RSVP
ReuSe Vanguard Project

Annex III
Safety guidelines

Supporting the implementation of reuse systems for food and beverage packaging for take-away

2026

RSVP
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Introduction

The environmental benefits of reusable packaging versus single-use materials are clearly evidenced today with growing research in this field. The economic benefits for switching to reuse are available for cities and businesses, in some cases and contexts. Yet for too many local authorities and businesses who wish to switch to reuse, it is still a struggle to be economically viable, due to the single-use economic bias that still exists in our linear economy. This is where the true costs of single-use packaging are hidden, outsourced to municipalities and taxpayers.

What is lesser known today is the health benefits that switching to reusable packaging can provide to consumers, with the removal of exposure to many of the chemicals of concern which exist in single-use packaging materials.

Design and material choice plays a critical role in the safety of reusables, impacting - among others - performance, cleaning processes, physical and clinical degradation, and consumer safety. This document, as an Annex to the **RSVP Blueprint for harmonising reuse systems across Europe**, aims to provide a useful overview of the key considerations for safe and hygienic reuse of take-away food packaging. We highlight the numerous stages of the operational cycle for reusable packaging where certain requirements, processes and standards must be met to ensure that reusable packaging - whether for food or beverages - do not risk neither microbiological contamination and therefore spreading germs/bacteria, nor unintended chemical releases.

By following these guidelines, we believe that key actors involved in reuse systems - the providers of the packaging, operators of the system and the public authorities tendering these roles out to businesses - can ensure that reusable packaging remains safe and healthy to use throughout multiple uses.

The document also offers clear guidance on when to remove packaging from circulation in the system, preventing risks and contamination from entering the system, as well as what to do if such an event occurs.

1. PURPOSE AND SCOPE

The EU Packaging and Packaging Waste Regulation (PPWR), adopted in 2025, sets reusable food packaging targets. Yet the final text lacks hygiene and legal safety guarantees that food operators need. There is a need therefore to supplement the PPWR with greater guidance and awareness on what decisions need to be considered, and how to do this, to ensure that reusable packaging is safe for consumers.

A 2021 **paper** endorsed by the World Economic Forum emphasised that compliance with key hygiene and safety regulations, guidance and procedures, as well as clear and open communications with consumers, workers, regulators, supply chain partners and other key stakeholders are critical for continuously earning and upholding their trust.

As concluded in the European Commission **"Study on sustainability in the context of food contact materials (FCM) in view of a possible revision of the FCM legislation"**, the provision of clear requirements and guidance on material durability, handling/cleaning, traceability and reusability cycles would remove barriers that may prevent businesses from choosing to use reusable FCMs.

Our aim with these guidelines is to support both reuse service providers and local/national policymakers who set procurement criteria, with an accessible list of the key criteria and factors that need to be considered when choosing packaging materials that are safe.

This guideline outlines the provisions to ensure the hygienic and safe operation of a reuse system for takeaway food and beverage packaging **(see section 5 on 'Guaranteed Safety' from the ReuSe Vanguard Project Blueprint for harmonising practices in the takeaway sector). It aims to ensure that all reusable packaging remains safe for food contact throughout multiple use cycles and that processes related to the choice of materials, the packaging manufacturing, its collection, cleaning, and redistribution maintain the highest standards of hygiene and safety.**

Certain measures proposed in these guidelines go beyond the existing official rules, and with this document we aim to promote best practices and enhance our broader understanding on the health benefits of reuse, with the ultimate goal of advancing reuse systems in Europe and globally which are safe, healthy and user-friendly. It is designed as a guidance document to begin informing the growing actors working on reusable packaging systems worldwide. We will seek to continue improving the document and our references, especially with a purposeful next step seeking to conduct independent laboratory testing to peer review the data in this document.

Before a service provider or city concludes on a certain material choice within its operation, we would strongly encourage that the material and final packaging item are tested to validate its ability for the intended use, and to understand the material's limitations for sustainably being used in reuse operations for food and beverages.

This guidance document is relevant to all operators implementing reuse systems for take-away, and to all kinds of materials used in reusable food and beverage packaging. For public tenders, the contracting authority reserves the right update these requirements based on new scientific evidence or regulatory changes.

NOTE: These guidelines will be periodically reviewed and, each time a change/update is needed, accordingly amended to stay current with new scientific information, specifications and regulations. This will apply in particular to any new methods (standards) and analytical thresholds that could be recommended for a number of tests included in this document.

GLOSSARY

DW	**dishwasher / dishwashing**
EC	**European Commission**
EU	**European Union**
FCMs	**Food Contact Materials**
HACCP	**Hazard Analysis and Critical Control Points**
ISO	**International Organisation for Standardisation**
PPWR	**Packaging and Packaging Waste Regulation**
RFID	**Radio Frequency Identification; a wireless, non-contact technology that uses electromagnetic radio fields track**
SOPs	**Standard Operating Procedures**
TDS	**Technical Data Sheet**
UP Scorecard	**Understanding Packaging Scorecard**

2. REGULATORY COMPLIANCE

All reusable packaging, processes, and operations in the EU must comply with the following legislation:

- ☑ EU Food Contact Materials Regulation (EC) No 1935/2004.
- ☑ EU Good Manufacturing Practices Regulation (EC) No 2023/2006.
- ☑ General Food Law Regulation (EC) No 178/2002.
- ☑ Hygiene of Foodstuffs Regulation (EC) No 852/2004.
- ☑ **Specifically for plastics:** Regulation (EU) No 10/2011 on plastic materials and articles, Regulation (EU) 2022/1616 for recycled plastic materials and articles intended for food contact, and Commission Regulation (EU) 2025/351 amending Regulations 10/2011, 2022/1616 and 2023/2006.
- ☑ Regulation (EU) 2025/40 on packaging and packaging waste.
- ☑ National food safety regulations applicable in the jurisdiction of operation.[1]
- ☑ Other legal frameworks that may apply depending on product type and composition.

Additional (not legally binding) recommendations:

- Any relevant international, national and local guidelines and technical standards (as for example **German DIN SPEC 91510:2025-04** – Requirements for the hygienic reprocessing of reusable plastic packaging)
- Other standards that are emerging from civil society or industry, which promote high standards of performance and safety, such as the **PR3 standards**, which allow a wide range of businesses and communities to easily plug into reuse infrastructure if they are all following the same harmonised standards.

[1]It is responsibility of an operator to check if any specific national rules are applicable.

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3. MATERIAL REQUIREMENTS AND PERFORMANCE

3.1 Basic material selection and safety requirements

- All packaging materials must be food-grade or food contact approved **for the intended use** (e.g. hot beverages, cold beverages, hot food, cold food, food with varying pH levels, oily or dry foods; ability to be safely used in microwave/oven/freezer, etc., depending on application).
- A final food packaging must remain food-safe, as well as germ, virus and allergen-free (not-detectable) after multiple washing cycles at commercial washing temperatures or other sanitisation and decontamination practices.
- Reusable food packaging must be washed at least at 65°C, steamed at approximately 85°C for a few seconds, then dried with hot air at roughly 60°C. The determination of microorganism contamination levels - against aerobe mesophile (kbE) and Enterobacteriaceae[2] - must be executed during every shift (e.g. every 2h). The limits should be roughly 5-10 kbE.
- Together with the final plastic food packaging, instructions must be provided on how to slow down its deterioration. This includes a description of the observable changes which could indicate the deterioration, as well as a warning in case specific damages or foreseeable misuse would cause increased migration of chemicals or would cause the article to become otherwise unsuitable for further use in contact with food (Art 14.1 Regulation (EU) 2025/351).
- Materials must avoid chemicals of concern that have been pre-identified to have negative health hazards, including: persistence/longevity of the chemical against degradation, mobility, bioaccumulation, carcinogenicity, mutagenicity, reproductive toxicity, specific target organ toxicity upon repeated exposure, or endocrine disruption. After ensuring that all national and EU requirements are fulfilled, **tier 1 of the UP Scorecard** and the **Food Contact Chemicals Priority List** should be used to ensure that the most problematic chemicals of concern are avoided.
- Depending on the application of each packaging, certain conditions have to be determined by the use case, material type and packaging design - which will differ across different food and beverages. Thermal stability is important to maintain across the intended use temperature range (which can vary for different applications, and be in the range from -20°C to 100°C), whilst regular checks should be done to ensure no detectable surface degradation, microcracking, or performance loss occurs over the required number of use cycles (see below for suggested cycles per packaging type).

[2]Testing food packaging for aerobic mesophiles (often referred to in German contexts as kbE - koloniebildende Einheiten or CFU) and Enterobacteriaceae is a critical part of food safety management (HACCP) to ensure packaging material does not contaminate food products. Example here.

3.2 Material performance testing

3.2.1 Dishwashing (DW) resistance assessment[3]

- Mechanical assessment after the appropriate[4] number of DW cycles for each material type:
    - Impact testing[5]
- Visual assessment after the appropriate number of DW cycles for each material type:
    - Clarity
    - Colour
    - Microcrack/microcraze
    - Fraying

3.2.2 Microplastic shedding assessment[6]

- Testing should be done to detect if the material is shedding microplastics during use (particularly with microwaving and other high temperature moments, during washing, refrigeration or long-term storage).
- Validated testing protocols are conducted which are appropriate to the material type, with defined thresholds agreed upon for acceptable microplastic release once they have been established (see footnote explanation).
- Documentation of the testing results and trend analysis is strongly encouraged, to see if microplastics released from the material start to plateau or decrease/increase after a set time/number of cycles.

3.2.3 Thermal cycling stability: aging

When choosing a suitable material, testing that items maintain integrity when repeatedly exposed to hot and cold environments (for containers with such use purpose) is strongly recommended. This will help test when/if surface degradation or damage happens, chemical migration and general continued functionality - for example leakages, discolouration. Tests can focus on:

- The simulation of realistic use conditions with rapid temperature changes (with limits expected in real-life performance).
- An assessment of the impact on a packaging's structural integrity and surface properties over time & use.

3.2.4 Chemical migration under stress

- Migration testing under combined stress conditions (mechanical stress, thermal stress, and chemical exposure).
- Testing after multiple (first 5, 10, and every other 10) use cycles to assess potential cumulative effects.
- Evaluation of different food types (depending on for what type of food is a container purpose / suitable) effect on migration potential.
- Specific testing for known problematic substances based on material type.

3.2.5 Sensory impact testing[7]

- Standardised protocols for evaluating flavour transfer.
- Triangle testing to detect subtle sensory changes.
- Quantification of odour retention after washing.
- Expert sensory panel evaluations at defined intervals.

It's worth noting here that the EU Food Contacts Material (FCM) regulation requires that any type of food contact material must not change the organoleptic properties of food - commonly this is interpreted as the taste, smell and optical appearance.

[3]When applicable, other technology to wash and / or sanitise reusable containers can be considered (e.g. steam sanitising)

[4]To be determined by each provider (depending on e.g. material, specific packaging format and application)

[5]Specifically evaluates the impact resistance, strength, and breakage characteristics of glass or plastic containers by simulating collisions. For more details look for example here.

[6]Currently, standard analytical methods and validated protocols for such assessment are lacking. Nevertheless, as daily ingestion of microplastics/overall exposure to microplastics is a growing public-health concern, understanding and reducing microplastic exposure through material selection (and eventually testing if a polymer is chosen) is strongly advised. Moreover, current efforts towards assessment of microplastic shedding will support future regulatory efforts aimed at safer consumer packaging.

[7]Some polymers (like polyolefins) are known to transfer odour and taste, while others (like polyester), none or very little.This should be kept in mind when matching the application with the food to be contained or if there is a risk of "cross taste/odour contamination". Check: Sensory analysis – transfesanitisationr of odour and flavour from food contact materials (DIN 10955).

4. WASHING AND SANITISATION REQUIREMENTS

This section outlines the recommended steps to ensure that packaging items remain safe to use, through implementing quality washing and sanitisation measures. These include:

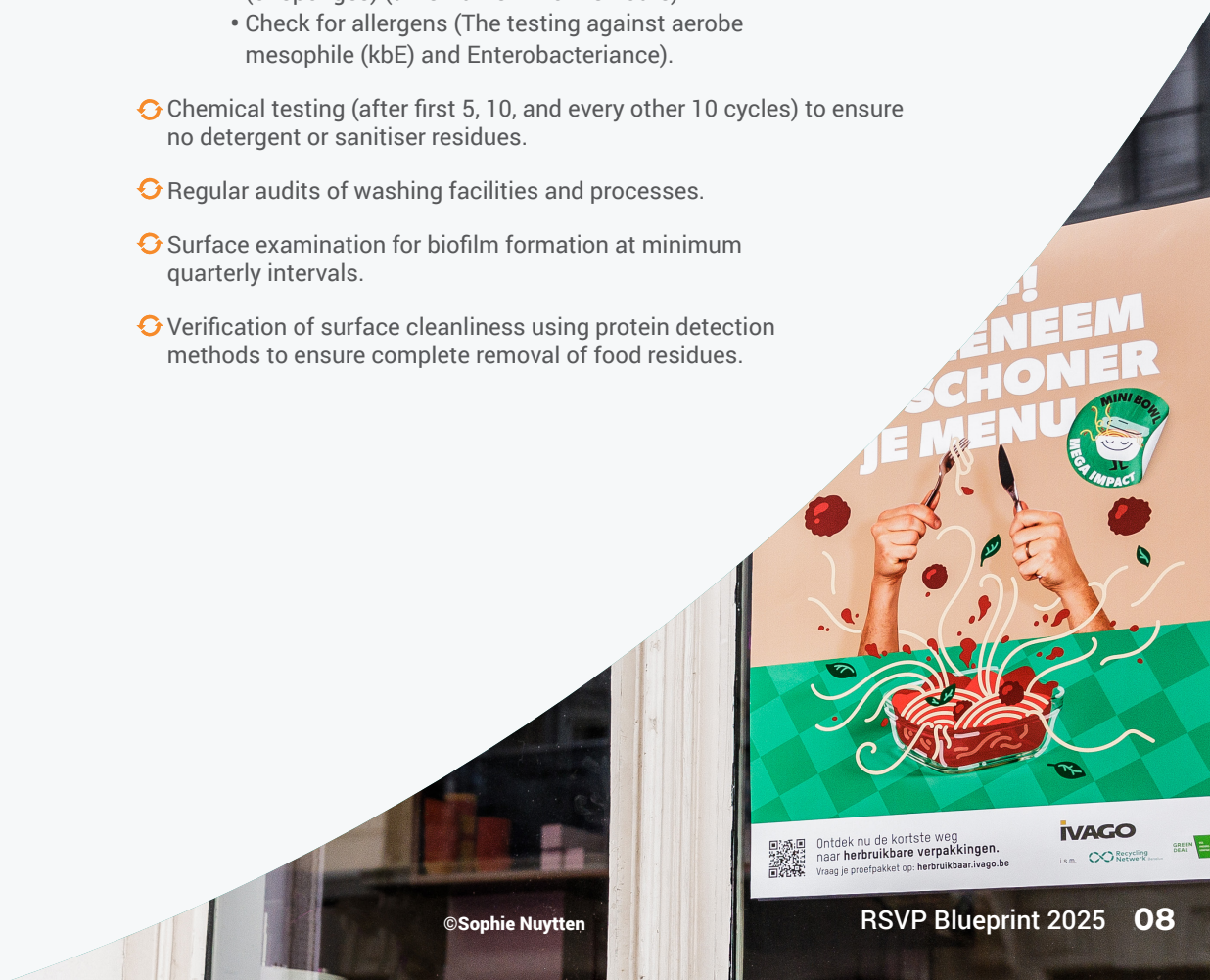
4.1 Washing process specifications

- Industrial washing facilities must meet Hazard Analysis and Critical Control Points **(HACCP standards)**.
- Minimum washing temperature of 65°C for thermal disinfection or equivalent validated alternative.
- Use of food-grade detergents appropriate for the packaging material with preference for those with **EU ecolabel**.
- If needed, add an extra sanitisation step, using for example steam treatment for a few seconds and/or approved agents (e.g., peracetic acid, hydrogen peroxide, or other approved sanitisers).
- Thorough rinsing with drinkable water to remove all chemical residues, complying with national drinking water standards.
- Material-specific washing protocols must be developed and validated based on material properties, such as:
    - Temperature limitations particular to the material
    - Compatible detergent formulations
    - Appropriate water hardness and pH ranges
    - Appropriate length of washing cycle duration
    - Drying (after drying no water drops must be detectable on the item to prevent the growth of mold and harmful bacteria)

4.2 Validation of washing efficacy[8]

- Material-specific washing protocols must be developed and validated based on material properties, such as:
    - ATP (adenosine triphosphate) testing for rapid validation (time frame: minutes).
        - After washing
    - Contact slides (time frame: 24 or 48 hours) (Specific for Bacteria).
    - When relevant (e.g. in case of recurrent problem), Periodic laboratory testing for total plate count, coliforms, E. coli, and other relevant microorganisms swipe (or sponges) (time frame: 24 or 48 hours).
    - Check for allergens (The testing against aerobe mesophile (kbE) and Enterobacteriance).
- Chemical testing (after first 5, 10, and every other 10 cycles) to ensure no detergent or sanitiser residues.
- Regular audits of washing facilities and processes.
- Surface examination for biofilm formation at minimum quarterly intervals.
- Verification of surface cleanliness using protein detection methods to ensure complete removal of food residues.

[8]Whatever the washing is internal or external, validation needs to be done. In case of internal validation, staff incharge of the washing should be responsible for testing and communicating the results. For external washers, typically the quality department does the job on a regular basis, and makes sure to communicate the results on a regular basis to the user of the washed parts.



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4.3 Format-specific washing requirements

4.3.1 Cups

- Specific attention needs to be given to rim areas/edges, where lipstick and other contaminants may accumulate.
- Testing for beverage residues that might affect taste.
- Verification of the complete removal of **tannins** and other beverage colourants.
- Regular sensory testing to verify absence of flavour carryover between wash cycles.

4.3.2 Food containers

- Enhanced washing protocols for containers used with oily foods.
- Special attention to corners and crevices where food residues may accumulate.
- Additional sanitisation steps for containers used with raw proteins.
- Validated cleaning processes for removing fatty residues without leaving chemical traces.

4.3.3 Pizza boxes

- Specialised washing equipment to accommodate larger formats.
- Enhanced grease removal protocols.
- Thorough drying to prevent mold growth.
- Regular testing for complete removal of oil residues from surfaces (note: higher risk of contamination due to potential deeper scratches).

4.4 Drying and storage requirements

- Complete drying before redistribution to prevent microbial growth (no stacking before perfect drying).
- Storage in clean, dry and dust-free environments.
- Stacking methods that prevent recontamination.
- Maximum storage time before rewashing if not put back into circulation.[9]
- Appropriate air circulation during storage to prevent condensation.

[9]The traceability measures should allow to check how long the container has been for example in the hands of the consumer.

5. PERFORMANCE AND SAFETY REQUIREMENT BY PACKAGING TYPE

Pre-testing protocol[10] for hot and cold beverages	Pre-testing protocol for common food containers (bowls, burger boxes, pizza boxes)[11]	Pre-testing protocol for sushi boxes and other specialised containers (containing more sensitive food)
Requirements for the packaging		
Design for a minimum of 50 use cycles[12] before replacement, where a "use cycle" represents the complete process of use, collection, washing, sanitsation, and redistribution: This cycle limit represents the point at which either technical performance (structural integrity, functionality) or food safety compliance (surface degradation affecting cleanability, increased risk of chemical migration) may become compromised; Hot beverage cups must be able to withstand temperatures up to 100°C, without deformation or leaching. Cold beverage cups must be able to withstand temperatures down to -10°C without becoming brittle and therefore risk breaking or deformation. Packaging items must remain leak-proof throughout the approved number of cycles. Multiple cycles should not have negative impact on the taste or odour of the original beverage; Packaging must be removed before being placed on the market if surface degradation is seen, requiring replacement including scratching to the extent that could harbor bacteria, crazing (micro-cracks), or the loss of surface smoothness that impedes proper cleaning.	Bowls and burger boxes should be designed for a minimum of 40 use cycles. Pizza boxes should be designed for a minimum of 30 use cycles (due to higher thermal stress and mechanical wear). - These limits reflect both the point of potential technical failure and the threshold at which food safety may be compromised due to material degradation. Containers must be able to withstand temperatures up to 85°C without deformation or leaching. Must maintain structural integrity to protect food content for a minimum of designed use cycles. Containers must be resistant to staining and odour absorption from food products. Surface degradation which would require replacement includes: deep scratches, permanent staining that may indicate material breakdown, warping affecting closure integrity, or corners/edges that have begun to degrade. Containers must demonstrate resistance to crazing and microcracking when repeatedly exposed to fatty foods followed by hot water washing.	Designed for a minimum of 40 use cycles. This limit reflects both structural durability and the point at which proper sanitisation may become compromised. Must be resistant to staining from soy sauce and other condiments. Must maintain proper closure to preserve freshness. Surface degradation requiring replacement includes: degradation of sealing surfaces, persistent staining indicating potential material breakdown, or damage to areas that come in direct contact with food.

[10]Testing before the final packaging item is placed on the market (e.g. sample tests after production).

[11]For sake of "cleanability", having separated lid and box is advised (as there is less risk that some areas are prevented to be washed/ sanitized because of being «hidden»).

[12]The cycle from when reusable packaging is placed on the market with a product until it is ready to be reused again.

Pre-testing protocol[10] for hot and cold beverages

Testing guidance

Dishwashing (DW) Capability

- Visual assessment after 100 DW cycles.

High temperature resistance

- Pour boiling water from kettle onto drinkware and check for deformations.

Low temperature resistance

- Check impact resistance at low temperature (Technical data sheet and/or actual testing).

Visual inspection of parts “collected” in existing reuse systems (can be done every 20 cycles for cups alongside mechanical testing)

- In order to detect potential failure mode (scratch, dent, fluff, fraying).

Sensory Panel (see appendix A) for both colour and flavour carry over of aged parts

- Aging protocol.
  - Contact with coffee and orange juice type beverages, couple of hours at 40°C
  - Dishwashing (see section 3.2.1)
  - Sensory Testing (see section 3.2.5)
  - Microbiological testing (may not be necessary for all beverages, but is encouraged for probably for juices, smoothies and soups that are more susceptible to cause microbial contamination)
  - Sensory testing is recommended after every 5 cycles. Microbiological test after every 10 cycles.

Consult professional washers on the topic to ensure quality standards are being met, or to potentially partner and work with professionals within this part of the reuse system.

Pre-testing protocol for common food containers (bowls, burger boxes, pizza boxes)[11]

Testing guidance

Dishwashing capability (if not already done before)

- Visual assessment after 100 DW cycles.

High temperature resistance (85° C)

- Put item in condition oven set at 85°C for 1 hour and check for deformations.

Low temperature resistance (if not already done before)

- Check impact resistance at low temperature (TDS and/or actual testing).

Visual inspection of parts “collected” in existing reuse systems

- In order to detect potential failure mode (scratch, dent, rim quality).

Sensory Panel for both colour and flavour carry over of aged parts

- Aging protocol.
  - Contact with tomato sauce, for 30 minutes at 85°C
  - Dishwashing
  - Sensory testing
  - Microbiological testing
  - Sensory testing is recommended after every 5 cycles. Microbiological test after every 10 cycles.

Consult professional washers on the topic.

Pre-testing protocol for sushi boxes and other specialised containers (containing more sensitive food)

Testing guidance

Dishwashing capability (if not already done before)

- Visual assessment after 100 DW cycles.

High temperature resistance (85° C)

- Put part in condition oven set at 85°C for 1 hour and check for deformations.

Low temperature resistance (if not already done before)

- Check impact resistance at low temperature (TDS and/or actual testing).

Visual inspection of parts “collected” in existing reuse systems

- In order to detect potential failure mode (scratch, dent, rim quality).

Consult professional washers on the topic.

Pre-testing protocol[10] for hot and cold beverages

Testing guidance

Mechanical testing for structural integrity at defined intervals

- Every 20 cycles for cups.

Surface microscopy examination at predefined intervals, depending on the specific material the packaging is made of, to detect microcracks and crazing not visible to the naked eye.

Standardised evaluation of staining/discolouration using colourimeter measurements and established delta thresholds for acceptable colour change.

Periodic sensory testing to verify the absence of retained odours or flavours (see section 3.2.5 for more detail).

Pre-testing protocol for common food containers (bowls, burger boxes, pizza boxes)[11]

Testing guidance

Mechanical testing for structural integrity at defined intervals:

- Every 10 cycles for food containers.
- Every 7 for Pizza boxes.

Measurement of material degradation through standardised methods.

- Impact testing.

Surface microscopy examination at predefined intervals to detect microcracks and crazing not visible to the naked eye.

Standardised evaluation of staining/discolouration using colourimeter measurements and established deltaE thresholds for acceptable colour change.

Periodic sensory testing to verify absence of retained odours or flavours.

Pre-testing protocol for sushi boxes and other specialised containers (containing more sensitive food)

Testing guidance

Mechanical testing for structural integrity at defined intervals:

- Every 5 (minimum 3) cycles for sushi box and specialised containers.

Measurement of material degradation through standardised methods.

- Impact testing.

Surface microscopy examination at predefined intervals to detect microcracks and crazing not visible to the naked eye.

Standardised evaluation of staining/discolouration using colourimeter measurements and established deltaE thresholds for acceptable colour change.

Periodic sensory testing to verify absence of retained odours or flavours.

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6. TESTING AND CERTIFICATION OF PACKAGING PARTS

Before being placed on the market, all separate parts of the final packaging need to be tested and certified to prove compliance for food contact. These are most commonly the container lids but can also include other parts of the packaging. Operational recommendations for ensuring the safety and standards of these separate parts of the packaging include:

- Food contact test results from accredited testing institute to confirm food contact compliance:
  - On “fresh from production” part
  - On part collected after 10 DW cycles[13]
  - According to agreed simulant and testing conditions (time/temperature)
    - All food containers: Simulants A (10% ethanol (v/v), B (3% acetic acid w/v), D2 (vegetable oil e.g., olive oil)
      - 40°C, 10 hours
  - Simulants B and C (20% ethanol v/v) for Drinkware or for spirits (B, C and D1 /50% ethanol v/v/ covering all drinks)
    - 70°C, 2 hours

[13]The migration tests should be repeated on washed parts after first 5 cycles and then a minimum of every 10 dishwashing cycles. Growing evidence emphasises that current legal safety assessments are inadequate for the rigors of reusable packaging systems. Therefore, to minimise uncertainty and potential risks, migration tests on “fresh from production” part and introduced to reuse system (washed) part after first 5 cycles, are recommended.

7. QUALITY CONTROL AND MONITORING OF THE PACKAGING LIFESPAN

Once the packaging core and any additional parts are tested and declared good to enter into a reuse system, quality control measures need to be performed to guarantee that the packaging is still safe, not contaminated or damaged, and therefore ready for the next cycle. Operational recommendations for ensuring quality control include:

7.1 Tracking and Traceability[14]

- Each packaging item must have a unique identifier (QR code, RFID, or other appropriate technology). This tracking device shouldn't impair recyclability at the end of life.[15]
- The tracking system must systematically collect the following data:
  - Date of manufacturing.
  - Material batch information (for recall purposes).
  - Cleaning history (dates, processes, applications used e.g. the process of pre-rinse, detergent application, washing, drying, etc.).
  - Date and results of the last inspection done on the packaging items after the cleaning process.
  - Number of completed use cycles.

7.2 Regular inspection protocol

- Visual inspection for scratches, cracks, or other damage that could compromise food safety.
- Inspection for discolouration **or** loss of transparency that might indicate material degradation or premature staining
  - Stained parts may be diverted to destaining station[16]
- Basic "sniff tests" to be conducted. These are sensory tests to verify the absence of retained odours which are not compatible with ongoing reuse and which may signify some contamination or existing bacteria from previous uses.

7.3 When to remove items from circulation and use:

We strongly suggest packaging items as a whole, or certain parts, be removed from circulation for repair and fixing when they contain any of the following aspects listed below. This is to maintain proper health and safety standards, as well as the ongoing optimisation and performance of the reuse system:

- Deep scratches that could harbor bacteria.
- Any cracks or structural damage.
- Permanent discolouration that cannot be removed through washing and destaining.
- Persistent odours that cannot be eliminated.
- Evidence of surface microcracking or crazing, even if not visible to the naked eye (but can be detected with help of the camera).
- Any evidence of microplastic shedding during standard use or washing.
- Loss of transparency (for clear items).

7.4 Disposal and recycling

- Packaging that is no longer fit for reuse must be properly sorted and recycled according to its material type and the available recycling options. Of course, the preference should be for closed-loop recycling systems that can repurpose materials into new packaging items. It's worth noting here that the EU Packaging & Packaging Waste Regulation mandates for all packaging placed onto the market to be recyclable by 2030.
- Documentation of disposal methods and quantities must be maintained for any subsequent audit or controls done by authorities with the jurisdiction to conduct inspections and maintain health & safety standards.

[14]The EU PPWR Art 12 (2) states: Reusable packaging placed on the market [...], shall bear a label informing users that the packaging is reusable. Further information on reusability, including the availability of a local, national or Union-wide re-use system and information on collection points, shall be made available through a QR code or other type of standardised, open, digital data carrier that facilitates the tracking of the packaging and the calculation of trips and rotations, or, if that calculation is not feasible, an average estimaodourstion. In addition, reusable sales packaging shall be clearly identified and distinguished from single-use packaging at the point of sale.

[15]End of life (end of use) may include the list of visible effects which may trigger the need for discarding the part of/the packaging item, and should be decided based on the "check list" (see: 7.3 Criteria for removing items from circulation).

[16]Stained packaging should be in this case separated, stains removed and then packaging reintroduced.

8. OPERATIONAL REQUIREMENTS

8.1 Collection and transport

The collection and transport methods, vehicles and materials used by providers must prevent cross-contamination between the used packaging containers. Practically this means:

- Transport vehicles must be regularly cleaned and sanitised.
- The separation of clean and used packaging during transport, with clear protocols in place for handling damaged or visibly soiled items separately.
- Temperature control during transport, if required by local regulations.

8.2 Staff Training and hygiene

- Mandatory training on healthy and safety protocols for all staff handling reusable packaging, with regular refresher trainings and assessment done.
- Personal hygiene requirements mandated to be followed throughout, including handwashing protocols and hair/clothing protection.
- Use of appropriate personal protective equipment throughout key stages of the operations where there is most touch-points with the packaging.
- Training for key staff on how to identify when a packaging item is damaged or soiled enough that is needs to be disposed of, and how to appropriately do this.
- Documented competency verification for staff performing quality inspections.

8.3 Facility requirements

- Physically separated areas within the facility for receiving used packaging, the washing process and the storing of clean packaging.
- Air quality controls to prevent airborne contamination.
- Pest control measures and avoidance initiatives.
- Regular facility and equipment maintenance to ensure high standards.
- Controlled environmental conditions for the storage of clean containers.

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9. QUALITY ASSURANCE AND DOCUMENTATION

Reusable packaging is, by its nature, an ongoing system of use - clean - return - use. Therefore there must be great emphasis placed on assuring that quality standards are maintained across all operations and at a frequent occurrence, given the ongoing cycle of reusable packaging - whether for specific one-off events or in continuing takeaway packaging systems. Recommendations for quality assurance include:

9.1 Management system requirements

- Implementation of a food safety management system based on HACCP principles.
- Monitoring procedures and corrective actions throughout the entire operational cycle.
- Regular internal audits and data available upon request verifying compliance with the audit checks.
- Continuous improvement processes with documented action plans and monitoring done against each plan.

9.2 Documentation requirements[17]

- Standard Operating Procedures (SOPs) for relevant processes.
- Records of washing cycles, temperatures, and chemical concentrations.
- Maintenance logs for all equipment.
- Training records for staff.
- Test results and inspection reports.
- Incident reports and corrective actions taken.
- Material composition documentation confirming absence of hazardous substances.
- Batch testing records maintained for the lifetime of the packaging items.
- Chemical analysis reports from periodic testing of random samples.
- Documented verifications of compliance with migration limits after multiple use cycles.
- Record retention policy ensuring documentation is available for a minimum of 3 years.

9.3 Continuous improvement

- Regular review of processes and procedures.
- Analysis of trends in quality metrics.
- Implementation of improvements based on data analysis.
- Documentation of all process modifications and validation of their effectiveness.

This last point is critical for those who wish to see, or believe, that reusable packaging can even be extended from 30-40 cycles to more than 50 uses, without reducing health and safety standards.

[17]Many of the required documentation points (SOPs, test reports, traceability, etc.) are declared to be only realistically feasible with centralised washing. Nevertheless, documents should be the same in a decentralised system as well. In the case of a decentralised system, actors should file up documents related to their responsibility and make sure it is available in case of control or any issue. It can also be recommended that the reuse system manager compile all the documents in one place for easier access and make sure all documents are completed in due time.

10. EMERGENCY PROCEDURES

System/service providers should enforce a series of procedures and processes that outline what to do in the case of an emergency, in order to protect the safety and integrity of packaging stock. The type of emergencies that could occur range from contamination by harmful bacteria in a certain food / beverage drink, or the detergents being used improperly, incorrect washing procedures being followed etc. Procedures to be put in place can include:

10.1 Recall procedures

- Implementing a documented system for identifying and recalling affected batches, available upon request by authorities.
- Communication protocols for informing stakeholders.
- Detailed plan for how they will analyse the root causes of the problem and how they will define steps to implement preventive measures.
- Regular testing of recall procedures through simulation exercises.

10.2 Incident management

- Procedures written and enforced for handling contamination incidents.
- Clear lines of responsibility and decision-making authority within the organisation and with external partners.
- Documentation requirements for incidents and responses enforced by all staff and partners.
- Post-incident review and improvement processes.

11. CONSUMER COMMUNICATION

There is also a responsibility on the packaging provider and system operator to provide clear information to the users (consumers) of the reusable packaging, in order to help minimise any risks to their health and the safety of each item. These include:

- End-users being provided with clear instructions on how the packaging can be used safely e.g. instruction on microwave or dishwasher usage.

- The system must include tamper-evident features to prevent contamination, such as feedback loops and opportunities for both businesses and users.
- A consumer feedback mechanism must be in place for reporting safety concerns.[18]
- A label on a final plastic food packaging must provide instructions designed to slow down its deterioration (a description of observable changes of the article that may indicate the deterioration; a warning in case specific damages or foreseeable misuse would cause increased migration or would cause the article to become otherwise unsuitable for further use in contact with food) as detailed by **EU regulation 2025/351** on food contacts materials.

[17]Preferably online, via the webpage of the system provider. But through other ways (e.g. the regular customer service) should be possible as well.

12. COMPLIANCE DECLARATION

For local authorities, or any entity offering a procurement tender procedure for operating a reuse system or the provision of the packaging itself, to minimise bureaucracy there should be a single declaration form requested which showcases how they comply with the requirements established above.

We would suggest mandating that all bidders submit a detailed plan demonstrating how they will comply with each section of this protocol, including:

- ☑ Technical specifications of proposed packaging materials.
- ☑ Washing and sanitisation procedures.
- ☑ Quality control and traceability systems.
- ☑ Staff training programs.
- ☑ Documentation and record-keeping systems.
- ☑ Material performance testing methodologies and expected results.

APPENDIX A: TEST METHODS AND STANDARDS

In Appendix A, we give a short overview of the different methodologies and standards for testing procedures which are mentioned throughout these guidelines.

A.1 Migration Testing

- EN 1186 series: Materials and articles in contact with foodstuffs - plastics.
- Method for testing overall migration into food simulants under various conditions.
- Specific migration testing for identified substances of concern.
- Testing after packaging item has undergone multiple dishwashing cycles (minimum of 5 cycles).

A.2 Mechanical and Physical Testing

- ISO 179: Determination of Charpy impact properties.
- ISO 75-1: Determination of temperature of deflection under load.
- SO 4892: Methods of exposure to laboratory light sources.
- ASTM D790: Flexural properties of unreinforced and reinforced plastics.
- Impact resistance testing before and after repeated washing cycles.

A.3 Surface Analysis Methods

- Optical microscopy for surface defect assessment.
- Colourimetric measurements (CIELAB colour space) for staining assessment.
- Contact angle measurements for surface property changes.
- Atomic Force Microscopy for microstructure analysis when indicated.

A.4 Microbiological Testing

- ISO 18593: Horizontal methods for surface sampling.
- ISO 4833: Horizontal method for the enumeration of microorganisms.
- ISO 21528: Horizontal methods for the detection and enumeration of Enterobacteriaceae.
- ATP bioluminescence for rapid hygiene verification.

A.5 Sensory Testing

- ISO 13302: Methods for assessing the influence of materials on food sensory properties.
- ISO 5492: Vocabulary for sensory analysis.
- Triangle test methodology for detection of subtle flavour differences.
- Ranking test protocols for odour retention comparison.

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