



environmental
services
association

QUALITY STANDARD

RECYCLED PLASTICS



INTRODUCTION

This industry derived standard builds upon existing requirements and best practise to help drive-up the quality of baled post-consumer plastic materials and applies to materials destined for export.

Although it makes reference to legislation it is not intended to offer a comprehensive compendium of statutory requirements so due diligence should continue to be applied to ensure all legal requirements are met.

If a material has been processed such that it achieves an *End of Waste* status then it can be exported as a product and will need to comply with the relevant legislation including REACH. This standard will not therefore apply.

Collection and review of inspection and monitoring data is at the heart of this standard. This data will be used to develop and refine the standard over time and contribute to raising the quality of materials ready to be sent for final reprocessing.

Plastic waste can be exported as *Green List* provided it is destined for separate polymer-specific recycling processes in an environmentally sound manner and is almost free from contamination and other types of waste.

The position of the Environment Agency and the Department for Environment, Food and Rural Affairs (Defra) is that materials should be substantially free of contamination. However, neither organisation defines a percentage limit for contamination.

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1. Scope

This standard has four primary objectives:

- To provide quality assurance for baled plastic recyclates - addressing concerns around quality, compliance and the sector's ability to clearly show that the "right waste ends up in the right place".
- Help those using the standard to understand what acceptable quality (almost free of contamination) from the perspective of the regulator means, such that delivered materials are of high quality, meet end-market requirements and are legally compliant.
- To protect human health and the environment by setting standards for recyclate quality.
- To aid the recovery of valuable secondary raw materials for manufacturing industries, helping to drive the circular economy.

2. Quality Management System

The essential elements of this standard shall be incorporated within an externally accredited quality management system (QMS).

Controls applied in the QMS shall be monitored, recorded and evaluated, from input materials to final recovery destination. Based upon audits and monitoring of the process, corrective actions shall be defined and then addressed.

Documents appropriate to the production of the recyclate shall be established and kept in an orderly manner and kept for at least four years.

A clear audit trail shall be created such that evidence will be available for individual loads from the point of production to final recovery.

3. Where the standard applies

Some materials may be subjected to a series of sorting and mechanical processes. The specifications set out in this document apply to the material as it leaves the final sorting/processing facility destined for its export and final *R3* recovery.

4. Complaints and concerns

In the event of any complaints or concerns about quality or usability of the recyclates, a record will be kept of the complaint, subsequent investigation and any actions taken.

5. Origin of input materials

Knowing the origin of the waste can greatly help in the accuracy of description and likely risk and nature of contamination. A record should be kept of the origin(s) of the input materials. Examples of some origin categories are listed below in order of risk of contamination. The list is not exhaustive and each material stream shall be assessed on a case-by-case basis for risk of contamination.

Origin of materials that may pose a higher risk of contamination include:

- Household/Municipal, (either source-segregated or co-mingled)
- Household-like business waste
- WEEE
- ELV
- Agricultural silage wrap
- Medical waste – clinical / non-clinical
- Construction and demolition

Origin of materials that may pose a moderate risk of contamination include:

- Retail
- HWRC

Materials that may pose a lower risk of contamination include:

- Post-production single stream
- Drinks containers in scope of a Deposit Return Scheme (DRS)
- Source segregated at retailer
- Distribution
- Clean/rinsed materials arising from agriculture

6. Processes applied

A record should be kept of each of the process(es) applied to the input materials to produce the recyclate e.g.:

- Hand-picking/sorting
- Mechanical sorting
- Near infrared sorting
- Baling
- Shredding
- Granulating

- Water separation
- Density separation
- Washing e.g. cold wash, hot wash, with or without chemical
- Electrostatic separation
- Source separation

7. Classification and customer requirements

Based on the origin, composition and processes applied to the recyclate, great care should be exercised to ensure that the target materials are accurately described, as well as having the correct European Waste Catalogue (EWC) code applied.

Documentary proof (i.e. a letter / contract) should be obtained from the customer receiving the material that it meets all of their required specifications. It should be accompanied by an invoice, purchase order or other record of a request and transaction for the material.

Depending upon the materials, operators may choose to include additional criteria such as colour, size of material and melting temperature etc. This may also include optional tests, such as alkalinity and filterability.

The exporter must have a contract in place with the recovery facility or the importer in the country of recovery, including arrangements to return or store the waste if it is unable to complete the transfer, and a copy of the Annex VII, (as required under Article 18 controls)

For materials that consist of mixed polymers (PE, PP and PET) the recovery facility must have the capacity to appropriately process the different polymers for subsequent separate recycling as individual polymers; and if needed, temporary storage limited to one instance, provided that it is followed by recycling and evidenced by contractual or relevant official documentation (Basel Convention Requirement).

8. Excluded materials

Any material which represent a hazard to health, personal safety and/or the environment, such as hazardous medical waste, contaminated personal hygiene products, hazardous waste, bitumen, toxic powders etc must not be present in the recyclate.

Depending upon the type of material and the destination recovery facility, there may be additional materials that should be treated as excluded materials. This would be agreed between the producer of the recyclate and the customer.

9. Residual contaminants

Residual contamination (non-target materials) in small quantities may be present. These materials could be anything that is outside the agreed target materials in the specification or transaction agreement. These could consist of:

- Other non-target plastic materials
- Metal
- Fibre
- Glass
- Food / liquid residues

It may be the case that certain recovery facilities are able to handle materials with significant levels of contamination but, for those materials intended for export, the contamination levels should be *de minimis*. To remain in accordance with CG12, levels of residual contamination shall not exceed 2% by weight.

10. End destinations

Recyclates shall only be transported to suitably permitted and authorised facilities that are being operated in accordance with the terms of the relevant permission and are capable of recovering the plastic waste in an environmentally sound manner.

Records shall be kept of the checks made to establish that the recovery end destinations are suitably authorised and compliant.

11. Implementation and “ground-truthing”

It is accepted that to define “*de minimis*” or “*almost free of contamination*” is a challenge and ultimately remains for the courts to decide where any line or limit may be. Subsequently, over time, limits and standards may change.

Therefore, to monitor whether this standard meets the relevant requirements, each organisation will, in addition to its own internal monitoring and inspection processes, keep a record of any inspections of the recyclates undertaken by a third party. This would include relevant regulators both in the UK and internationally that they become aware of.

If concerns are raised over the quality of the materials, or the presence of contaminants, then a review shall be undertaken to investigate the concerns raised.

The review will seek, as a minimum, to answer the following questions:

- What was the reason for the concern to be raised?
- Was the material in question compliant or non-compliant with this standard?
- If material had met this standard but still caused concern, what are the reasons for the concern in terms of both quality and quantity of contamination?
- If material in question didn't meet this standard, how was it able to leave the production facility below the intended specification?
- What corrective actions need to put in place to address concerns raised?

12. Inspection and testing

Sampling and testing shall be undertaken to determine the composition of the recyclate and presence of contaminants.

Duty of Care regulations require that waste must be accurately classified. Key to the correct classification is an appropriate sampling plan to obtain accurate and representative results of the make-up of the recyclate and presence of contaminants. Guidance on developing sampling can be found in the Sampling and Testing Guidance for Material Facilities published by WRAP.

In addition to the above sampling requirements, all materials shall be subject to a visual check as part of the production process. Each bale shall be inspected on five sides for contamination, and should be visually checked for contamination and odours that may indicate contamination. The tables at the end of this document set out descriptions of different qualities of recyclates for baled materials.

In addition to the sampling and visual inspection it may be determined, on a risk-based basis, that a proportion of baled materials are broken open for inspection.

Factors that should be taken into account in determining whether bale-breaking and sampling is undertaken include:

- Origin of material (as described in Section 5 above)
- Processes applied
- Whether the materials have been positively or negatively picked
- Recent experience and history of testing

In the event of a bale failing the breaking or a visual inspection, an assessment shall be made of the scale and nature of the failure and then appropriate further inspection and/or corrective actions should be taken such that only materials that are substantially free from contamination leave the facility destined for recovery.

The inspection, findings and any corrective action should be recorded in the production records.

13. Guidance for visual Inspection

| Mixed Plastic Bottles, Pots, Tubs & Trays (HDPE, PET, PP, PS) | | |
|--|---|--|
| Green | Amber (Requires further inspection and sampling) | Red (banned) |
| Up to five items of each non-haz non-plastic visible | Plastic covered in excess dirt | Any nappies |
| Occasional dirt eg from baler | Up to ten items of each non-haz non-plastic visible | Any soiled healthcare items |
| Paper labels used for information eg on pallet wrap | Visual appearance of some different polymer to load description | Solid food waste |
| Non-plastic lids on beverage bottles | Mild organic odour | Liquid (including yoghurt/ketchup) in containers other than residues left when container emptied |
| Mixed polymers (PE PP and PET) from PRF | Flies appear when container door opened | Mineral oil contaminated plastic |
| Single polymers from MRF | Labels beyond normal product/pallet information | Dirt that can be removed by hand |
| | Mixed polymers from MRF | Strong organic odour |
| | Construction waste film | Petrol or diesel odour |
| | | Chemicals odour |
| | | Liquid leaking from containers or free flowing from bale |

| | | |
|--|--|--|
| | | <p>On visual inspection of whole bale, more than occasional (eg five items of each):</p> <ul style="list-style-type: none"> • Cans • Carboard • Paper • Wood |
|--|--|--|

| LDPE Films | | |
|--|--|--|
| Green | Amber (Requires further inspection and sampling) | Red (banned) |
| If surface of bale covered by 10x10 grid contamination present only in 3 “squares” or fewer | Dirt covering plastic | Any nappies |
| Occasional dirt eg from baler | If surface of bale covered by 10x10 grid contamination present more than 3 “squares” | Any soiled healthcare items |
| Paper labels used for information eg on pallet wrap | Visual appearance of some different polymer to load description | Solid food waste |
| | Mild organic odour | Liquid (including yoghurt/ketchup) in containers other than residues left when container emptied |
| | Flies arising from bale | Mineral oil contaminated plastic |
| | Labels beyond normal product/pallet information | Dirt that can be removed by hand |
| | If un-split bag(s) present – check to ensure it is empty and | Strong organic odour |

| | | |
|--|--------------------------------|---|
| | does not contain contaminants. | |
| | Construction waste film | Petrol or diesel odour |
| | | Chemical odour |
| | | Liquid leaking from containers or free flowing from bale. |
| | | On visual inspection of whole bale, more than occasional (eg five items of each): <ul style="list-style-type: none"> • Cans • Carboard • Paper • Wood |

ACKNOWLEDGEMENTS

This document was drafted and published in 2022 by the Environmental Services Association (ESA) in the United Kingdom with input from its members as well as representatives from the British Plastics Federation; Recycling Association and RECOUP.

This standard is endorsed by the ESA, British Plastics Federation, RECOUP and the Recycling Association.

If you have any questions about the contents or use of this document, please contact info@esauk.org



ABOUT THE ESA

The **Environmental Services Association (ESA)** is the trade association representing the UK's resource and waste management industry. Our members are directly delivering the UK's transformation to a more circular economy and are leading the sector's efforts to decarbonise recycling and waste management operations.

The ESA works with government, regulators and the public to deliver sustainable and high-performing waste and resource management solutions for the UK. Our strategic priorities are to set high operational standards for the sector; to deliver more recycling and focus on up-stream interventions to eliminate waste; and to decarbonise our sector by 2040. You can find out more about the ESA and our members' work in our [Annual report](#) for 2020/21.

For further information, please visit www.esauk.org