

Recycled content used in plastic packaging applications





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Introduction

In order to help build a truly circular economy businesses are increasingly looking at ways to incorporate recycled content into their packaging. This is no less true than in the area of plastics packaging. This guide is intended to help support such applications for food and drink, cosmetic and pharmaceutical products by providing detailed information on measuring recycled content, regulatory requirements and technical considerations. It additionally identifies the risks of not following required procedures and addresses considerations in relation to labelling and communications.

The information seeks to provide detailed guidance in the form of frequently asked questions (FAQs). The aim is to support the setting and meeting of requirements to incorporate recycled content in plastic packaging where it is technically and legally possible and encourage best practice. It is intended to help both those in industry and external policy makers understand some of the important considerations specific to these sectors.

This document is current as of the date of issue (April 2020) and does not reflect any subsequent updates or developments. References to EU legislation and its applicability to the UK nations remain correct at the date of issue but this situation may change from January 2021, depending on the nature of any final trade agreement reached between the UK and the EU. Every effort has been made to provide accurate and complete information. However, names of signatories and organisations involved expressly disclaim liability for any errors or omissions in the content.

CHAPTER 1: FAQs

Why use recycled content?

1. What are the environmental benefits of using recycled materials?

The inclusion of recycled materials in packaging can have environmental benefits of resource efficiency and carbon savings. The level of resources and carbon saved is dependent on the level of recycled content incorporated alongside the application of packaging and the recovery method employed. Detailed life cycle assessments (LCA) on specific applications can provide the stated savings.

To demonstrate the level of environmental benefit of using recycled materials a study by [Accorsi, Versari and Manzini \(2015\)](#) is detailed. The study demonstrated the carbon saving of a PET bottle for olive oil with levels of 0 to 50% recycled material. The carbon footprint (per kg CO₂ equivalent) per 1 litre of 0% recycled content is 0.225, compared with 0.155 for 50% recycled content, a saving of 31% kg CO₂ equivalent.

Additional environmental benefits of incorporating recycled materials in plastic packaging are that it reduces the demand for virgin raw materials and gives materials another life and use. Therefore, it supports the drive towards a circular economy.

CHAPTER 2: FAQs

Measuring Recycled Content

2. How can recycled content be measured?

Currently there is no widely agreed method for measuring the amount of recycled content. Although tests can be conducted in a laboratory on a case by case basis to determine if recycled content is present, it is not possible to determine the amount. Across the range of materials in use, including all suppliers big and small, the only practical way of accounting for recycled content is to measure and audit a business on a mass balance basis according to polymer type across individual sites and not by individual stock keeping unit (SKU). For each component part that industry supplies, there would be multiple SKUs.

Definition of mass balance

The Ellen MacArthur Foundation paper 'Enabling a Circular Economy for Chemicals with the Mass Balance Approach' includes the following definitions:

Mass Balance: *Mass balance is a consideration of the input, output, and distribution of a substance between streams in a process or stage. A method to match output (i.e. products with recycled content) with input (i.e. quantity of recycled feedstock) within a predefined system boundary (see below) and within a given booking period (usually one year).*

System boundary: *The point where materials flow into or out of the system. Materials are converted to credits when entering the system at a boundary and from credits to allocated mass when leaving the system at a boundary. Only materials which have an origin within the system boundary are eligible for recycled content credits from the credit system.*

NB: As part of the implementation of the **Single Use Plastics Directive (EU) 2019/904** on the reduction of the impact of certain plastic products on the environment (Article 6.5), the European Commission has committed to develop a method for calculating and verifying recycled content by 1st January 2022.



CHAPTER 3: FAQs

Regulatory Requirements

3. Are there any regulations governing packaging and the inclusion of recycled content in plastic packaging intended for food contact applications?

Yes, plastic packaging materials in common with all packaging materials intended to come into contact with food are currently regulated in the UK under UK and European legislation.

National Regulations

The national Materials and Articles in Contact with Food Regulations 2012 for England, Wales, Scotland and Northern Ireland include enforcement provisions for existing directly applicable European legislation on materials and articles intended to come into contact with food.

England: The Materials and Articles in Contact with Food Regulations 2012

Wales: The Materials and Articles in Contact with Food Regulations 2012

Northern Ireland: The Materials and Articles in Contact with Food Regulations 2012

Scotland: The Materials and Articles in Contact with Food Regulations 2012

EU Legislation

Regulation 1935/2004 on Materials and Articles Intended to Come into Contact with Food

The EU Framework Regulation for Food Contact Materials Regulation (EC) No **1935/2004 on Materials and Articles Intended to Come into Contact with Food** sets out the general principles of safety and inertness for all food contact materials. It requires that materials are manufactured according to 'good manufacturing practice', do not release their constituents into food at levels harmful to human health and provides rules for compliance documentation and traceability.

Regulation 2023/2006 on Good Manufacturing Practice for Materials and Articles Intended to Come into Contact with Food

Regulation (EC) No 2023/2006 on Good Manufacturing Practice for Materials and Articles Intended to Come into Contact with Food lays down the rules on good manufacturing practice for materials and articles intended to come into contact with food.

Regulation 10/2011 on Plastic Materials and Articles Intended to Come into Contact with Food

Regulation (EU) No 10/2011 on Plastic Materials and Articles Intended to Come into Contact with Food sets out requirements for plastic materials and articles intended to come into contact with food, in contact with food or which can reasonably be expected to come into contact with food. This includes a list of authorised substances, migration limits and requirements relating to compliance testing and declarations of compliance.

Regulation 282/2008 on Recycled Plastic Materials and Articles Intended to Come into Contact with Foods

Regulation (EC) No 282/2008 on Recycled Plastic Materials and Articles Intended to Come into Contact with Foods sets out requirements for plastic materials and articles and parts thereof intended to come into contact with foods which contain recycled plastic.

Recycled plastic materials and articles within the scope of the Regulation may only be placed on the market if:

- A.** They contain recycled plastic obtained only from a recycling process authorised in accordance with this regulation:
 - i. Dossiers on the corresponding recycling processes must be submitted to European Food Safety Authority (EFSA) for evaluation. European Commission (EC) guidelines on submitting a dossier are available [here](#) and the EFSA scientific opinion on the criteria to be used for safety evaluation of a mechanical recycling process to produce recycled food grade PET is available [here](#).
 - ii. EFSA issue an opinion on the corresponding dossier. To date around 140 opinions have been issued. These mainly relate to PET processes. These are available at:
<https://www.efsa.europa.eu/en/topics/topic/plastics-and-plastic-recycling>
 - iii. The European Commission will issue a decision on whether to authorise the recycling process once it has been assessed by EFSA.
 - iv. The authorised recycling process will then be included on a Community Register.

To date the European Commission has not yet issued any such decisions. Further details on next steps and timescales regarding the Commission decisions and further amendments to Regulation 282/2008 are available under question 7.

Until the Community Register is published, national provisions continue to apply in the Member States.

The authorised recycling processes will need to be managed by an appropriate quality assurance system that ensures that the recycled plastic complies with the requirements set out in the authorisation. That quality assurance system must comply with the requirements of Regulation (EC) No 2023/2006.

- B.** The plastic materials and articles that fall within the scope of this Regulation remain subject to **Regulation 10/2011**.
- C.** A declaration of compliance is required for recycled plastic materials and articles.

Scope of Regulation 282/2008

This Regulation does not currently apply to the following recycled plastic materials and articles, if they have been manufactured according to good manufacturing practice, as laid down in Regulation (EC) No 2023/2006 and are compliant with Regulation 10/2011:

- A. Recycled plastic materials and articles made with monomers and starting substances, derived from chemical depolymerisation of plastic materials and articles;
- B. Recycled plastic materials and articles made from unused plastic production offcuts and/or process scraps in compliance with Regulation 10/2011, that are recycled within the manufacturing site or are used at another site;
- C. Recycled plastic materials and articles in which the recycled plastic is used behind a plastic functional barrier, as specified in Regulation 10/2011.

EU Chemicals Legislation

In addition, compliance with the requirements of the EU Chemicals Legislation (REACH) and [Directive 94/62/EC on packaging and packaging waste](#) is mandatory, including certain information that the suppliers need to provide to downstream users. This information should include relevant regulatory information for each material or component in use.

Regulation 1907/2006 on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

The [REACH Regulation](#) includes some requirements applicable to plastic packaging. For example it is mandatory to declare the presence of Candidate List substances of very high concern (<http://echa.europa.eu/web/guest/candidate-list-table>) when present in a component at a quantity at or above 0.1% w/w (i.e. ≥ 1000 mg/kg) and to provide the identity of such substances.

Further details regarding the REACH Regulation are available [here](#).

The European Chemical Agency (ECHA) has published [Guidance](#) on the requirements for substances within articles such as FCM.

Other Sectors

Other sectors will also employ food contact grade plastics such as cosmetics, detergents and healthcare. They will likewise be guided by the approach employed by EFSA to evaluate safety, based on potential for migration (see Q8 and Q9 for further details).

Functional Barriers

For a functional barrier that is presently not in scope, it must be evaluated and tested on a case by case basis. However, for a functional barrier to prevent the migration of contaminants from post-consumer recycle it would necessitate a multilayer structure. This would require more overall material use to incorporate the barrier/barriers and for most applications render the packaging unrecyclable within the current recycling infrastructure provision.

4. What opinions have been published for recycling processes for plastics intended for food contact in Europe and for which applications?

Where EFSA opinions have been given they can be found at:

<https://www.efsa.europa.eu/en/topics/topic/plastics-and-plastic-recycling>

Around 130 of the recycling processes submitted for an opinion by EFSA are for food grade recycled PET with a small number for food grade HDPE. In addition EFSA has given an opinion on a small number of processes for food grade recycled polypropylene crates and trays within a closed loop system.

The EU legislative framework on recycle used for food contact is outlined on the following link:

https://ec.europa.eu/food/safety/chemical_safety/food_contact_materials/legislation_en

5. Is the process governing plastics and food contact in the EU likely to be adopted by other countries in the future?

Yes, it is common practice for other countries to look to the EU when developing regulations. Recently Japan and previously China have adopted similar guidance to that operated in the EU, so it is probable that other countries will follow suit.

6. How is the regulation surrounding the use of recycled content between the USA and Europe different?

In the USA, recycled materials need to comply with the relevant requirements of Chapter 21 of the Code of Federal Regulations. The US Food and Drug Administration (FDA) list of submissions on post-consumer recycled plastic (PCR) for food contact uses for which the FDA has issued a favourable opinion can be found on the following links:

<https://www.accessdata.fda.gov/scripts/fdcc/?set=RecycledPlastics>

<https://www.fda.gov/food/packaging-food-contact-substances-fcs/recycled-plastics-food-packaging>

FDA guidance is available on the following link:

<https://www.fda.gov/regulatory-information/search-fda-guidance-documents/guidance-industry-use-recycled-plastics-food-packaging-chemistry-considerations>

In the USA, cosmetic manufacturers have the legal responsibility for the safety and labelling of the products they are placing and making available on the market (please refer to question 8 for cosmetics regulations in the UK and EU). However, complementary safety assessments of products are not mandatory but considered best practice.

At present, there is no legislation in the USA concerning the use of recycled content in cosmetic packaging.

7. What are the proposed future amendments to Regulation 282/2008 and when is the register of authorised recycling processes likely to be published by the European Commission?

Next steps foreseen by the European Commission

The European Commission has set out its proposed next steps and timings with respect to amendment of Regulation 282/2008 and publication of the register of authorised recycling processes:

Step 1 – Amendment to Regulation 282/2008:

The proposed first amendment to the Regulation relates to mechanically recycled FCM PET and will set out transition arrangements and clarify obligations. The Commission aims to adopt this in **Q2 2020**.

Step 2- Adoption of individual Authorisation Decisions

After preparation and consultation, the aim is then to adopt the individual authorisation decisions on the 130 dossiers for mechanically recycled PET processes so far assessed by EFSA. This is due to take place in **Q3 2020**.

Step 3- Notification and Publication of Register

The authorisation decisions will then be notified to business operators. The provisions on transition arrangements would come into effect from the point when the Commission publishes the Union Register of Authorised Recycling Processes.

Step 4 – Establishment of a Compliance Monitoring Summary Sheet

This will involve Member States competent authorities and business operators.

Step 5 –Plastics other than mechanically recycled PET

A Regulation relating to plastics other than mechanically recycled PET will be drawn up. This will bring all recycled plastics into the scope including those from chemical recycling processes. It is envisaged that some may be used without authorisation, subject to material specific rules, whereas others will require authorisation. Steps for establishing evaluation criteria where these do not currently exist would be drawn up and an Annex setting out material specific rules would be included. This is expected to be discussed and further developed during 2020 and 2021.

8. Are there any regulations governing the inclusion of recycled content in plastic packaging for cosmetic product applications?

In the UK and across the EU the manufacture and supply of cosmetic products is governed by the EU Cosmetic Products Regulation (EC No. 1223/2009) and its amendments. Annex I of Regulation 1223/2009 describes the information that needs to be considered in the content of the Cosmetic Product Safety Report (CPSR). Section 4 provides details about impurities, traces, information about the packaging material:

- The purity of the substances and mixtures.
- In the case of traces of prohibited substances, evidence for their technical unavoidability.
- The relevant characteristics of packaging material, purity and stability.

Whilst there are no specific regulations governing the inclusion of recycled content in cosmetic products, due consideration should be given to the following: **(1223/2009 requires the implications of the packaging purity and stability on the safety of cosmetic products).**

- EC No. 1935/2004 (Regulation on Materials and Articles in Contact with Food)
- EC No. 1272/2008 (CLP)
- EC No. 1907/2006 (REACH)
- EC No. 10/2011 (Regulation on Plastic Materials and Articles)
- EC No. 94/62/ (Directive on Packaging and Packaging Waste)
- EC No. 2011/95 (Directive on General Product Safety)
- EC No. 75/324 (Directive on Aerosol Dispensers)
- SCCS Notes of Guidance for the Testing of Cosmetic Ingredients and their Safety Evaluation 7th Edition (10th Revision, Oct 2018)
- Information Exchange on Cosmetic Packaging Materials Along the Value Chain in the Context of the EU Cosmetics Regulation EC 1223/2009 - June 2019



Commission Regulation (EU) 2019/1966 has been published. Mainly, it amends Regulation 1223/2009 by adding to Annex II (prohibited substances) several substances which have recently been classified as CMR. It also changes the Annex III and V entries for some substances. Of these, the following are listed for use in food contact materials and hence should be considered when using the argument “safe for food, safe for cosmetics”. Please see table 1 below which demonstrates this.

Table 1: Amendments to Annex II and III of EU Cosmetics Regulation EC 1223/2009

NAME	CAS NO.	FCM LISTING	ACTION
2-Benzyl-2-dimethylamino-4'-morpholinobutyrophenone	119313-12-1	Swiss Ink Part A with SML of 0.15 mg/kg	Added to Annex II
1-[[2-(2,4-dichlorophenyl)-4-propyl-1,3-dioxolan-2-yl]methyl]-1H-1,2,4-triazole	60207-90-1	Swiss Ink Part B	Added to Annex II
1-Vinylimidazole	1072-63-5	In 10/2011 as FCM 387 and Swiss Ink Part A with SML of 0.05 mg/kg	Added to Annex II
Salicylic acid	69-72-7	In 10/2011 as FCM 121 and Swiss Ink Part A without an SML	Entries in Annex III and V amended

9. Are there any regulations governing the inclusion of recycled content in plastic packaging for pharmaceutical product applications?

Pharmaceutical packaging cannot incorporate recycled plastics within primary packaging for medicines and medical devices. Pharmaceutical packaging is governed by the following regulations and guidance for inclusion of recycled materials:

- A. EudraLex - Volume 4 - Good Manufacturing Practice (GMP) guidelines**
- B. Guidelines on Good Distribution Practice of medicinal products for human use**
- C. Eudralex Volume 3 Guideline on Plastic Immediate Packaging Materials**
- D. Annex 15: Qualification and Validation**
- E. Regulation (EU) 2017/745 on Medical Devices**
- F. Regulation (EU) 2017/746 on in vitro diagnostic medical devices**

CHAPTER 4: FAQs

Technical Considerations

10. What is a challenge test?

In the EU, recycled plastics for food contact applications are covered by Regulation (EC) No 282/2008. Part of compliance involves only using approved recycling processes. For a process to be approved, it is necessary to submit a technical dossier to EFSA. Part of this dossier involves determination of the decontamination efficiency of the recycling processes, often demonstrated through 'challenge testing' since it involves challenging the process with a plastic deliberately contaminated with surrogate contaminants, to determine the decontamination efficiency. Further details on the challenge test for PET can be found in the EFSA guidance.

The EFSA guidance at <https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2008.717> refers to challenge testing under section 3.2.3

In the USA, recycled materials need to comply with the relevant requirements of Chapter 21 of the Code of Federal Regulations. Details of the FDA recommended surrogate testing is included in an industry guidance document (published in 2006):

<https://www.fda.gov/regulatory-information/search-fda-guidance-documents/guidance-industry-use-recycled-plastics-food-packaging-chemistry-considerations>

Another consideration will be the impact of the characteristics of packaging materials in use; its purity and stability, and how these vary over time in different conditions.

11. What is a functional barrier?

A functional barrier is defined in EC Regulation 10/2011 as a layer or multi-layer within food contact materials or articles, which prevents the migration of substances from behind that barrier into the food.

As set out in the Plastics Regulation 10/2011, non-authorized substances may be used behind a functional barrier, provided they fulfil certain criteria, and their migration remains below a given detection limit. The detection limit will depend on the toxicity of the substance and the Limit of Detection for the substance which has to be 0.01 mg/kg food or less as proposed in future amendments to 10/2011.

There is no formal definition for a functional barrier in the Federal Food, Drug and Cosmetic (FD&C) or in Food Drug Administration (FDA) regulations in the USA. However, the [Guidance For Industry: Use of Recycled Plastics in Food Packaging](#) (published in 2006) on chemistry recommendations for pre-market submissions for food-contact substances address functional barriers. For example, FDA defines a 25-micron thick PET layer intended for use at room temperature conditions and below as a functional barrier in its recycled plastics guidance.

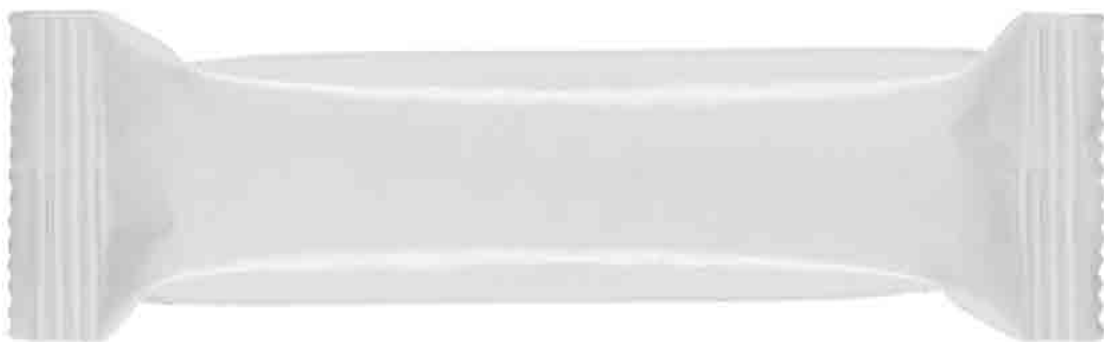
12. What needs to be considered if a functional barrier is to be used with recycled content?

Currently the use of recycled plastics behind a functional barrier is out of scope of EC Regulation 282/2008. The draft amendment to 282/2008 noted intent to bring this into scope. Therefore, in some cases the use of certain functional barriers in the development of multi-layer packaging may make it obvious that migration of substances into food is not possible under the conditions of use (this includes the use of aluminium and PET). In applications not tested before the effectiveness of the functional barrier must be demonstrated on a case by case basis through scientific study.

The following procedure can be followed to demonstrate that a given thickness of a virgin polymer works as an effective barrier to the migration of contaminants:

- A.** Intentional contamination of a virgin polymer with a known concentration of surrogate substances (i.e., a challenge test), which is used to simulate a recycled plastic in the worst scenario possible in terms of contamination.
- B.** Incorporation of the contaminated polymer as an inner layer into the final article, using a virgin polymer with a given thickness as the barrier layer.
- C.** Migration testing with food-simulating solvents under worst foreseeable conditions of use to determine if the virgin polymer and thickness used for the barrier layer are effective enough to avoid the migration from the contaminated polymer.

However, if a multi-material structure were used to incorporate post-consumer recycle, it would require more material to be used to incorporate the barrier/barriers, and the multi-material structure is likely to render the packaging unrecyclable based on current recycling infrastructure provision.



13. What other technical factors need to be considered in determining the maximum level of recycled content that can be used by polymer type?

Appearance and performance may be affected which will be a function of both the quality of recycled material available and the effect of recycling. Inclusion of additives may be used to compensate for these factors to a degree. However, care is needed to ensure the additives used do not compromise the future recyclability of the pack.

In addition, there have been concerns over stress-cracking of components within airless pump systems, and in packaging which could compromise the integrity of the product or in a sealing component.

For some packs, plastic componentry can be 'welded' or sealed. Recycled material may be less able to form a faultless weld and/or effective seal.

There are different types of recycled material e.g. flake or pellet. Washed flake can be used in various applications – strapping, sheet, pots & trays, but not in high addition rates for injection into preforms for bottle to bottle manufacture. To achieve high levels of recycled material in bottle to bottle manufacture, an extrusion & pelletisation process which takes the material to full food grade and the correct intrinsic viscosity (IV) specification is required.

Additionally, the material in use, coatings, colour, additives, ink coverage and the type of recycling process can all affect the quality, functional performance and appearance of recycle. For all these reasons technical specification sheets should be requested and it is important to seek guidance from the supplier on the maximum amount of recycled material that can be used without compromising functional performance and appearance.

NB: Intrinsic Viscosity (IV) is a measure of the polymers' molecular weight and therefore reflects the material's melting point, crystallinity and tensile strength.

14. Can all materials incorporate 100% recycled content where its use is permitted?

All mechanical recycling processes will result in some loss of performance and this can affect appearance, and functionality in terms of flexibility, rigidity, strength etc. The use of high addition rate recycled materials is totally dependent of the material type and the recycling process.

PET can be moulded with up to 100% levels of recycled material, but the colour and functional parameters of the finished product can be affected, and a longer manufacturing process window may be required. For this reason, it may prove difficult to sustain.

Currently when rHDPE food contact grade recycled material is added to HDPE at levels above 45%, it can result in excessive extrusion machine down time due to degradation of the material during the extrusion process. This degradation is caused during the final stages of the recycling process where all volatiles and additive processing packages can be stripped out of the recycle. Removal or dilution of the additive package within the virgin and recycled material mix causes degradation issues in the

extrusion process. For this reason, it is important to check with your supplier what the maximum level is for the category and on a case-by-case basis. For example, HDPE milk bottles on case-by-case basis and as a category should be able to sustain up to a maximum level of 45%. However, WRAP's Strategy For Delivering 30% Recycled Plastic Content In UK Consumer Packaging indicated that the current level was limited to 28% due to a variety of factors which can prevent 45% being achieved across the sector for some time. PET on a case-by-case basis can incorporate up to 100% recycled material, which is feasible but not sustainable due to capture rates and yield losses. For PET, up to a level of 50% is feasible at present, however the same WRAP study indicated that a sector average of only 20% was being achieved and that it would take time to reach higher levels for the sector. However, the availability of good quality material will vary, the participation by consumers in recycling schemes varies, as does the efficiency of sorting and recycling facilities, function and performance.

Table 2 demonstrates the levels of collection, recovery and recycling of consumer household packaging to illustrate this point.

Table 2: WRAP's Plastic Flow 2025 Data Report

STREAM	2017						
	POM	COLLECTED	RECOVERED PLASTIC IN	RECYCLED POLYMER OUT	COLLECTION RATE	RECYCLING RATE (IN)	RECYCLING RATE (OUT)
CONSUMER							
TOTAL	1532k	525k	525k	461k	34%	34%	30%
PTTs/Bottles	935k	509k	509k	445k	54%	54%	48%
Films	395k	16k	16k	16k	4%	4%	4%
Other	202k						
NON-CONSUMER							
TOTAL	830k		586k	565k		71%	68%
Rigids	453k		155k	155k		34%	34%
Films	364k		431k	410k		118%	113%
Other	13k						
Grand Total	2361k		1111k	1026k		47%	43%



15. Can plastics be recycled indefinitely?

The mechanical recycling of polymers will allow multiple cycles to be achieved, but not an infinite number of cycles due to the impact on the properties of that material. However, the continuous addition of virgin material acts to counter balance this effect. Recycled material will undergo testing to ensure it meets the required properties.

Widespread collection of plastics for recycling is necessary and is set to increase through different interventions such as the introduction of deposit return schemes and more consistent household and business collections across the UK alongside alternative collection schemes. This is expected to bring more and, in some cases, higher quality material into the recycling system.

Chemical recycling where the material is returned back to monomers offers the opportunity for an infinite number of cycles to be achieved without the necessity to incorporate a virgin element.

16. What supply considerations need to be considered?

In the UK at present, unlike many other European countries, plastic packaging is not collected in a consistent way from households, on the go or from businesses. The Government is presently planning to make changes in the future to address this issue. The current situation restricts the supply of material available for recycling to less than 50% of the plastic packaging material placed on the market.

However, some materials are widely collected including PET and HDPE bottles, whereas others such as polyethylene (PE) and polypropylene (PP) films much less so. The 2018 Recoup household collections survey showed that 99% of councils across the UK were collecting plastic bottles, 79% of councils collecting pots, tubs and trays and 17% of councils collecting plastic film ([RECOUP, UK Household Plastics Collection Survey 2018](#)).

As a result, current UK capacity exists to recycle PET and HDPE bottles and some film used in business-to-business, non-food applications. Other considerations that will determine what is available for recycling include:

- A.** Whether collection systems for products and materials from consumers and businesses exist.
- B.** Where collection systems do exist, to what degree consumers and business participate in the recycling system provided.
- C.** Process losses in Material Recovery Facilities (MRFs) and recycling plants.

17. What supplies of recycled materials are available in the UK/EU?

In the UK at present a total of 1.1m tonnes of plastic packaging are collected for recycling. Of that around 380k tonnes are processed and used across a variety of applications for food, and non-food grade packaging and non-packaging applications. The applications into which the material can be used, will of course be determined by a variety of factors including the previous use, colour, use of coatings and additives, technical considerations, degree of contamination, regulations etc.

Recycling operations do exist in the UK that can supply PET and HDPE food grade materials made from PCR. They also exist for PP and PE material, made mainly from post-industrial packaging as opposed to post consumer rigid and film packaging materials. The same is true in the EU where tray to tray post-consumer PET recycling plants exist. However, with all countries pledging to use more recycled materials it should not be assumed that current imports of recycled materials from Europe can be sustained.

UK recycling capability for food grade materials, the most challenging area both in terms of sufficient availability, technical and regulatory barriers, is presently estimated to include:

- rHDPE Food grade 28,000te pa is currently available from only 2 suppliers both based in the UK.
- rPET Pellet 30,000te to 35,000te pa from 2 suppliers.

Further information on where to source recycled material can be found at the following:

Submit an enquiry to purchase recycled materials:

https://www.bpf.co.uk//suppliers/recycled_plastic/Buy.aspx

Directory of UK Recyclers:

<https://www.bpf.co.uk/group/recyclers-15.aspx>

18. What is expected to change in the future?

New PET, HDPE and PP recycling capacity is planned by several companies. New capacity to wash and recycle PP and PE is also planned by packaging and recycling companies. In addition, new types of recycling are expected to develop, including the development of chemical recycling plants and polymer suppliers supplying new blends of raw materials that already include recycled content.

19. Are there any special considerations when importing plastics material with recycled content?

Ensuring the recycled content represented is present will be vital. Also, that it meets any EU and UK technical and regulatory requirements. Certification from a trustworthy source will be key.

20. What is the definition of chemical recycling?

There are different types of chemical recycling processes, including pyrolysis, gasification, solvent dissolution and chemical depolymerisation and other specialist processes which are evolving.

The process of breaking down collected plastics into monomers and other basic chemical elements (“depolymerization”) offers the opportunity to process difficult to recycle materials and remove contamination. These monomers can be used as virgin material alternatives in manufacturing new polymers.

21. When will chemical recycling be widely available?

The first production scale plant is planned to be operational in the UK in 2020 with a second planned in 2022. Several polymer manufacturers are starting to offer polymer with recycled content already present, but it could be up to 5 years before this solution is widely available. In the meantime, the collection of feedstocks for these plants (mainly flexible structures) needs to be enabled and Materials Recycling Facilities (MRFs) need to be able to be effectively able to sort films from rigid formats efficiently otherwise there will be insufficient feedstock.

22. What will chemical recycling offer that mechanical cannot?

Chemical recycling is intended to complement mechanical recycling and enable the recycling of consumer films, multimaterial structures and difficult to recycle applications. In addition, it offers the ability for polymer suppliers to offer pre-blended feedstock, including recycled content that can be recycled an indefinite number of times.

23. When is the collection of plastic films from households likely to be implemented?

At present only 4% of the total volume of packaging films used for the UK consumer market are collected for recycling (see table 2). However, several retailers are currently offering consumers the opportunity to recycle front of store. The consistent collection of all polyolefin films both PP and PE from both households and businesses is unlikely for some time until full extended producer responsibility is implemented from 2023 and Government enables consistent collections.

CHAPTER 5: FAQs

Risks

24. What are the consequences and risks of failing to follow procedures around incorporation of recycled materials?

Failure to follow procedures and to adhere to the regulatory requirements for the incorporation of recycled materials could result in regulatory non-compliance and the potential for product contamination and risk to safety. There could also be the potential for material sources not to contain the level of recycled materials stated with the associated risk of increased waste and fraud. This could have detrimental effect on the supply chain resulting in a loss of consumer trust and a setback to recycling efforts.



CHAPTER 6: FAQs

Labelling and Communication

25. Is it necessary to label my product to indicate the percentage of recycled content?

No, but businesses may choose to do this on a voluntary basis. The International Organisation for Standardization (ISO)) [standard 14021: 2016](#) 'Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling)' addresses claims in relation to recycled content.

Companies choosing to label should be mindful of the general legal requirement for labelling to be accurate and not misleading.

DEFRA guidance on making an environmental claim may be relevant:

<https://www.gov.uk/government/publications/make-a-green-claim>

Administrative burdens and costs to businesses of any labelling schemes need to be minimised.

26. What labelling requirements are necessary to show how to recycle a product?

Consistency and simplicity in messaging can help to inform consumers on whether packaging is recyclable, contains recycled materials and how to responsibly dispose of the item at the end of its life.

Additionally, labelling needs to be supported by consistency of household collections throughout the UK, which also reduces the confusion for consumers. A revision of the UK household collection system is being consulted on by Government and is due to implemented in 2023.

Industry are supportive of the proposals put forward by UK Governments in the consultation on reforming the packaging producer responsibility system to introduce a mandatory national recycling labelling scheme for all packaging, provided this is matched by the introduction of consistent local authority collections.

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