

An introduction to

# **Packaging and Recyclability**

November 2009

## PRAG: Packaging Resources Action Group

PRAG is a multi-stakeholder group that facilitates the development of cross-sectoral partnerships and enables constructive dialogue between central and local government, manufacturers and retailers, waste management companies and reprocessors. It aims to catalyse action to create more consistent systems and communications for the recovery of used packaging.

Members work together to:

- Improve the environmental, social and economic impacts of packaging and product systems.
- Optimise the amount of packaging on products for net environmental gain.
- Increase quantity and quality of used household packaging materials collected for recycling.
- Increase recovery of used packaging.

This guidance has been developed by the Product Design sub-group of PRAG. It is a plain language introduction to designing for recyclability. It provides guidance for designers and packaging specifiers at a general level on the factors that need to be considered. Packaging technologists and designers will need to seek more detailed informed to inform design decisions. It contains links and references to these sources.

### Disclaimer:

The guidance contained in this guide is for reference only and advice should be sought from individual material suppliers and packaging suppliers as to the specification of their products. The guidance is intended primarily for the UK market conditions only. The guidance reflects the usual municipal collection, disposal and reprocessing option available in the UK at the time of writing. No responsibility or liability on behalf of PRAG or the authors. The guidance is subject to change and future advice may differ from the advice contained in this guide. October 2009

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## Why packaging is important

Each year 10.5 million tonnes of packaging is used to protect the billions of goods used by UK households and industry. Over 60% of this is already recycled. Of the 4.7 million tonnes used for consumer goods just under half is recycled (40-45%) (Source: Defra).

Packaging specification is based on many factors, including the technical properties of the material, fitness for purpose, sourcing, functionality, manufacturing capability and cost. If packaging is poorly specified the resulting damaged products or wasted food would probably have far more of an environmental impact than the impact of the packaging.

While an increasing amount of the packaging is recycled, a high proportion is not. Reducing the environmental impact of all packaging can be largely influenced at the design and specification stage – determining which materials are used, how much packaging is used and how easy it is to recycle. This guide is aimed at helping packaging technologists, designers and marketers reduce the environmental impact of the packaging used in the UK, with a particular focus on recyclability of the packaging. This should be achieved without compromising its functional performance or reducing the overall resource efficiency of a product/packaging supply chain.

In addition to technical and commercial issues, there is clear regulation relating to packaging. **If a business makes, fills, sells or handles packaging or packaging materials, then they must comply with packaging regulations. For more details see 'Legislation' on page 23.**

## Reducing Environmental Impact

Designing packaging to reduce its environmental impact, covers several key elements:

- **Fit for purpose:** ensuring the packaging protects the products and reduces the risk of damage or product waste.
- **Remove:** challenging whether packaging is needed at all to protect a product and deliver it safely and in good condition to the end user.
- **Reduce:** understanding the opportunity to use less material through design, specification and weight of material.
- **Re-use:** looking at the options to reuse the packaging, for example use of refills.
- **Recycle:** designing packaging so that it can be readily and efficiently recycled more easily – its recyclability.
- **Recycled content:** specifying recycled content will reduce the demand for primary raw materials and generate demand for recycled material.

## Scope of the Guidance

The guidance that follows covers the 5 later points above, but centres on **recyclability** of packaging as this is the area that is often the most unclear for packaging designers and also where guidance is least available. The guidance does not cover full life cycle analysis of packaging impact, but does reflect recognised industry practices to help reduce the environmental impact of packaging in its end of life phase. The guidance complements other packaging related guides that are available to industry and provide a broader perspective. Such guides are available from INCPEN, Recoup, Envirowise and WRAP (see page 23 for links).

Reducing the amount of packaging used is a key step in reducing the environmental impact of a pack.

Reduction:	Guidance / examples
Incorporating new technologies.	New production processes, materials or technologies may be available to reduce the amount of material used whilst retaining performance. See the IPTS database (International Packaging Technology Study) <a href="http://www.wrap.org.uk/retail/tools_for_change/international.html">www.wrap.org.uk/retail/tools_for_change/international.html</a>
Reducing the weight of material used in a pack – benchmark to others in the category.	Sense-check against what packaging competitors are specifying in the UK and internationally. Useful benchmarking tools can be found at; WRAP: <a href="http://www.wrap.org.uk/retail/tools_for_change/uk_packaging_benchmark/index.html">www.wrap.org.uk/retail/tools_for_change/uk_packaging_benchmark/index.html</a> Mintel's Global New Products Database (GNPD) which can be found at: <a href="http://www.gnpd.com">www.gnpd.com</a> and PackTrack at: <a href="http://www.pack-track.com">www.pack-track.com</a>
Designing out unnecessary layers or elements of packaging.	Consider the function of every piece of the packaging.
Reducing the size of the pack by designing out head space or voids.	Match the size and shape of the container to the contents – this will also help reduce the need for inserts, fillers or packing materials.
Consider offering a range of sizes.	Customers can buy just what they need or buy in bulk, reducing the ratio of packaging to product.
Design using the most efficient shape.	e.g. a shorter, squat bottle will normally use less material than a very tall, thin one. Also ensure that the design/shape is suitable for the manufacturing technology to be employed.
Considering alternative/efficient materials.	Review options to research the environmental impacts of different materials. eg. double-walled rather than triple-walled corrugated board.
Do not over specify 'just to be sure'.	Do the load and stress resistance specifications reflect reality in the current distribution system?
Make packaging work harder by identifying dual-functions.	For example can information be printed on the inside of packaging to avoid separate leaflets or the need for larger packs.
Promotion packs/size impression.	Avoid packs with a large size impression just to increase stand out. Consider achieving effective marketing by maximising in-store merchandising / point-of-sale opportunities.
Primary / secondary / tertiary packaging reduction.	Consider the overall packaging impact for primary, secondary and tertiary packaging when reviewing and make savings throughout the supply chain.

**Re-using packaging** reduces the raw materials used in manufacturing, postpones waste going to landfill and saves the resources expended in recycling, but it may take more energy to produce a container that is robust enough to withstand re-use than in equivalent one-trip container. There are also other environmental impacts associated with re-use, such as washing, that should be considered.

Opportunities for primary packaging re-use are fairly limited but a growing number of reuse/refill packs are available in the UK – particularly for household and personal care products.

Re-use should work in tandem with Reduction and Recycling.

There are several ways in which packaging can be reused:

- **In the home:** packaging that can be re-used or refilled once its contents are finished, for instance a biscuit tin, tea caddy or a trigger spray with a refill or plastic carrier bags – reused as bin liners
- **In store:** more innovative examples for primary packaging include where consumers re-use laundry and household bottles and get them re-filled in store.
- **Returnable systems:** returnable secondary and tertiary packaging is very common for example returnable trays ‘totes’ for fresh and chilled produce, pallets, roll cages, display crates etc. Also returnable systems where consumers return packaging which is cleaned and refilled (most commonly bottles). E.g. door step milk delivery.

Re-use:	Guidance / examples
Refill packs.	Lightweight refill packs that can be decanted/used in the parent pack offer packaging reductions. If concentration/dilution is possible as well this adds further reduction. Consumers could be incentivised to choose the refill option through a lower retail price and promotions.
Give packaging a secondary use.	Packaging can be designed to offer a second use in the home, for example a gift set, jam jars or tea caddy. Make sure the reuse potential is communicated to consumers. Bear in mind that consumers can only purchase so many reusable packs before they are forced to dispose of some. This could ultimately lead to increased packaging being used.
Packaging can become part of the product.	Use the product to be the packaging e.g. a toiletry wash bag / gift set / toys / luggage items.
Closed Loop packaging systems.	Some home improvement stores have explored the potential for using closed-loop packaging systems for delivering DIY kitchen furniture or appliances into the home. As well as reducing the impact of single-trip packaging, products are better protected and have a lower damage rate.

Using **recycled material** for packaging will not only reduce the amount that may end up in landfill but may reduce the carbon footprint of a pack. Most consumers believe using recycled content packaging to be a positive move by a brand or retailer.

'Recycled' materials are usually defined as materials that have been through a prior use (either consumer or industrial) and then subsequently recycled back into usable material. Use of process scrap or post industrial waste is not defined as recycled content by most packaging material sectors, and it is misleading to call this material 'recycled'. See the BS EN ISO 14021:2001 Environmental labels and declarations for clarification and definition of recycled content by material, see [www.bsi-global.com](http://www.bsi-global.com)

Some packaging materials have the ability to use a recycled option, in the case of glass, aluminium, steel, paper and board it is the industry norm. It is also growing in other materials such as PET and HDPE. However the availability, quality and technical specification of recycled material varies by material so it is not possible to make generalisations across materials for recycled content. It is important to ensure that materials (virgin or recycled) used for food toiletries, cosmetics and pharmaceuticals are fit for use, hygienic and meet required health and safety standards.

Recycled content:	Guidance / examples
<b>Glass Packaging</b>	<p>Packaging made from glass almost always contains some recycled material (cullet). It can be recycled indefinitely without losing performance. However approximately twice as much green glass is imported into the UK than is currently produced, resulting in a significant surplus. Additionally, clear (flint) and amber glass is not being collected in sufficient quantities to meet demand.</p> <p>As a result of the supply situation, technical performance and consumer acceptance the level of recycled content possible varies by colour of glass container. Indication of <b>maximum recycled content</b> levels (excluding internal cullet inclusion) are;</p> <p><b>Green</b> glass packs: up to <b>90%</b> recycled content  <b>Clear</b> glass packs: up to <b>50%</b> recycled content  <b>Amber</b> glass packs: up to <b>50%</b> recycled content</p> <p>Actions to be considered:</p> <ul style="list-style-type: none"> <li>▪ Increase recycled content in <b>white flint</b>: e.g. review clarity specifications to allow a subtle green tint from white flint where this won't affect the product appearance;</li> <li>▪ Review <b>amber</b> specifications to allow a greater amount of recycled glass to be used.</li> <li>▪ For UK manufactured containers move from white flint to amber or <b>green glass</b> where product colour is compatible, such as dark liquids in amber or mint sauce in green glass. This allows a higher recycled content level;</li> <li>▪ For imported containers move to <b>clear</b> glass where possible to help reduce the green glass imbalance.</li> </ul>

<b>Paper and Board Packaging</b>	<p>Paper, card and cartonboard packaging is inherently recyclable. Cartonboard and corrugated board generally contain a very high proportion of recycled material. Paper cannot be recycled indefinitely because the fibres get shorter and weaker each time they are recycled. Some virgin fibre must therefore be introduced into the process to maintain the strength and quality of the fibre.</p> <p>So while specifying recycled content card packaging helps reduce the environmental impact of a pack, a balance needs to be struck in some applications between the amount of shorter fibre recycled content specified and the performance requirements of the pack.</p> <p>Actions to be considered;</p> <ul style="list-style-type: none"> <li>■ Specify recycled content board where appropriate. Strength of board may be reduced through greater use of recycled content which may mean a higher gauge is required.</li> <li>■ Recycled board is not recommended for direct contact with certain foods. The matter should be discussed with your packaging supplier.</li> </ul>
<b>Plastic Packaging</b>	<p>Specifying recycled content for PET (and HDPE) packs for food and drink applications can be safe and permissible. Where recycled materials are used in contact with food or drink they need to comply with EU Materials and Articles in Contact with Food Legislation. In practice this means that they must come from a closed loop system with approved super-cleaning processes to remove the risk of contaminants and unknown substances transferring to the food and causing harm or adversely affecting quality.</p> <p>Co-extrusion technology in certain circumstances may allow for a layer of recycled material to be used which is not in contact with food products, however it is important that where recycled materials are being used in food contact applications that proper systems are in place for traceability of the source of the recycle that prove it is suitable for food contact. If this is not available it should not be used in food contact use.</p> <p>In Europe, recycled PET (rPET) that is of a suitable standard for food applications must be manufactured in compliance with Commission Directives 2002/72/EC and 2008/282/EC (and future amendments). To establish due diligence, it is worth sourcing material produced under an FDA (Food and Drug Administration, the centre for food safety and applied nutrition) approved process.</p> <p>Plastics cannot be recycled indefinitely without some performance loss so some virgin polymer must be introduced into the process</p> <p>Actions to be considered;</p> <ul style="list-style-type: none"> <li>■ Specify recycled content for packaging where appropriate and commercially viable. 25-50% is the normal range of inclusion.</li> <li>■ Review options for HDPE, PP and PS as recycling technology, processes and suppliers emerge.</li> <li>■ See WRAP for further information: <a href="http://www.wrap.org.uk/retail/materials/recycled_pet.html">http://www.wrap.org.uk/retail/materials/recycled_pet.html</a></li> </ul>
<b>Metal Packaging</b>	<p>Packaging made from steel or aluminium may contain a significant amount of recycled material as standard. Over 50% of cans are recycled in the UK. Cans are collected through a well established recycling infrastructure and capable of handling 100% of cans consumed in the UK. This figure is expected to rise annually.</p> <p>Cans are infinitely recyclable without loss of quality and there is no 'down-cycling' of material to lower grade applications. Each can recycled substantially reduces the carbon footprint of the next can. Steel cans made from recycled material require only 25% of the energy needed from virgin material and if the can is an aluminium one, only 5% of the energy is required. Cans are made from materials produced with 50% or more recycled metal.</p>

## Recyclability in Context

The ability of a pack to be readily recycled – its recyclability – is often the aspect that the consumer is most focused on, yet from an environmental impact perspective, product protection, packaging optimisation, efficient product delivery and use of recycled content are all important and likely to have a greater net impact than recyclability. Packs should not be designed or specified solely based on recyclability.

### Principles of Designing for Recyclability

While bearing in mind the need for sound environmental decisions, there are several overarching principles that are appropriate for all packs and materials when considering designing for recyclability;

- Use fewer packaging materials, in any one pack, to allow for ease of recycling.
- Use mono materials where possible.
- Design for ease of separation to allow recycling.
- Clearly communicate the pack material and recycling message (where appropriate sign up to use the BRC on-pack recycling label scheme).
- Design packs in such a way as all the contents can be easily extracted – reduces waste and eases recycling.
- Avoid use of logos and icons that could confuse the consumer. See Defra's 'Green Claims Code' for information.
- Avoid use of extraneous or additional items on packs on primary packs as they may contaminate recycling streams.

## Purpose of the Recyclability Guidance

The following guidance is aimed at ensuring that household packaging placed onto the UK market is specified, designed and labelled in such a way as to **maximise the potential for the packaging to be recycled in an environmentally and economically efficient manner** based on the recycling technologies that are most relevant at the current time. This should not be at the expense of compromising other key considerations such as fitness for purpose, product wastage or damage etc. The guidance will also help inform brand, marketing and design functions as to the impact on recyclability of various packaging options and choices.

The challenge of developing a UK wide guidance that can reflect the wide **geographical variation** in collection, sorting and reprocessing capabilities is obvious. The guidance is aimed at reflecting what is appropriate for the majority of cases and also to incorporate trends in emerging recycling technology.

Materials are constantly developing as are the recycling technology and processes. So the guidance will **evolve**, be updated and develop as the market develops. Feedback and suggestions are welcomed.

## Packaging Materials and Formats covered by the Guidance:

The guidance is predominantly aimed at primary packaging that arises in the household waste stream. The materials covered represent the vast majority of what is found in the grocery, electrical, home improvement retail environment. And currently covers;

- Plastic packaging: bottles, rigid/semi-rigid packs, films/bags/laminates,
- Glass packaging,
- Paper, Card & Corrugated board packaging,
- Metal cans and aerosols, foil packaging,
- Composite packaging,
- Compostable Packs,

Important to note that secondary and tertiary packaging are not included at present, only consumer take-home packaging ending up in the household waste stream.

## Plastic Bottles (narrow neck pack with a cap)

See Recoup guide: 'Recyclability by Design' publication for more details - [www.recoup.org/design](http://www.recoup.org/design)



Topic	Guidance			Reason	Priority
	Most desirable	Less desirable	Least desirable		
Material:	Specify <b>HDPE</b> or <b>PET</b> where possible.	Monolayer PP, PVC or PS. Multi-layer single material bottles.	Avoid multi-material, multi-layer, PLA or other biopolymer bottles where possible and appropriate.	Facilitates higher value recycle and closed loop recycling. Materials may move up to be more desirable as technology and infrastructure evolve.	High
Colour:	Clear PET or Natural for PE	Pale tints of blue or green for PET	Black, dark colours and opaque colours including white where possible.	Most valuable/ easy to recycle into high value products. Black cannot be readily detected by sorting systems and may lead to contamination. This advice is based on current sorting technology and is expected to evolve from 2010 onwards.	High
Label / Sleeve	Label rather than sleeve	Partial sleeve	Full sleeve	Enables bottle recognition by automatic sorter.	High
Label materials	HDPE, LDPE, MDPE, PP, OPP	PET, EPS, Paper	PVC, PS, Metallised	For HDPE: Paper labels, should use water soluble adhesive and not pulp in the wash process.	High
Sleeve materials	PE, PP sleeve (PET & PE bottles)		PVC or PS sleeves on PET and PE bottles	PVC sleeve on PET bottle may contaminate the PET recycling stream and cause black spots in the rPET.	High
Consumer Communication (labelling):	Label all plastic bottles for recycling. Use OPRL on-pack recycling label scheme if appropriate.	Use clear recycling messaging if OPRL system cannot be used (e.g. pan-European packs)	Avoid use of logos and icons on labels that may confuse e.g. Green dot on packaging sold in UK only	Encourages maximum recycling of all plastic bottles.	High
Barriers:	No physical barrier layers.	Non-physical barrier layers or thin layers (e.g. vapour deposition)	Barrier materials e.g. nylon, EVOH	Physical barrier layers hinder recycling process.	Med

Material identification:	All bottles should be marked with the SPI identification symbols 1-7 moulded into the base (not recommended on label artwork). Use SPI abbreviations for polymers; e.g. PET. Do not use other abbreviations, PETE, APET, rPET etc.			Facilitates polymer identification by manual recyclers.  SPI code should be used at 10mm size if possible. See Recoup guide for full details.  See page 23 for SPI Link.	High
Closure liners:	Closures with no liners/ foil or residual rings.	HDPE, LDPE, PP, EVA	PVC, PU, PS, or EVA + aluminium	Eases recycling	Med
Trigger sprays, other devices etc	Label instructions for triggers, hooks etc. to be removed before recycling Plastic only trigger sprays (without metal springs and ball bearings are desirable)		Labelling trigger packs as 'fully recyclable'	Avoids metal contamination if triggers get included in recycling.	Med
Closure polymer:	HDPE/LDPE/PP caps		Metal, PS, PVC	Eases recycling	Med
Closures colour:	Specify same colour closure as bottle	Pale colours	Dark opaque colours	Most valuable/ easy to recycle into high value products	Med
Adhesives	Water soluble (or dispersible) at 60-80OC or hot melt alkali soluble adhesives.			See EuPR list of hot melts <a href="http://www.plasticsrecyclers.eu/docs/docs/useful006.pdf">http://www.plasticsrecyclers.eu/docs/docs/useful006.pdf</a>	Med
Oxygen scavengers	Impact at high incidence not fully known – seek advice from WRAP if looking to adopt.			Unless oxygen scavengers become more widely used their impact is not significant.	Low
Direct print	Avoid direct print onto pale/natural plastics unless production or expiry date.	Printing onto dark plastics.		Ink could contaminate recycle if occurring in high percentage, but currently not an issue.	Low
In mould labels	Where in-mould labels are desirable use the same plastic as the container or the same type.			Not a significant issue at current levels.	Low

## Rigid / Semi-rigid (non-bottle) Plastic Packaging (e.g. trays, pots, tubs, blister packs, clam shells)

Relatively few people (c20-30%) have access to kerbside collection for rigid plastic packs. However this situation is changing and could change significantly in the next few years, so the following guidance needs to be regularly reviewed. To improve economic attractiveness of recycling non-bottle rigid plastics and to maximize the higher value end market opportunities, there is a logic in specifying packs in the more commercially attractive polymers of PE, PET, PP. However recycling systems normally accept other polymer types and so caution should be used in labelling some polymers 'more recyclable' than others which is not necessarily the case. As recycling technologies develop this is one area of the guidance that is likely to evolve significantly.



**Black packs/ CPET:** black packs are less likely to be accurately identified and sorted by Near Infra Red (NIR) auto sorting technology in a recycling plant due to the nature of the current detection technology. Therefore black PET trays are likely to be sorted into 'other' low value polymers and not into the PET stream. Use of black enables a high percentage inclusion of post consumer recyclate (PCR) and so has clear benefits. Where possible higher value polymer packs such as PET, PE and PP should be coloured another colour other than black to help avoid them getting into lower value recyclate stream. However this discrepancy can be used to an advantage if specifying cPET (crystalline PET) for dual oven-able packs as it avoids contamination of the PET stream with cPET packs. Recommendation is therefore to use black for all cPET packs.

Topic	Guidance			Reason	Priority
	Most desirable	Less desirable	Least desirable		
Material:	Specify HDPE, PET or PP where possible and appropriate.	PS	PVC, EPS, PLA, other biopolymers. Also avoid multi-material, multi-layer packs where possible and appropriate e.g. PVC/PE	Facilitates higher value recyclate and closed loop recycling. Materials may move up to be more desirable as technology and infrastructure evolve.	High
Colour:	Clear PET Natural for PP Natural for PE	Pale tints of blue or green for PET Pale colours for PP/PE	Black. Also avoid opaque dark colours where possible and appropriate.	Most valuable/ easy to recycle into high value products. Black cannot be readily detected by auto-sorting systems and may lead to contamination. Where dark colours are required for certain applications, use non-black colours, where possible	High

Consumer	Label all plastic items for recycling. Use the OPRL On-Pack Recycling Label scheme.	Use clear recycling messaging if OPRL system cannot be used (e.g. pan-European packs)	Try and avoid use of logos and icons that are not appropriate in the UK or may confuse e.g. green dot	Encourages maximum recycling of all plastic bottles	High
Barriers:	No physical barrier layers unless required to deliver functional requirements.		Barrier materials e.g. nylon, EVOH	Barriers can provide significant benefits for performance and extending shelf life but some can have a high impact on recycling and could affect recycle quality.	High
Fillers	Fillers that do not alter the density of the base polymer pack.		Fillers / filler proportion that alter the density of a pack.	Non-polymer fillers (such as chalk) may alter the density of a pack and hinder recycling using float/sink density separation for flakes.	Med
Sealing layers (e.g. foil induction seals)	Seals that leave no residue on the base pack.	Induction/heat sealing using polymer based seals	Heat sealing that leaves a foil layer on plastic packs.	May leave a residue that could hamper recycling. Impact not fully known.	Med
Material identification:	Identify polymer with clear, legible marking (preferably moulded in the base) with SPI identification symbols 1-7 (not recommended on label). Use SPI abbreviations for polymers; e.g. PET not, PETE, APET.			Facilitates polymer identification by manual recyclers.  SPI code should be used at 10mm size if possible. See Recoup guide for details.  See page 23 for SPI Link.	High
Label materials	Paper, HDPE, LDPE, MDPE, PP, OPP. Printed film lids may also reduce need for labelling the pot/tray and therefore will aid recycling of the container.	PET, EPS	PVC, PS, Metallised, Non peel-able foil seals.	Eases recycling	Med

Adhesive	Water soluble (or dispersible) at 60-80OC or hot melt alkali soluble adhesives. Labels that are glued at a few points or the overlap only.	Fully glued labels	Adhesives that cause label separation or prevent label removal during recycling	See EuPR list of hot melts <a href="http://www.plasticsrecyclers.eu/docs/docs/useful006.pdf">http://www.plasticsrecyclers.eu/docs/docs/useful006.pdf</a>	Med
Ovenable (cPET) packs	Specify black for cPET packs			See above; Black trays are not detected by NiR detection and will reduce cPET contaminating aPET recycle. See above.	Med
In-mould labels		Avoid in-mould labels with inks that contrast in colour to the pack pigment.		If labels contrast in colour and occurring in high percentage then could impact on recycle quality. Not a significant issue at current levels.	Low
Other plastic packaging components e.g. roll-ons, trigger sprays etc	Not generally recyclable and communication should be labelled accordingly – see earlier table.				Med

## Plastic film, laminates & bags packaging (including tubes)

Relatively little post consumer film is currently collected for recycling, however this situation is changing and could change significantly in the forthcoming years, so any guidance needs to be regularly reviewed.

Currently only carrier bags have a significant collection infrastructure. Some retailers are encouraging other PE based film packaging e.g. cereal bags to be deposited in the carrier bag banks. If this trend grows or is expanded the following guidance should be reviewed.

Choice of film will be dictated by technical performance, cost etc. With little recycling on any polymer, there is little rationale for specifying any specific polymers. Similarly specifying mono-layer films ahead of multi-layer films is not advisable, at present, if this results in a poorer performance and/or heavier gauge film.

Topic	Guidance	Reason / Further Information	Priority
Material choice:	Optimize for performance and down gauging.	Optimize use of materials and maximize performance e.g. shelf life etc.	High
Labels	To avoid contamination of future plastic film waste streams, paper labels should be avoided on plastic films/bags.	Potential contamination of plastic recycling stream if/when it develops.	Med
Oxo-degradable / degradable films	Include clear consumer communication on disposal options to avoid confusion with conventional, compostable or biodegradable films.	Oxo-degradable films are a potential contamination of plastic recycling stream if arising in large quantities. Also adds to consumer confusion with biodegradable polymers.	Med
Metallised film/ laminates	Do not refer to metallised plastic film as 'foil'.	This could lead to contamination of the aluminium foil recycling stream. Label as plastic film.	Med
Colour, adhesives, barriers etc	See above – specify for packaging optimization rather than recycling.		Low

## Glass container packaging (bottles and jars)



Topic	Guidance			Reason	Priority
	Most desirable	Less desirable	Least desirable		
Colour	Specify green glass where possible for UK sourced containers. Specify clear glass where possible for imported containers or filled products.	Amber glass for UK sourced containers.		Assists in reducing colour imbalance on recycled cullet.	High
RFID tags	To be avoided on glass packs.			Not in common use. But will impact on recyclability	Med
Sleeves/ print/ labels:	Direct print or labels are generally preferred for glass packs.	Full body sleeves for glass containers are not the issue that they are for plastic bottles.		Full body sleeves if occurring in large quantities may impact on glass recycling operational efficiencies.	Low

## Paper and Board packaging (e.g. cereal boxes, pizza/ready meal sleeves/boxes, detergent boxes)

Topic	Guidance	Reason / Further Information	Priority
Wax or Latex coatings	Should be avoided or labelled as 'not for recycling'	Serious contaminant to paper/board recycling.	High
Laminated board	Board laminated on both sides with PE, PET etc., and complex or multi-material laminated board to be or labelled as 'not for recycling'.	Not readily recycled in paper mills and is a contaminant	Med
Single sided lamination	Single sided PE, PET or other plastic lamination is acceptable for recycling.	Recycling acts on un-laminated side	Low
Food contamination (light)	Board or paper packaging that is packaging food and likely to have no/light soiling with food, can be readily recycled.	Recycling process can cope with no/light food soiling.	Low
Food contamination (heavy)	Board or paper packaging that is packaging food and likely to have heavy soiling with food, particularly fats, should not be labelled for recycling e.g. butter wraps, fast food take-away packaging etc.	Acts as a contaminant and reduces recycle quality.	Med
Print, labels & decoration:	Avoid / minimise plastic and foil coated labels and coatings where possible. Paper labels are not an issue.	Reduces recyclability and recycle quality.	Med
Coatings & inks	Specify water based coatings and simple polymer coatings if necessary.	Reduces recyclability and recycle quality.	Med
Board in direct contact with food	Little or lightly soiled board packaging can be recycled readily. However heavy contamination with food especially fatty foods must not be recycled.	Contamination risk for recycling if heavily soiled.	Med
Inserts/ fittings	Specify and design card fittings and inserts to avoid risk of contamination.	Avoid risk of contamination.	Med



Cut out windows:	Only use window material in cartons if necessary. If a window is needed then; - Provide clear instructions for consumers to remove window film before recycling. - Specifying cellulose Acetate window (or other home compostable polymer) may enable the pack to be composted (which may be an option for some Local Authority areas).	Helps avoids contamination of paper recycling with plastic / other films.	Med
Plastic components e.g. blisters stuck to board.	Instruction to remove plastic blister before recycling. Design for ease of separation.	Avoid contamination with plastic.	Med
Metal components	Metal components/bases and lids welded to paper / card containers may render the pack un-recyclable. Instructions to remove metal component before recycling where possible.	The metal components render the packs non recyclable.	Med

### Corrugated Board packaging (electrical and household appliances etc)

As Card packaging above, plus the additional point;

Topic	Guidance	Reason / Further Information	Priority
Labels	Avoid plastic labels if possible and use direct print or paper labels.	Reduces recyclability and recycle quality.	Med

### Fibre based packaging (e.g. moulded paper or other fibre packaging – trays, punnets, egg boxes etc)

As Card packaging above, plus the additional point;

Topic	Guidance	Reason / Further Information	Priority
Moulded paper pulp packaging	Made from short paper fibres, which can be handled in a paper recycling process. They are readily recycled or composted at home.	No recycling issue	Low

## Steel/Aluminium container packaging (drinks cans, food cans, aerosols, food & pet food trays)



Topic	Guidance	Reason / Further Information	Priority
Labelling: drinks cans/ aerosols	Label all steel and aluminium drinks cans, food cans and aerosols for recycling.	Encourage greater recycling rates on steel and aluminium packaging	Med
Labelling: aluminium trays	Aluminium trays containers are not as widely collected for recycling and should carry the 'check local recycling' label under the OPRL on-pack recycling label scheme where the brand owner/retailer is a registered scheme member. Plus the Aluminium id symbol on the pack (preferably embossed on pack)	Register to use the OPRL on-pack recycling label scheme. This is based on what local authorities will actually accept for recycling.	Med
Aluminium trays – coloured lacquer	Avoid the use of coloured lacquer on aluminium trays if possible.	May reduce recycle quality if occurring in high percentage.	Med
Aerosol cans	Design aerosols for the plastic caps to be readily removed before recycling. Label all aerosols for recycling (once emptied).	Avoids contamination of bales by lower value plastic.	Med
Sleeves/ print/ labels:	Full body sleeves, labels or direct print. Choice of decoration does not have a significant impact on recycling. Direct print or labels are preferred.	Allows for ease of recycling and minimum contamination.	Low

### Considerations:

Most local authorities collect steel and aluminium drink and food cans as well as aerosol cans for recycling. Over 50% also collect aluminium food trays but there is also a strong network of community/charity groups that collect and recycle aluminium foil packaging including foil lids, wrappers and kitchen foil. See Alupro for details [www.alupro.org.uk](http://www.alupro.org.uk)



## Compostable Packaging

Compostable packaging can be fibre based (e.g. paper pulp) or biopolymer based.

Fibre based packs (e.g. egg boxes) may be home composted or often included in the card/paper recycling stream.

Biopolymer packaging can provide lightweighting and performance benefits especially in fresh produce, so there may be applications where compostable packaging is the most appropriate choice of material when considering overall packaging and product optimisation e.g. to extend shelf life and reduce food waste.

**However there is currently no infrastructure to collect compostable biopolymer packaging from households and deliver them to commercial composting facilities. Compostable packaging (other than caddy liners) placed in with food waste will currently be treated as a contaminant and could result in the load being rejected. Therefore all compostable packs should include clear disposal instructions.**

Home compostable biopolymer packaging may be labelled for home composting if applicable, but also needs disposal information for those householders who do not have access to home composting (i.e. 'not

currently recycled'). Currently c40% of all UK homes with an outdoor space has a compost bin/heap.

Best practice is for only certified home compostable packaging to be used in the UK. This certifies that the packaging is compostable under typical conditions found in home compost bins. The European standard for compostability is EN 13432 – see [www.dincertco.de](http://www.dincertco.de), but this is for conditions found in industrial composting facilities only. UK local authorities do not currently accept these materials into their food waste collection systems (apart from caddy liners). The 'OK Compost - Home' scheme (see [www.vincotte.com](http://www.vincotte.com)) is based on EN 13432, but the testing is at lower temperature for a longer duration. Oxo-degradable plastics do not conform to EN 13432 or OK Compost Home standard and must not be labelled as compostable.

If a pack is to be certified as compostable all its packaging elements need to be compostable e.g. label, tray, lid. For further information contact **Association for Organics Recycling** (previously The Composting Association) [www.organics-recycling.org.uk](http://www.organics-recycling.org.uk)

See [www.wrap.org.uk/downloads/Material\\_Considerations.98c071d9.4480.pdf](http://www.wrap.org.uk/downloads/Material_Considerations.98c071d9.4480.pdf) for further background.

### Considerations:

Topic	Guidance	Reason / Further Information	Priority
Material choice:	Specify home compostable materials where possible.	Facilitates home composting disposal.	High
Certification:	Specify certified compostable materials that conform to European standard EN13432, and preferably Home Compostable to AFOR Home Compostable Standard or 'OK Compost – Home' (or similar).	Ensures compostability and biodegradation. Will help build confidence for future collection initiatives. See Association for Organics Recycling AFOR, AIB Vincotte, Din Certco (see page 23)	<b>High</b>
Labelling	Clearly labelling for disposal. Home compost / residual bin only unless fibre based packaging (see above)	<b>To help avoid contamination of recycling streams.</b>	<b>High</b>

## Composite Packaging (e.g. spiral cord packs with metal bases, food and drink cartons, foil and plastic laminated pouches )



Generally composite packs are a combination of packaging materials that cannot be readily separated and hence they are normally classed as 'not currently recycled' and should be labelled such. However as the range of composite packs is so varied and new combinations are frequently being developed, it is not possible to be too prescriptive. Some packs such as

drink cartons have a more developed collection infrastructure and can carry recycling messages. PRAG recommend that users of such packaging contact WRAP to seek greater clarification.

Topic	Guidance	Reason / Further Information	Priority
Labelling	Label clearly for recycling or disposal.  Drinks Cartons: label for recycling with link to website for bank location.	Encourage greater recycling rates on food and drink cartons. See <a href="http://www.ace-uk.co.uk/recycling.html">www.ace-uk.co.uk/recycling.html</a>	Med
Plastic caps etc	Drink Cartons: Plastic caps and openings that are attached to the drinks cartons do not disrupt the carton recycling. Other plastic sleeves, etc should not be included.	Risk of contamination	Low

## On-Pack Labelling



The new BRC on-pack recycling label (OPRL) scheme, which is being supported by WRAP, was launched in March 2009. The scheme aims to provide brand owners and retailers with a standardised label format, based on the Recycle Now iconography, to inform consumers what packaging is currently collected for recycling; it is not about how to specify packaging to maximise recyclability.

For example a clear PET plastic bottle with a label will carry the same 'widely recycled' symbol as a dark colour PET bottle with a full sleeve, yet one has a greater ability to be recycled efficiently and effectively than the other. Companies who wish to use the new label will need to register via the scheme's website ([www.onpackrecyclinglabel.org.uk](http://www.onpackrecyclinglabel.org.uk)). An annual fee is charged to cover costs of monitoring and administering the scheme.

## Legislation

If your business makes, fills, sells or handles packaging or packaging materials, then you must comply with packaging regulations.

If your business produces or handles packaging and you fail to comply with the regulations you could be prosecuted and fined.

The packaging waste regulations ensure that businesses are responsible for recovering and recycling UK packaging waste.

There are two sets of regulations you may need to comply with:

The Packaging (Essential Requirements) Regulations apply to you if your business produces packaged products, or places packaging or packaged goods on the market.

The Producer Responsibility Obligations (Packaging Waste) Regulations apply to you if your business handles more than 50 tonnes of packaging in a year and has a turnover of more than £2 million.

There are three on-pack recycling label categories:

- **'Widely recycled'** – where 65% or more of local authorities have collection facilities for that packaging type in their area
- **'Check local recycling'** – where 15% to 65% of local authorities have collection facilities for that packaging type in their area
- **'Not currently recycled'** – where less than 15% of local authorities have collection facilities for that packaging type in their area.

Packaging formats and materials that are currently classed as **'not currently recycled'**, may be **the more appropriate** material and have a **lower environmental impact** than one that is **'widely recycled'** e.g. a plastic bag. A desire for positive **labelling in this respect should not solely dictate material choice.**

For further details visit: <http://www.netregs.gov.uk/netregs/63254.aspx?qclid=CPbyij2UwjgCFQxHQwodKBd-aw> or Envirowise free Adviceline on 0800 585794.

BS EN ISO 14021:2001 Environmental labels and declarations. Self-declared environmental claims (Type II environmental labelling). [www.bsi-global.com](http://www.bsi-global.com)

The European Committee for Standardization (CEN) develops standards which also cover packaging and packaging waste. These cover such issues as child resistant packaging, compostable packaging, material recycling etc. see [www.cen.eu](http://www.cen.eu)

<http://www.cen.eu/cenorm/sectors/sectors/transportandpackaging/packaging/ppw.asp>

<b>General Packaging:</b>	<p>INCPEN - The Industry Council for Packaging and the Environment: <a href="http://www.incpen.org">www.incpen.org</a></p> <p>EUROPEN - The European Organization for Packaging and the Environment: <a href="http://www.europen.be">www.europen.be</a></p> <p>The Packaging Federation <a href="http://www.packagingfedn.co.uk">www.packagingfedn.co.uk</a></p> <p>Defra Green Claims Code <a href="http://www.defra.gov.uk/environment/consumerprod/glc/index.htm">www.defra.gov.uk/environment/consumerprod/glc/index.htm</a></p> <p>Envirowise - <a href="http://www.envirowise.gov.uk">www.envirowise.gov.uk</a> see 'A Guide to Packaging Eco-design' publication.</p> <p>WRAP – The Guide to Evolving Packaging Design <a href="http://www.wrap.org.uk/retail/design">www.wrap.org.uk/retail/design</a></p>
<b>Retail sector:</b>	BRC: British Retail Consortium <a href="http://www.brc.org.uk">www.brc.org.uk</a>
<b>General Recycling:</b>	<p>RecycleNow <a href="http://www.recyclenow.com">www.recyclenow.com</a></p> <p>Recycling Expert: <a href="http://www.recyclingexpert.co.uk">www.recyclingexpert.co.uk</a></p> <p>Recycle-More <a href="http://www.recycle-more.co.uk">www.recycle-more.co.uk</a></p>
<b>Recycling Labelling:</b>	On-pack recycling label <a href="http://www.onpackrecyclinglabel.co.uk">www.onpackrecyclinglabel.co.uk</a>
<b>Plastics:</b>	<p>British Plastics Federation: <a href="http://www.bpf.co.uk">www.bpf.co.uk</a></p> <p>Packaging and Films Association (PAFA) <a href="http://www.pafa.org.uk">www.pafa.org.uk</a></p> <p>Recoup: <a href="http://www.recoup.org">www.recoup.org</a></p> <p>Plastics Europe: <a href="http://www.plasticseurope.org">www.plasticseurope.org</a></p> <p>European Plastics Recyclers (EuPR): <a href="http://www.plasticsrecyclers.eu">www.plasticsrecyclers.eu</a></p> <p>SPI (Society of Plastics Industry) <a href="http://www.plasticsindustry.org">www.plasticsindustry.org</a></p> <p>American Plastics Council: <a href="http://www.americanchemistry.com">www.americanchemistry.com</a></p>
<b>Metals:</b>	<p>Metal Packaging Manufacturers Association: <a href="http://www.mpma.org.uk">www.mpma.org.uk</a></p> <p>Alupro: <a href="http://www.alupro.org.uk">www.alupro.org.uk</a></p> <p>Steel Can Recycling Information Bureau: <a href="http://www.scrib.org">www.scrib.org</a></p>
<b>Paper/board/corrugate:</b>	<p>CPI (Confederation of Paper Industries) <a href="http://www.paper.org.uk">www.paper.org.uk</a></p> <p>Pro Carton: European Association of Carton and Cartonboard manufacturers <a href="http://www.procarton.com">www.procarton.com</a></p> <p>BPIF (British Printing Industries Federation) <a href="http://www.bipf.org.uk">www.bipf.org.uk</a></p> <p>Labelling scheme for certified schemes: <a href="http://www.scs-certified.com/forestry/PDFS/FSC-STD-40-201%20(version2.0)%20Approved%202004.PDF">www.scs-certified.com/forestry/PDFS/FSC-STD-40-201%20(version2.0)%20Approved%202004.PDF</a></p>
<b>Glass:</b>	<p>British Glass <a href="http://www.britglass.org.uk">www.britglass.org.uk</a> and <a href="http://www.recyclingglass.co.uk">www.recyclingglass.co.uk</a></p> <p>Glass Recycling UK <a href="http://www.glassrecycle.co.uk">www.glassrecycle.co.uk</a></p>
<b>Food &amp; Drinks Cartons:</b>	ACE (The Alliance for Beverage Cartons and the Environment UK) <a href="http://www.ace-uk.co.uk">www.ace-uk.co.uk</a>
<b>Compostable Packaging:</b>	<p>Association For Organics Recycling (AFOR): <a href="http://www.organics-recycling.org.uk">www.organics-recycling.org.uk</a></p> <p>European Bioplastics: <a href="http://www.european-bioplastics.org">www.european-bioplastics.org</a></p> <p>Din Certco <a href="http://www.dincertco.de/en/about_us/our_marks_of_conformity/index.html">www.dincertco.de/en/about_us/our_marks_of_conformity/index.html</a></p> <p>AIB Vincotte <a href="http://www.vincotte.com/Frontmodules/EN/diensten_dom_detail.asp?lang=EN">www.vincotte.com/Frontmodules/EN/diensten_dom_detail.asp?lang=EN</a></p> <p>National Non Food Crops Centre (NNFCC) <a href="http://www.nnfcc.co.uk/">www.nnfcc.co.uk/</a></p>