorific gain shall be considered to comply (described below).
2. Any packaging which has a positive net calorific gain determined experimentally, e.g. by ISO/DIS 1928 or ISO/5660: Part 1, shall be considered to comply.

The net calorific gain is defined as: $Q_{net} = Q - H_a$

This must be positive for the packaging to be considered to comply.

Where: Q is the energy released on combustion.

H_a is the energy required to adiabatically heat the post combustion residues of a material from ambient temperature to the final combustion temperature. In this case the ambient temperature is defined as 25°C and final temperature as 850°C.

Thus an example would be a composite with 66% cellulose, 23% lignin and 11% inert coating. Calorific gain = $(0.66 \times 8) + (0.23 \times 14) + (0.11 \times -1) = 8\text{MJ/kg}$

This calculation produces a positive value; the example would thus be considered to conform. The following table may help:

Constituent	energy released from combustion, Q (MJ/kg)	energy required by combustion residue, Ha (MJ/kg)	calorific gain, Q - Ha (MJ/kg) or Qnet
Paper Constituents			
- cellulose	16	8	8
- lignin	26	12	14
Plastics			
- polyethylene, PE	43	21	22
- polypropylene, PP	44	20	24
- polystyrene, PS	40	18	22
- polyvinyl chloride, PVC	17	8	9
- polyethylene terephthalate PET	22	10	12
Aluminium under 50 µm	31	6	25
Aluminium over 50 µm - inert	0	1	-1
Steel	0	0.4	-0.4
other inert material (ceramic, glass)	0	1	-1
Calcium Carbonate	-2	1	-3
Water (moisture)	-2	2	-4

Annex B - Heavy metals in packaging

Although it is recognised that heavy metals are rarely intentionally added to packaging, here are some known uses that may occur. Companies should be aware of these applications and the possible need to undertake compliance checks.

- **Glass (undecorated).** Glass containers may contain lead due to its unintentional introduction to recycled glass. This may be from lead containing glass or old wine bottle capsules. The derogation in the legislation for glass packaging allows heavy metal levels of above 100 ppm in glass packaging under certain conditions.
- **Glass (decorated).** Enamels used to decorated or print on glass may contain lead oxide as a basic component and cadmium may be used in bright red and yellow enamels. A number of major producers signed a voluntary agreement aiming to phase out the use of heavy metals in enamels in enamelled glass.
- **Non-food grade plastics.** Pigments containing cadmium are occasionally still found, as is the use of lead chromate for yellow, orange and red pigments. A derogation from the heavy metal limits has been agreed for plastic pallets and crates manufactured by recycling old plastic pallets and crates in closed loop schemes.
- **Drums.** Lead chromate or other hexavalent chromium compounds may be used in some colours of coatings for metal drums.
- **Non-food metal containers.** Rarely, lead solder may be used in metal container construction.
- **Pigments and inks.** May in a few cases be based on lead, cadmium or hexavalent chromium compounds.

More generally, the specified heavy metals will occur in small levels in most materials and some level of compliance monitoring should be performed.

Assessing compliance

To assess compliance with the heavy metals requirements it is recommended that manufacturers and responsible persons develop protocols through working with their trade association, supply chain and/or materials organisation. For example, following the voluntary procedures contained in CEN Report CR 13695-1, Requirements for measuring and verifying the four heavy metals present in packaging. CR 13695-1 recommends two alternative means of establishing concentration levels in packaging, to be used according to the information available: testing and calculation.

- Testing is necessary when no complete or reliable information is available from earlier stages in the manufacturing process, for example when using recycled materials.
- Calculation is recommended where information from early and intermediate stages in the manufacturing process of constituent materials is available.

If testing is carried out, particular care should be taken to ensure that a sample is representative of all the constituent materials and the proportion in which they are used. For example, a sample taken from a drum could lead to an unreliable result if the drum had a red stripe which contained lead chromate, yet the rest of the coating did not.



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