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STYLEGUIDE
Sustainable packaging design 2024

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Introduction

Foreword

Packaging is an essential part of the product, as it protects perishable and sensitive foods, extends shelf life, and thus prevents food losses. It also meets hygiene requirements and aids in the transportation of goods. In addition, information about the product or its handling and the list of ingredients are part of the packaging.

Sustainable packaging design means designing the packaging in such a way that it has as minimal impact on the environment and the climate as possible. This helps to preserve resources and reduce packaging waste. The most important factors here are the materials used for packaging and the efficient use of resources in the production of food and consumables [1].

The Schwarz Group's goal is therefore to use as little material as possible and to transfer the materials used into closed loops - in other words, to reuse them through recycling [2].

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Special Focus on Plastic

Plastic represents a key packaging material for the retail industry. Plastic packaging fulfills many essential functions, from product protection and design to easy handling, low (transport) weight and food waste prevention.

However, due to its longevity, plastic decomposes very slowly, if at all, and can still be found in our ecosystem years later.

It is therefore our goal to significantly reduce the amount of plastic used and to make plastic packaging maximally recyclable [1, 2].

Recyclability is determined on the basis of the German minimum standard. Tools such as PreZero SPOT, CHIRA from cyclos-HTP or Recyda can be used for this purpose.

Bioplastics

Bioplastics (bio-based and biodegradable plastics) are increasingly being used, as an alternative to conventional plastic packaging.

Although the demand for these materials is increasing, their use must also be viewed critically: for example, bio-based plastics may compete with food and require arable land, while packaging made of biodegradable plastics is often only fully compostable under very special conditions or does not decompose completely.

Due to these reasons, biodegradable plastics are currently only used to a limited extent in our own-brand packaging. Bio-based plastics can be used as packaging if:
- the legislator prescribes it at European or national level, **or**
- a recycling stream exists for the material (basis: current German minimum standard at the time of testing) **and**
- an ecological advantage over the conventional material can be demonstrated **and**
- the original raw material is certified according to a recognized sustainability standard (e.g. BonSucro or similar for sugar cane)

Pre-Consumer vs. Post-Consumer Recycled Plastic

According to DIN EN ISO 472, there are two types of recyclate: pre-consumer recyclate (also known as post-industrial recyclate (PIR)) and post-consumer recyclate (PCR).

Pre-Consumer (PIR): Material that is separated from the waste stream during the manufacturing process. It does not include the reuse of materials from reworking, regrinding or scrap that arise during a technical process and can be reused in the same process.

Post-Consumer (PCR): Material from households, commercial and industrial facilities, or institutes (who are end users of the product) that can no longer be used for its intended purpose. This includes material returned from the supply chain. For example, disposed PET bottles, packaging, film and plastic bags are the source material for post-consumer recyclate [4].

In principle, the use of PCR material is always preferable. In general, however, the use of PIR material is also possible in consultation with the purchasing department, but this is not advertised on the packaging and does not count towards achieving the "REset Plastic" target.

Generally undesirable materials

Unless otherwise regulated by national/European legislation, the following materials and substances are considered undesirable in the Schwarz Group and must be removed from primary packaging as far as possible: PVC, BPA, polycarbonate, EPS, stoneware, polyurethane, silicone components.

Fibers from sustainable forestry

Packaging with cellulose components must be made of recycled material or FSC-certified virgin fiber. In exceptional cases, PEFC-certified cellulose can also be used. The target applies to primary and secondary packaging, including labels.

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Plastic strategy REset Plastic

With its REset Plastic strategy, the Schwarz Group is aiming for a holistic and cross-divisional approach to plastics as a recyclable material .

REset Plastic comprises the following five fields of action:



Figure 1: REset Plastic fields of action

REset Plastic's vision of "Less Plastic - Closed Loops" is being consistently pursued and the following goals have been set for 2025:

- **To reduce plastic consumption in own-brand packaging by 30 %**
- **To make 100 % of own-brand packaging maximally recyclable**
- **To use an average of 25 % recycled content for own-brand packaging**



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Summary

Packaging should be designed in such a way that its collection, sorting, and recycling processes are supported in the best possible way. The following basic recommendations should therefore be considered in sustainable and recycling-friendly packaging design:

General points	Plastic packaging	Paper packaging	Glass packaging	Metal packaging
– Reduction of material as much as possible – Use of recycled material – Minimal use of dyeing agents and avoidance of dark (carbon black-based) pigments – Use of materials that are as homogeneous as possible and free from additives – Avoidance of components from foreign materials that cannot be separated in the sorting process – Avoidance of large labels made from foreign material – Use of recycling-compatible printing inks and adhesives – Minimization of printing on the main body, replacement with laser engraving – Optimal emptying of the packaging (residual emptying) must be ensured	– Use of materials that are most widely available (e.g. polyolefins, PET) and materials with available sorting and recycling infrastructure – Use of monomaterials instead of composite materials – Avoidance of paper-based labels – Avoidance of polymers with different densities – Colors should be as transparent as possible	– Use of unbleached cardboard – Use of FSC-certified (in exceptional cases PEFC-certified) raw materials – Use of alternative materials (e.g. silphium paper) – Use of mineral fillers instead of wet strength agents	– Avoidance of non-packaging glass and harmful additives – Use of as much recycled material as possible – Use of transparent standard colors	– Use of mono-materials with maximum possible PCR content

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Product categories

Beverages and liquid foods

The beverages and liquid foods category is characterized by comparatively few product variants, which include, for example, beer, wine, mineral water, carbonated beverages, fruit juices and oils.

The packaging types in this product category are mainly glass or plastic bottles with caps and labels, liquid packaging board (composite carton) with caps, and tinplate or aluminum cans with winders.

PET bottle has established itself as the most common packaging as well as in disposable and returnable segments, especially in water, soft drinks, and juice segments. In beer, the glass returnable bottle represents the most common packaging [1].

Detailed information under:

→ PET bottle (e.g., carbonated beverages) **Page 23**
→ Rigid packaging made from (HD)PE; bottle (e.g., lemon juice) **Page 35**
→ Fiber-based composite carton and liquid packaging board (e.g., milk) **Page 57**
→ Glass bottle, container and jar (e.g., wine) **Page 63**
→ Aluminum packaging (e.g., beer, carbonated beverages) **Page 66**
→ Tinplate packaging (e.g., beer, carbonated beverages) **Page 68**



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Meat and fish

This product category includes packaged fresh meat, meat preparations, meat-based products and packaged fish.

The most widely used packaging is MAP (Modified Atmosphere Packaging), which serves to improve shelf life and appearance. This is followed by vacuum packaging and the plastic bag. Plastic bag does not increase the shelf life of the product in comparison with MAP or vacuum packaging, therefore it is used rather rarely [1].

Detailed information under:

→ PET tray (MAP packaging) **Page 24**
→ Rigid packaging made from PP; tray (MAP packaging) **Page 35**
→ Paper packaging and paper-based composites (e.g., minced meat) **Page 60**



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Sausage and cheese

This product category includes to a large extent cold cuts, bratwurst, sliced cheese, or cream cheese.

The most common packaging is the MAP tray, followed by plastic film, vacuum packaging, plastic cup, and plastic bag. In rare cases, cardboard packaging, glass containers and cans are also used [1].

Detailed information under:

→ PET tray (MAP packaging, e.g., for cold cuts and sliced cheese) **Page 24**
→ Rigid packaging made from PP; tray (MAP packaging, e.g., for cold cuts and sliced cheese); **Page 43**
→ Flexible plastic packaging; film and bag (e.g., for mozzarella, film wrapped cheese or packaged cabanossi) **Page 50**
→ Rigid packaging from PS; cup (e.g., for cream cheese) **Page 31**
→ Rigid packaging from PP; cup (e.g., for cream cheese) **Page 39**
→ Paper packaging and paper-based composites (e.g., for film wrapped soft cheese in cardboard trays) **Page 60**
→ Glass container (e.g., for viennese sausages) **Page 63**



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Detergents and cleaning agents

This category includes, for example, detergents, glass cleaners, dishwashing liquids, dishwasher tabs, etc. The main materials used in this category are plastic bottles, cardboard packaging and plastic bags. Plastic is used in this category to a large extent as packaging material [1].

Detailed information under:

→ PET bottle (e.g., for glass cleaner or washing up liquid) **Page 23**
→ Rigid packaging from (HD)PE and PP; bottle (e.g., all-purpose cleaner or liquid detergent) **Page 35**
→ Flexible plastic packaging; film and bag (e.g., scrub sponges or disinfecting wipes) **Page 50**
→ Fiber-based composite carton and liquid packaging board (e.g. for liquid detergent or fabric softener) **Page 57**
→ Paper packaging and paper-based composites (e.g., for washing powder) **Page 60**



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Dairy products – liquid

This category includes, for example, drinking yogurt and milk. The packaging material is mostly liquid packaging board (composite carton). Besides liquid packaging board (composite carton), plastic bottles and plastic cups are used as well [1].

Detailed information under:

→ Fiber-based composite carton and liquid packaging board (e.g., for milk or soya beverages) **Page 57**
→ PET bottle (e.g., for milk beverages) **Page 23**
→ Rigid packaging from PS; cup (e.g., for milk beverages or whipped creme) **Page 31**
→ Rigid packaging from PP; cup (e.g., for milk beverages or whipped creme) **Page 39**
→ Glass bottles and jars (e.g., for coffee cream or milk) **Page 63**



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Dairy products – pasty

Article variations that belong to the category of dairy products are, for example, yogurt, pudding, quark or sour cream.

The plastic cup is the main type of packaging that is used. The plastic bucket is used less frequently and for larger packaging units. The use of plastic film in this category is limited only to certain items [1].

Detailed information under:

→ Rigid packaging from PS; cup and tray (e.g., for yogurts or quark) **Seite 31**
→ Rigid packaging from PP; cup and bucket (e.g., for yogurts or quark) **Seite 39**
→ Rigid packaging from PP; tray (e.g., for margarine) **Seite 43**
→ Flexible plastic packaging; film (e.g., for milk snacks) **Seite 50**
→ Glass container (e.g., for yogurt) **Seite 63**
→ Fiber-based composite carton and liquid packaging board **Seite 57**



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Dry food range

Products that fall into this category are, for example, cereals, confectionery, coffee, tea, pasta, or bulk goods such as flour or sugar.

Flow-wrap is the most commonly used type of packaging in this category due to its good formability or shapeability and light weight. Among others, cardboard packaging, cans, and films are also widely used in this category [1].

Detailed information under:

→ PET tray (e.g., for confectionery) **Page 24**
→ Rigid packaging from PP; tray (e.g., for confectionery) **Page 43**
→ Flexible plastic packaging; film and bag (e.g., for nuts, muesli, rice, toast or chocolate snacks) **Page 50**
→ Paper packaging and paper-based composites (e.g., for eggs, chocolates, muesli, flour or oatmeal) **Page 60**
→ Glass container (e.g., for instant coffee) **Page 63**
→ Aluminum packaging (cans for nuts and other snacks) **Page 66**
→ Tinplate packaging (cans for nuts and other snacks) **Page 68**



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Convenience

This category includes products intended for immediate consumption, such as delicatessen salads, ready meals, and meat substitutes.

For the packaging of these products, plastic trays are often used, especially MAP packaging. Flow-wraps, cups, and films are also frequently used. Packaging made of glass, metal or cardboard is also used to a minor extent [1].

Detailed information under:

→ PET tray
(MAP packaging, e.g., for ready meals and delicatessen salads) **Page 24**

→ Rigid packaging from PP; cup
(e.g., for hummus or ready-made salads) **Page 39**

→ Rigid packaging from PP; tray
(MAP packaging, e.g., for ready meals and delicatessen salads) **Page 43**

→ Flexible plastic packaging; film and bag
(e.g., for tortellini or puff pastry) **Page 50**

→ Paper packaging and paper-based composites
(e.g., for instant soups or ready-made sauces) **Page 60**



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Frozen products

The frozen category includes, for example, products such as ice cream, cakes, vegetables, meat, fish, and ready meals such as pizza, potato pockets, and French fries. The products are primarily packaged in cartons, bags, or films [1].

Detailed information under:

→ PET tray (e.g., for ice cream) **Page 24**
→ Rigid packaging from PP; tray (e.g., for ice cream) **Page 43**
→ Flexible plastic packaging out of PP and PE; bag (e.g., for frozen vegetables, popsicles in individual packaging, frozen fruits) **Page 50**
→ Paper packaging and paper-based composites (e.g., for popsicles in a bulk packaging, ice cream in a cup, frozen pizzas and other frozen ready-made products) **Page 60**



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Cosmetics

This category includes, for example, products such as single-use razors, deodorant sprays, toothbrushes, creams, or hair care products.

Possible packaging includes jar, bottle or dispenser, carton, film, tube, aerosol can or tubular bag. Most of the packaging in this category is made of plastic and glass, and the secondary packaging is usually made of cardboard [1].

Detailed information under:

→ PET bottle (or dispenser, e.g., for lotion or creams) **Page 23**
→ Rigid packaging made of (HD)PE and PP; bottles (or dispenser, e.g., for shampoo, soap, creams and other cosmetic products) **Page 35**
→ Rigid packaging made of (HD)PE and PP; tubes (e.g., for creams, lotion or toothpaste) **Page 47**
→ Flexible plastic packaging made of PP and PE; bags (e.g., for liquid soaps) **Page 50**
→ Applicators for brushes (e.g., for mascara or eyebrow pencils) **Seite 53**
→ Applicators for lip gloss and similar (e.g., for lip gloss) **Seite 55**
→ Paper packaging and paper-based composites (e.g., for make-up boxes) **Page 60**
→ Glass bottle and jar (e.g., perfume or creams) **Page 63**
→ Aluminum packaging (e.g., for spray deodorants) **Page 66**
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Delicatessen sauces

This category includes, for example, products such as ketchup, mustard, rémoulade or various barbecue sauces. Mostly, delicatessen sauces are packaged in plastic bottles, glass bottles/containers/jars or tubes [1].

Detailed information under:

→ PET bottle (e.g., for ketchup) **Page 23**
→ Rigid packaging made of (HD)PE and PP; bottles (e.g., for ketchup) **Page 35**
→ Rigid packaging made of (HD)PE and PP; tubes (e.g., for barbecue sauces) **Page 47**
→ Glass bottles and containers (e.g., for ketchup or barbecue sauces) **Page 63**
→ Aluminum packaging (e.g., mustard tubes or other sauces) **Page 66**
→ Tinplate packaging (e.g., mayonnaise tube or other sauces) **Page 68**



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Pet food

This category includes, for example, wet and dry food, chew sticks and other pet food products.

Metal cans or pouches are predominantly used for wet food. For dry food, the composite bag is mainly used as packaging, less frequently cardboard [1].

Detailed information under:

→ Flexible plastic packaging made of PP and PE; pouch (e.g., bags or pouches for dry food) **Page 50**
→ Paper packaging and paper-based composites (e.g., for cat litter) **Page 60**
→ Aluminum packaging (e.g., for wet food) **Page 66**
→ Tinplate packaging (e.g., for wet food) **Page 68**



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Spices

This category includes e.g., salt, pepper, basil, marjoram, spice blends and fix dishes.

Most spices are packed in glass containers (single use) with a plastic lid. Furthermore, especially fix mixes are mainly packed in sachets. Plastic films and cans are used for packaging spices in a limited way [1].

Detailed information under:

→ PET bottle (e.g., for spice grinder) **Page 23**
→ Flexible plastic packaging; films and bags/sachets (e.g., for bay leaves) **Page 50**
→ Paper packaging and paper-based composites (e.g., composite bags for spices or cardboard boxes for salt) **Page 60**
→ Glass containers (e.g., for spice jars) **Page 63**
→ Aluminum packaging (e.g., for spice jars) **Page 66**
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Canned food

This category includes product characteristics such as canned fruit and vegetables, pasta sauces or various ready meals.

Cans made of aluminum or tinplate and glass containers or jars are mainly used in this category. Packaging types made of cardboard or plastic are used rather rarely [1].

Detailed information under:

→ Paper-based composite packaging (e.g., strained tomatoes) **Page 60**
→ Glass containers (e.g., for vegetables) **Page 63**
→ Aluminum packaging (e.g., for sauces, vegetables, fish, etc.) **Page 66**
→ Tinplate packaging (e.g., for sauces, vegetables, fish, etc.) **Page 68**



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Fruits and vegetables

Packaging in the fruit and vegetable category includes plastic or paper trays, as well as plastic bags and plastic/cellulose nets. Good packaging alternatives in this category are loose goods, laser marking or label [1].

Packaging to use:



Priority 1: Unpacked or loose
- For products with natural protection, optionally with sticker, sleeve, label or laser engraving
- For products whose shelf life is not extended by packaging
- Coatings (e.g. wax): For easily perishable products that have a natural skin but must be protected from premature spoilage

Prio 2: Fiber-based packaging
- For products whose properties require packaging (e.g. for mechanical protection or for bundling several individual items)
- Optimally, fiber materials with silphium content
- Form to be used in the form of trays, banderoles, bags, wrappers & boxes

Priority 3: plastic packaging
- For products whose properties require packaging (e.g. for mechanical protection or for bundling several individual items)
- In the form of nets, bowls, banderoles, flow packs, bags, cups or pots
- Material selection:
  Priority 3.1: plastics PP or PE
  Priority 3.2: PET in exceptional cases
  (if selected: as high a proportion of recycled material as possible)

To avoid:
- Composite packaging made of several types of material
- Unwanted plastics PVC, PA, EPS (Styrofoam)
- Wooden boxes for sales packaging (less recyclable than corrugated board)

In general:
- Box inserts exclusively made of pulp (e.g. wood pulp or paper)
- Recommendation: use of EPS crates (reusable pool)
- Elimination of absorbent pads and unnecessary components.

Please contact Kaufland Packaging Management for detailed documents on packaging for fruit and vegetables and flowers and plants:
K-ST-EK-ORGA-PACKAGING@kaufland.com

Detailed information under:

→ PET trays (e.g., for tomatoes) **Page 24**
→ Rigid packaging made of (HD)PE and PP; trays (e.g., for tomatoes) **Page 43**
→ Flexible plastic packaging made of PP and (LD)PE (e.g., flow wrapping film for fruits & vegetables, girsack for citrus fruits) **Page 50**
→ Paper packaging and paper-based composites (e.g., carton cups/ trays for apples) **Page 60**

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Mandatory specifications and requirements

General

The following chapters present design requirements and recommendations for different types of packaging system and are intended to serve as guidelines for suppliers.

The main focus lies on recyclability, material reduction and further recommended measures and instructions.

The classification is based on the material of the main body of the primary packaging, i.e., each chapter is structured according to the material of the packaging's main body (e.g., PET bottle).

The packaging is considered in conjunction with all the related packaging elements. These include body/shape, color, barrier, closure, label/sleeve, adhesive, and inks.

Batch verification PCR: On request, it must be possible to immediately verify the recycled batch (granulate) used based on the batch coding. This includes complete batch traceability from the packaged product, through packaging, packaging distribution, packaging manufacturer to the raw material of the packaging and its certificate. Clear identification (No.) of the material must be ensured throughout the entire batch traceability. The documents must be provided in German or English. Further information can be found in the separate documents.

The headspace of the packaging must not mislead the consumer. Orientation value max 30 % when the product is not visible, and no technical necessity requires higher headspace.

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Plastics

Rigid packaging made from PET

PET bottle

The packaging includes, among others, products of the following product categories:

→ Beverages and liquid foods (e.g., mineral water) **Page 07**
→ Detergents and cleaning agents (e.g., all-purpose cleaner or liquid detergent) **Page 10**
→ Dairy products - liquid (e.g., milk) **Page 11**
→ Cosmetic (e.g., shampoo) **Page 16**
→ Delicatessen sauces (e.g., barbecue sauce) **Page 17**

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Mandatory specifications

- All national legal requirements must be complied with at all times (even in the event of changes)
- National deposit regulations must be observed
- Use of the highest possible amount of PCR material
- Single use plastice directive: min. 25 % rPET of total weight for beverages for EU countries
- Max. 50 % of the surface to be printed in solid black
- Use of recyclable, non-hazardous, non-toxic printing inks (EUPIA guidelines) [6]
- No dark material coloring using carbon black-based pigments that cannot be identified and sorted out by NIR [7, 21]
- No biodegradable/oxo-degradable plastics [6]
- Best possible optimisation of the packaging design [1]:
  - Reduction of weight in existing packaging
  - Elimination of unnecessary components
  - Reduction of the neck finish size
  - Optimization of thread geometry
  - Minimization of headspace
  - Use of nitrogen during filling (increases stability)
  - Stability grooves on the bottle
  - Bottle bottom ideal with quadruped base (if applicable)

Requirements PET bottle

	Specifications	In exceptional cases	To be avoided
Material	– Monomaterial (PET-A) [6]		– Composite material [6]
Material coloring	– Transparent clear or transparent light blue [6, 7] – Transparent light colors [6]	– Transparent dark colors [6]	– Other colored bottles – Opaque bottles [6, 7] – Fluorescence, metallic [6] – Coloring using carbon black-based pigments (also when used in inner layers) [7]
Barrier/ coating	– Ideally: no barrier [6, 7] – SiOx coating [6] – Carbon plasma-coating [6] – PA-MXD6 multilayer with < 6 % PA.MXD6 and no tie layers [6]	– PTN alloy [6] – PGA multilayer [6] – Max. 5 % PA-MXD6 multilayer with < 5 % PA-MXD6 and no tie layers [6]	– EVOH layers [6, 7, 8] – PA-MXD6 multilayer with > 5 % PA-MXd6 or with tie layers – Other blended barriers [6, 7]

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Requirements PET bottle			
	Specifications	**In exceptional cases**	**To be avoided**
Barrier/ coating		– PA monolayers (PET/PA) [6, 7, 8] – EVOH-Multilayer with < 3 % EVOH and no tie layers [6] – Monolayer PA-MXD6 blend [6]	– EVOH multilayer with > 3 % EVOH or with tie layers [6]
Additives	– Ideally: no additives [6]	– UV stabilizers – AA blockers [6] – Optical brighteners [6] – Oxygen scavengers [6] – PA additives [7]	– Bio-/oxo-/photodegradable additives [6] – Nanocomposites [6]
Closures	– Slip lid, screw cap: PE/PP [6] – Liners, seals and valves: PE, PE+EVA, PP Density < 1 g/cm³ [9] – If no color is defined for the closure, use neutral PE/PP without masterbatch – Cetie specifications for tethered caps must be observed: Containers with integrated neck finish: 25N minimum tear-off force – Closing/opening cycles for containers up to 3l: 12 cycles	– Silicone (density < 1 g/cm³) – Floatable TPE (for Liners, seals, and valves) [8]	– Thermosetting plastics [8] Materials with a density > 1 g/cm³ (PETG, POM, PVC, silicone etc.) [6, 7] – Glass and metal springs in pump systems [6] – Seals that cannot be completely removed [8] – Non-detachable or welded closures (except PET) [6] – Seals with different composite materials e.g., Plastic/Paper/ Aluminum
Labels/ sleeves	– Ideally: labels/(full body) sleeves made from materials with a density < 1 g/cm³ with integrated tear perforation	– EPS; foamed PET; lightly metallized labels (all with density < 0,95 g/cm³) [6]	– Large labels (taking up > 50 % of the surface) made from foreign material [7]

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Requirements PET bottle			
	Specifications	**In exceptional cases**	**To be avoided**
Labels/ sleeves	– 1st priority: PP, PE, OPP – 2nd priority: PET – 3rd priority: EPS, OPS, foamed PET – Adhesive: soluble in water/hot alkaline solution at 60–80 °C [6, 10] – Indication label size of the bottle: < 500ml: < 70 % of the surface < = 500ml: < 50 % of the surface [6]	– Paper labels without fiber losses [6]	– Full sleeve labeling with light barrier [7] – Labels/sleeves with density > 1 g/cm³ (PETG, POM, PVC, PS, PLA etc.) [6, 7] – Foamed PETG labels/sleeves (even with density < 1 g/cm³) [6, 7, 8] – Metallized labels/sleeves [6, 7] – Paper labels with fiber losses [6] – Non-washable labels [6] – Foamed PETG lables (even with density < 1 g/cm³) [6] – PET lables with washable inks [6] – Heavy printed sleeves [6]
Printing	– Direct printing: Inkjet and laser [6] – Laser marked, embossing [6]	– Production or expiry date (with minimal direct printing) [6]	– Any other direct printing [6, 7] – Inks that bleed [6] – Metallic inks [6]
Other	– No further components are recommended – Good residual emptying must be ensured [7]		– Metal pigments applied on a large scale (taking up > 50 % of the surface) (lacquering, coating, or embossing) [7] – Non-detachable or welded components (except PET) [6] – PVC or PVDC components [6] – Conventional glitter or biodegradable plastic glitter if removal/detachment/wash-off is not possible [11]

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PET tray

The packaging includes, among others, products of the following product categories:

→ Meat and fish (e.g., salmon fillet) **Page 08**
→ Sausage and cheese (e.g., sausage and cheese cold cuts) **Page 09**
→ Dry food range (e.g., cookies) **Page 13**
→ Convenience (e.g., ready meals and ready salads) **Page 14**
→ Frozen products (e.g., ice cream) **Page 15**
→ Fruits and vegetables (e.g., tomatoes) **Page 21**

Mandatory specifications

- All national legal requirements must be complied with at all times (even in the event of changes)
- Use of the highest possible amount of PCR material
- Max. 50 % of the surface to be printed in solid black
- Use of recyclable, non-hazardous, non-toxic printing inks
- No dark material coloring using carbon black-based pigments that cannot be identified and sorted out by NIR [7, 21]
- No biodegradable/oxo-degradable plastics [6]
- Best possible optimisation of the packaging design [1]:
  - Reduction of weight in existing packaging
  - Elimination of unnecessary components
  - Reduction of the thickness
  - Optimal surface/volume ratio
  - Geometry optimization of the top and bottom film (e.g. improvement of stability add ribs and cross struts; improvement of the thickness distribution)

Requirements PET tray

	Specifications	In exceptional cases	To be avoided
Material	– Monomaterial (PET-A) [6]		– PET based multilayer material (including PET/PE) [6] – Expanded PET (LDPET) [6]
Material coloring	– Transparent clear or transparent light blue [6, 7]		– Other transparent colors [6] – Opaque [6, 7] – Use of metal pigments [6] – Coloring using carbon black-based pigments (also when used in inner layers) [7]

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Requirements PET tray			
	Specifications	**In exceptional cases**	**To be avoided**
Barrier/ coating	– Ideally: no barrier [6] – PET based oxygen scavenger without yellowing effect after EPBP oven test [6]	– PET based oxygen scavenger with limited yellowing effect after EPBP oven test [6]	– EVOH layers [6] – PA layers [6] – Any other oxygen scavenger [6] – Any other barriers (except for sealing films, see "Closure") [6]
Additives	– Silicone surface coating [6] – Antiblocking masterbatch < 3 % [6]	– UV stabilizers [6] – AA blockers [6] – Optical brighteners [6] – Antiblocking masterbatch > 3 % [6] – Anti-stat agents [6] – Antiblocking agents [6] – Anti-fogging agents (on coated surfaces) [6]	– Bio/Oxo/Photodegradable additives [6] – Nanocomposites [6]
Closures	– Monomaterial (unprinted PET, PP, PE) – Plastics with density < 1 g/cm³ and easily removal from the tray and without glue residuals [6] – SiOx, AlOx plasma for barrier [6, 8]		– Any other film [6]
Labels/ sleeves	– Ideally: labels/(full body) s leeves made from materials with a density < 1 g/cm³ 1st priority: PP, PE, OPP 2nd priority: PET 3rd priority: EPS, OPS	– BPA-free paper labels without fiber losses [6]	– Large labels (taking up > 50 % of the surface) made from foreign material [7] – Plastic labels with density > 1 g/cm³ (also in more heavily printed and glued area) [6]

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Requirements PET tray			
	Specifications	**In exceptional cases**	**To be avoided**
Labels/ sleeves	– Adhesive: soluble in water/hot alkaline solution at 60–80 °C [6, 7]		– Non floating paper labels [6] – Paper labels with fiber losses [6] – Paper labels containing BPA [6] – Metallized labels/sleeves [6]
Printing	– Direct printing: Inkjet and laser 1st priority: Laser marked 2nd priority: Production or expiry date (with minimal direct printing) [6]		– Any other direct printing [6] – Inks that bleed [6]
Other	– Other components (like Soaker pads) made from: PET or materials with density < 1 g/cm³, e.g., HDPE, LDPE, PP [6, 8] – For absorbent pads, the following applies: clear separation instructions on the packaging body, leave no traces and have a density of < 1 g/cm³ [6]; – Material: 1st priority: paper, paperboard, cardboard 2nd priority: EPS – Good residual emptying must be ensured [7]	– Paper/cardboard not losing fibers [6, 8]	– Metal pigments applied on a large scale (taking up > 50 % of the surface) (lacquering, coating, or embossing) [7] – Non-detachable or welded components (except PET) [6] – PVC, PVDC, PS, EPS, PU, PA or PC/PMMA [6] – Conventional glitter or biodegradable plastic glitter if removal/detachment/wash-off is not possible [11]

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Rigid packaging made from PS

Cup and tray from PS

The packaging includes, among others, products of the following product categories:

→ Sausage and cheese (e.g., cream cheese) **Page 09**
→ Dairy products - liquid (e.g., milkshakes and coffee drinks) **Page 11**
→ Dairy products - pasty (e.g., yogurt and quark) **Page 12**

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Mandatory specifications

- All national legal requirements must be complied with at all times (even in the event of changes)
- Use of max. amount of PCR
- Max. 50 % of the surface to be printed in solid black
- Use of recyclable, non-hazardous, non-toxic printing inks
- Coloring using carbon black-based pigments that cannot be identified and sorted out by NIR [7, 21]
- No biodegradable/oxo-degradable plastics [6]
- Best possible optimisation of the packaging design [1]:
  - Reduction of weight in existing packaging
  - Elimination of unnecessary components
  - Reduction of the thickness
  - Optimum surface/volume ratio

Requirements Cup and tray from PS

	Specifications	In exceptional cases	To be avoided
Material	– Monomaterial PS [6] – Substitution by PET and PP-based packaging systems		– Composite material [6] – Foamed PS with a density < 1 g/cm³ [6]
Material coloring	– Light colors [6]	– Dark colors (NIR detectable) [6]	
Barrier/ coating	– Ideally: no barrier [6, 7] – EVOH ≤5 % with PE, which is provided with PMA tie layers with an EVOH/tie layers ratio ≤1 [6]	– EVOH > 5 % with PE, which is provided with PMA tie layers and EVOH/tie layers ration ≤1 [6] – EVOH < 1 % without tie layer [10]	– PA barrier [6] – PVDC barrier [6]

Requirements Cup and tray from PS			
	Specifications	**In exceptional cases**	**To be avoided**
Additives	– Ideally: no additives [6] – Additives that are unavoidable in processing, e.g., stabilizers, antioxidants, lubricants, nucleating agents, peroxides [6] – Density: 1,0-1,07 g/cm³ [6]	– Mineral fillers (CaCO3, talc) not increasing density > 1,07 g/cm³ [6]	– Additives not increasing density above 1,07 g/cm³ [6] – Bio/Oxo/Photodegradable additives [6]
Closures	– Ideally: closure made from PS [6]	– Sealing films made from PP, PE, paper without fiberloss [6] – Removable aluminium lidding [6]	– PET, PETG, PVC, PLA [6] – Materials other than PO or foamed materials of density < 1 g/cm³ [8] – Metals or metal-containing closures [6, 8] – PET/paper multilayer 'composite [10] – PET/PS multilayer composite (for sealing film) [8] – Non-detachable or welded closures (except PS)
Labels/ sleeves	– Ideally: labels/sleeves made from PS – Water-based adhesive - water-soluble or water-releasable (< 40 °C) [6]	– PP, PE, paper without fiber losses [6]	– Large labels (taking up > 50 % of the projected area) made from foreign material [7] – IML [6] – Paper labels with fiber losses [6] – Other plastics or multilayers with density 1,00 – 1,08 g/cm³ (e.g., PET; PETG; PVC; PLA) [6] – Metallized labels/sleeves [8]

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Requirements Cup and tray from PS			
	Specifications	**In exceptional cases**	**To be avoided**
Printing	– Laser marking or embossing [6] – Production or best-before date [6] – Direct printing (color + varnish) < 1 % of the total packaging (dark colors excluded) [6]		– PVC binders
Other	– Other components: ideally made from PS, easily detachable by user or during sorting process – Good residual emptying must be ensured [7]		– Metal pigments applied on a large scale (taking up > 50 % of the projected area) (lacquering, coating, or embossing) [7] – Other materials with density > 1 g/cm³ [6, 8] – Metal, metal foil [6, 8] – PVC or PVDC components [6, 8] – Conventional glitter or biodegradable plastic glitter if removal/detachment/wash-off is not possible [11]

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Rigid packaging made from (HD)PE and PP

Bottle from (HD)PE and PP

The packaging includes, among others, products of the following product categories:

→ Beverages and liquid foods (e.g., lemon juice) **Page 07**
→ Detergents and cleaning agents (e.g., all-purpose cleaner or liquid detergent) **Page 10**
→ Cosmetics (e.g., shampoo) **Page 16**
→ Delicatessen sauces (e.g., ketchup) **Page 17**

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Mandatory specifications

- All national legal requirements must be complied with at all times (even in the event of changes)
- Use of max. amount of PCR
- Max. 50 % of the surface to be printed in solid black
- Use of recyclable, non-hazardous, non-toxic printing inks
- No dark material coloring using carbon black-based pigments that cannot be identified and sorted out by NIR [7, 21]
- No biodegradable/oxo-degradable plastics [6]
- Best possible optimisation of the packaging design [1]:
  - Reduction of wall thickness
  - Omission of the spout or use of the same material as the main body
  - Reduction of the bottle mouth
  - Reduction of the bottle opening
  - Optimization of thread geometry
  - Minimization of headspace
  - Insertion of stability pinches in the waist of the bottle
  - Adding stability grooves to the bottle (Rib, stiffening, groove)
  - Reinforcement/introduction of waisted shape
  - Bottle bottom ideal with quadruped base (if applicable)
  - Conical lid design for headspace bottles

Requirements Bottle from (HD)PE and PP

	Specifications	In exceptional cases	To be avoided
Material	– Monomaterial (> 95 %) HDPE od PP [6] – Minimal proportion of other foreign materials (TPO < = 10 %) [6]	– Multilayer structure (excluding PE/PP EVOH) [7]	– Multilayer with PLA; PVC; PS; PET; PETG [6] – Non-PO plastics with density < 1 g/cm³ [6, 7] – Foamed non-thermoplastic elastomers [7] – Non-PO plastics [12]
Material coloring			– TPO (containing rubber, e.g., EPDM) [6] – PE-X components [7]

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Requirements Bottle from (HD)PE and PP			
	Specifications	**In exceptional cases**	**To be avoided**
Barrier/ coating	– EVOH < 5 % [6, 7, 10] – SiOx Plasma coating [6]		– PA barrier [7, 12] – PVDC barrier [7, 12] – Aluminum [6, 12] – Metallization, PVOH [6] – Plasma fluorination [6]
Additives		– Additives that are unavoidable in processing, e.g., stabilizers, antioxidants, lubricants, nucleating agents, peroxides – Density < 0,97 g/cm³ [6]	– Additives changing the material density > 1 g/cm³ [6] – Flame-retardant additives [6] – Bio/Oxo/Photodegradable additives [6] – PU > 4,5 % [6]
Closures	– Ideally: same material as the main component [6, 7] – PP/PE with density < 1 g/cm³, easily separable without residues [6] – Liner: plastic/paper composite/ aluminum	– Silicone [7]	– Non-PO or foams (density < 1 g/cm³) [6] – Aluminium, metal, PVC [6]
Labels/ sleeves	– Ideally: Label/sleeve made of the same material as the main component (density < 1 g/cm³) [6]		– Large labels (taking up > 50 % of the surface) made from foreign material [7] – Full sleeve label [7] – Labels that hinder the recognition of the PE/PP [6]

Requirements Bottle from (HD)PE and PP			
	Specifications	**In exceptional cases**	**To be avoided**
Labels/ sleeves	– PE/PP sleeve (density < 1 g/cm³) [6] – Labels containing fibers if the cellulose content peels off during cold washing [7] – Water-based adhesive - water-soluble or water-releasable (< 40 °C) [6]		– Labels/sleeves in non-PO materials with density < 1 g/cm³ [6] – Sleeves made from PET with density < 1 g/cm³ [7] – Paper labels with fiber losses [6] – IML made from paper/ cardboard [6] – Aluminium/PVC/metallized labels/sleeves [6] – Non-water-soluble adhesives that do not peel at < 40 °C [6] – Non removable or partially removable labels [6] – Labels containing fibers if the cellulose content does not peel off during cold washing [7]
Printing	– Laser marking (Production or best-before date) [6]		– PVC binder [6]
Other	– Recycled material content > 30 % of total packaging weight, if possible (e.g., Detergents, cleaning agents and cosmetics rinse off) – Good residual emptying must be ensured [6]		– Metal pigments applied on a large scale (taking up > 50 % of the surface) (lacquering, coating, or embossing) [7] – PE-X components – Conventional glitter or biodegradable plastic glitter if removal/detachment/wash-off is not possible [11]

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Cup and bucket from (HD)PE and PP

The packaging includes, among others, products of the following product categories:

→ Sausage and cheese (e.g., cream cheese) **Page 09**
→ Dairy products - liquid (e.g., milk drinks or whipped cream) **Page 11**
→ Dairy products - pasty (e.g., yogurt or quark) **Page 12**
→ Convenience (e.g., hummus) **Page 14**

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Mandatory specifications

- All national legal requirements must be complied with at all times (even in the event of changes)
- Use of recyclable, non-hazardous, non-toxic printing inks
- No dark material coloring using carbon black-based pigments that cannot be identified and sorted out by NIR [7, 21]
- No biodegradable/oxo-degradable plastics [6]
- Max. 30 % headspace (free space of the filling height), if product is not visible
- Best possible optimisation of the packaging design [1]:
  - Elimination of unnecessary components
  - Reduction of packaging thickness
  - Optimum surface/volume ratio
  - Checking the cup and filling level

Requirements Cup and bucket from (HD)PE und PP

	Specifications	In exceptional cases	To be avoided
Material	– Monomaterial (> 95 %) HDPE od PP [6] – Minimal proportion of other foreign materials (TPO < = 10 %) [6]	– Multilayer structure (excluding PE/PP EVOH) [7]	– Multilayer with PLA; PVC; PS; PET; PETG [6] – Non-PO plastics with density < 1 g/cm³ [6, 7] – Foamed non-thermoplastic elastomers [7] – Non-PO plastics [12] – TPO (containing rubber, e.g., EPDM) [6] – PE-X components [7]
Material coloring	– Transparent, translucent, white, unpigmented [6, 7]		– Coloring using carbon black-based pigments (also when used in inner layers) [7]

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Requirements Cup and bucket from (HD)PE und PP			
	Specifications	**In exceptional cases**	**To be avoided**
Barrier/ coating	– EVOH < 5 % [6, 7, 10] – Metallization (in the middle layer) [7] – SiOx plasma coating [6]		– PA barrier [7, 12] – PVDC barrier [7, 12] – Aluminium (lamination) [6, 10] – Metallization, PVOH [6] – Plasma fluorination [6]
Additives		– Additives that are unavoidable in processing, e.g., stabilizers, antioxidants, lubricants, nucleating agents, peroxides – Density < 0,97 g/cm³ [6]	– Additives changing the material density > 1 g/cm³ [6] – Flame-retardant additives [6] – Bio/Oxo/Photodegradable additives [6] – PU > 4,5 % [6]
Closures	– Ideally: same material as the main component [6, 7]		– Non-PO or foams (density < 1 g/cm³) [6]
Labels/ sleeves	– Preferred decoration options: 1st priority: direct printing 2nd priority: IML (same material type) 3rd priority: Label (same material type) – Ideally: Label/sleeve made of the same material as the main component (density < 1 g/cm³) [6] – PE/PP sleeve (density < 1 g/cm³) [6]		– Large labels (taking up > 50 % of the surface) made from foreign material [7] – Full sleeve label [7] – Labels that hinder the recognition of the PE/PP [6] – Labels/sleeves in non-PO materials with density < 1 g/cm³ [6] – Paper labels with fiber losses [6] – IML made from paper/ cardboard [6]

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Requirements Cup and bucket from (HD)PE und PP			
	Specifications	**In exceptional cases**	**To be avoided**
Labels/ sleeves	– Labels containing fibers if the cellulose content peels off during cold washing [7] – Water-based adhesive - water-soluble or water-releasable (< 40 °C) [6]		– Aluminium/PVC/metallized labels/sleeves [6] – Non-water-soluble adhesives that do not peel at < 40 °C [6] – Non removable or partially removable labels [6]
Printing	– Laser marking (Production or best-before date) [6]		– PVC binder [6]
Other	– Good residual emptying must be ensured [6]		– Metal pigments applied on a large scale (taking up > 50 % of the surface) (lacquering, coating, or embossing) [7] – Silicone components [7] – PE-X components [7] – Conventional glitter or biodegradable plastic glitter if removal/detachment/ wash-off is not possible [11]

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Tray from (HD)PE and PP

The packaging includes, among others, products of the following product categories:

→ Fresh meat and fish (e.g., grilled meat) **Page 08**
→ Sausage and cheese (e.g., cold cuts) **Page 09**
→ Dairy products - pasty (e.g., margarine) **Page 12**
→ Dry food range (e.g., cookies) **Page 13**
→ Convenience (e.g., ready meals and ready salads) **Page 14**
→ Frozen products (e.g., ice cream) **Page 15**
→ Fruits and vegetables (e.g., tomatoes) **Page 21**

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Mandatory specifications

- All national legal requirements must be complied with at all times (even in the event of changes)
- Max. 50 % of the surface to be printed in solid black
- Use of recyclable, non-hazardous, non-toxic printing inks
- No dark material coloring using carbon black-based pigments that cannot be identified and sorted out by NIR [7, 21]
- No biodegradable/oxo-degradable plastics [6]
- Best possible optimisation of the packaging design [1]:
  - Elimination of unnecessary components
  - Reduction of packaging thickness
  - Optimum surface/volume ratio
  - Switching to the thermoforming process, if shells and lids are produced by injection molding
  - Installation of ribs (longitudinal ribs and cross braces) to improve shell height (check filling height accordingly)
  - Introduction of thin-wall injection molding, if deep drawing is not possible

Requirements Tray from (HD)PE and PP

	Specifications	In exceptional cases	To be avoided
Material	– Monomaterial (> 95 %) HDPE od PP [6] – Minimal proportion of other foreign materials (TPO < = 10 %) [6]	– Multilayer structure (excluding PE/PP EVOH) [7] – Plasma Fluorination [6]	– Different types of plastic used on front and back sides [7] – Multilayer with PLA; PVC; PS; PET; PETG [6] – Non-PO plastics with density < 1 g/cm³ [6, 7] – Foamed non-thermoplastic elastomers [7] – Non-PO plastics [12] – TPO (containing rubber, e.g., EPDM) [6]
Material coloring	– Transparent, translucent, white, unpigmented [6, 7]		– Coloring using carbon black-based pigments (also when used in inner layers [7]

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Requirements Tray from (HD)PE and PP			
	Specifications	**In exceptional cases**	**To be avoided**
Barrier/ coating	– EVOH < 5 % [6, 7, 10] – SiOx Plasma Coating [6]	– PVDC, PA [6] – Metallization (except metallized inside/in the middle layer) [6, 7]	– Aluminium (lamination) [6, 12] – PVOH > 1 % [6]
Additives		– Additives that are unavoidable in processing, e.g., stabilizers, antioxidants, lubricants, nucleating agents, peroxides – Density < 0,97 g/cm³ [6]	– Additives changing the material density > 1 g/cm³ [6] – Flame-retardant additives [6] – Bio/Oxo/Photodegradable additives [6] – Polyurethanes and water-based acrylics > 5 % [6]
Closures	– Ideally: same material as the main component [6, 7] – PP/PE with density < 1 g/cm³, easily separable without residues [6, 7]	– PET: PETG; PLA; PS (all with density > 1 g/cm³) [6]	– Non-PO or foams (density < 1 g/cm³) [6] – Aluminium, metal, PVC [6]

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Requirements Tray from (HD)PE and PP			
	Specifications	**In exceptional cases**	**To be avoided**
Labels/ sleeves	– Ideally: Label/sleeve made of the same material as the main component (density < 1 g/cm³) [6] – PE/PP sleeve (density < 1 g/cm³) [6] – Labels containing fibers if the cellulose content can be removed under cold wash conditions [7] – Water-based adhesive - water-soluble or water-releasable (< 40 °C) [6]		– Large labels (taking up > 50 % of the projected surface) made from foreign material [7] – Full sleeve label [7] – Labels that hinder the recognition of the PE/PP [6] – Labels/sleeves in non-PO materials with density < 1 g/cm³ [6] – Sleeves made from PET with density < 1 g/cm³ [7] – Paper labels with fiber losses [6] – IML made from paper/ cardboard [6] – Aluminium/PVC/metallized labels/sleeves [6] – Non-water-soluble adhesives that do not peel at < 40 °C [6]
Printing	– Laser marking (Production or best-before date) [6]		– PVC binder [6]
Other	– Good residual emptying must be ensured [6]		– Metal pigments applied on a large scale (taking up > 50 % of the surface) (lacquering, coating, or embossing) [7] – PE-X components [7, 12] – Silicone components [7] – Conventional glitter or biodegradable plastic glitter if removal/detachment/ wash-off is not possible [11]

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Tube from (HD)PE and PP

The packaging includes, among others, products of the following product categories:

→ Cosmetics (e.g., creams and toothpaste) **Page 16**
→ Delicatessen sauces (e.g., barbecue sauces) **Page 17**

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Mandatory specifications

- All national legal requirements must be complied with at all times (even in the event of changes)
- Use of the highest possible amount of PCR material
- Max. 50 % of the surface to be printed in solid black
- Use of recyclable, non-hazardous, non-toxic printing inks
- No dark material coloring using carbon black-based pigments that cannot be identified and sorted out by NIR [7, 21]
- No biodegradable/oxo-degradable plastics [6]
- Best possible optimisation of the packaging design [1]:
  - Adaptation of the packaging size to the contents and the smallest possible weld seam

Requirements Tube from (HD)PE and PP

	Specifications	In exceptional cases	To be avoided
Material	– Monomaterial (> 95 %) HDPE od PP [6] – Minimal proportion of other foreign materials (TPO < = 10 %) [6]		– Multilayer with PLA; PVC; PS; PET; PETG [6] – Non-PO plastics with density < 1 g/cm³ [6, 7] – Foamed non-thermoplastic elastomers [7] – Non-PO plastics [12] – TPO (containing rubber, e.g., EPDM) [6]
Material coloring	– Transparent, translucent, white, unpigmented [6, 7]		
Barrier/ coating	– EVOH < 5 % [6, 7, 10] – Metallization (in the middle layer) [7] – SiOx Plasma Coating [6]		– PA barrier [7, 12] – PVDC barrier [7, 12] – Aluminium (lamination) [6, 12] – PVOH > 1 % [6]

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Requirements Tube from (HD)PE and PP			
	Specifications	**In exceptional cases**	**To be avoided**
Additives		– Additives that are unavoidable in processing, e.g., stabilizers, antioxidants, lubricants, nucleating agents, peroxides – Density < 0,97 g/cm³ [6]	– Additives changing the material density > 1 g/cm³ [6] – Flame-retardant additives [6] – Bio/Oxo/Photodegradable additives [6] – Polyurethanes and water-based acrylics > 5 % [6]
Closures	– Ideally: same material as the main component [6, 7] – PP/PE with density < 1 g/cm³, easily separable without residues [6]		– Non-PO and/or foams (density < 1 g/cm³) [6] – Aluminium, metal, PVC [6]
Labels/ sleeves	– Labels containing fibers if the cellulose content can be removed under cold wash conditions [7] – Water-based adhesive - water-soluble or water-releasable (< 40 °C) [6]		– Aluminium/PVC/metallized labels/sleeves [6] – Non-water-soluble adhesives that do not peel at < 40 °C [6]
Printing	– Direct printing – Laser marking (Production or best-before date) [6]		– PVC binder [6]
Other	– Good residual emptying must be ensured [6]		– Metal pigments applied on a large scale (taking up > 50 % of the surface) (lacquering, coating, or embossing) [7] – PE-X components [7] – Silicone components [7] – Conventional glitter or biodegradable plastic glitter if removal/detachment/ wash-off is not possible [11]

Flexible plastic packaging from PP and PE

Film and bag from PP and PE

The packaging includes, among others, products of the following product categories:

→ Sausage and cheese (e.g., cheese) **Page 09**
→ Detergents and cleaning agents (e.g., cleaning sponges) **Page 10**
→ Dairy products - pasty (e.g., milk snacks) **Page 12**
→ Dry food range (e.g., nuts) **Page 13**
→ Convenience (e.g., tortellini) **Page 14**
→ Frozen products (e.g., popsicles) **Page 15**
→ Cosmetics (e.g., liquid soap) **Page 16**
→ Pet food (e.g., dry food) **Page 18**
→ Spices (e.g., bay leaves) **Page 19**
→ Fruits and vegetables (e.g., peppers) **Page 21**

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- All national legal requirements must be complied with at all times (even in the event of changes)
- Use of the highest possible amount of PCR material
- Max. 50 % of the surface to be printed in solid black
- Use of recyclable, non-hazardous, non-toxic printing inks
- No dark material coloring using carbon black-based pigments that cannot be identified and sorted out by NIR [7, 21]
- No biodegradable/oxo-degradable plastics [6]
- Best possible optimisation of the packaging design [1]:
  - Optimum surface/volume ratio
  - Reduction of the film thickness
  - Adjustment of the format, e.g. reduction of the packaging with unchanged filling content

Requirements Film and bag from PP and PE

	Specifications	In exceptional cases	To be avoided
Material	– Monomaterial, PE or PP with proportion of other foreign materials < 5 % (printing inks and coating) [6] – Composites of one material type (> 90 %) PE or PP with the use of barrier layer and adhesive/printing	– PO (combinations of PP and PE)	– Different types of plastic used on front and back sides [7] – Multilayer with PET – Non-polymeric layers [7, 12]
Material coloring	– Light, translucent, unpigmented, transparent [6, 7]		– Non NIR-detectable colors [6]
Barrier/ coating	– Barrier layers in the same polymer matrix [6] – SiOx and AlOx without additional coating [6, 7] – EVOH < 5 % [6, 7, 10] – Metallization (coating) in the middle layer [7]	– PA-6 or Co-PA 6/6.6 in coextruded PE/PA films without EVOH, combined with PMA-grafted PE as an adhesive at a ratio of at least 0.5g of adhesive per 1g of PA [7]	– PVC, PVDC, PA [6, 12] – Foaming agents used as expanding chemical agents [6] – Laminated aluminum foil [6] – EVOH > 5 % (in PO laminate) [6]

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Requirements Film and bag from PP and PE			
	Specifications	**In exceptional cases**	**To be avoided**
Additives	– Additives that do increase the density higher than 0,97 g/cm³ [6]		– Bio/Oxo/Photodegradable additives [6]
Closures	– Ideally: same material as the main component [6, 7]		– Metal, aluminium, PVC, PET, PETG, PS, PLA – Non-PO or foamed closures (density < 1 g/cm³) [6] – Silicone components [6]
Labels/ sleeves	– Ideally: Label/sleeve made of the same material as the main component [6] – Fiber-based labels that peel off during cold washing [7] – Water-based adhesive - water-soluble or water-releasable (< 40 °C) [6]		– Large labels (taking up > 50 % of the surface) made from foreign material [7] – Full sleeve label [7] – Metallized labels [6] – Paper labels with fiber losses [6] – Non-water-soluble adhesives that do not peel at < 40 °C [6]
Printing	– Laser marking and ink-jet (Production or best-before date) [6]	– NC-based printing inks in intermediate layer printing [7]	
Other	– Good residual emptying must be ensured [6]		– Metal pigments applied on a large scale (taking up > 50 % of the surface) (lacquering, coating, or embossing) [7] – PE-X components [7, 12] – PVDC layers [7] – PA layers [7] – Silicone components [7] – Conventional glitter or biodegradable plastic glitter if removal/detachment/wash-off is not possible [11]

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Applicators

Applicators for brushes

The packaging includes, among others, products of the following product categories:

→ Cosmetics
(e.g., mascara or eyebrow pencils) **Page 16**

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Mandatory specifications

- All national legal requirements must be complied with at all times (even in the event of changes)
- Max. 50 % of the surface to be printed in solid black
- Use of recyclable, non-hazardous, non-toxic printing inks
- No dark material coloring using carbon black-based pigments that cannot be identified and sorted out by NIR [7, 21]
- No biodegradable/oxo-degradable plastics [6]
- Best possible optimisation of the packaging design [1]:
  - Optimum surface/volume ratio
  - Adjustment of the format, e.g. reduction of the packaging with unchanged filling content

Requirements Applicators for brushes

	Specifications	In exceptional cases	To be avoided
Material	– Brush made of PP with metallic wire [13]	– Brush made of PA if density > 1 g/cm³ and proportion < 5 % [13]	
Material coloring	– Paint/metal coatings on a maximum of 50 % of the surface	– Dark/black color scheme without the use of carbon black-based paints [13]	
Other	– Packaging should be designed in such a way that it can be easily emptied of residues [13]		

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Applicators for lip gloss and similar

The packaging includes, among others, products of the following product categories:

→ Cosmetics
(e.g., Lip gloss and correcting pencils) **Page 16**



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Mandatory specifications

- All national legal requirements must be complied with at all times (even in the event of changes)
- Max. 50 % of the surface to be printed in solid black
- Use of recyclable, non-hazardous, non-toxic printing inks
- No dark material coloring using carbon black-based pigments 'that cannot be identified and sorted out by NIR [7, 21]
- No biodegradable/oxo-degradable plastics [6]
- Best possible optimisation of the packaging design [1]:
  - Optimum surface/volume ratio
  - Adjustment of the format, e.g. reduction of the packaging with unchanged filling content
- Components that are essential for the functionality of the product are excluded from the specifications

Requirements Applicators for lip gloss and similar

	Specifications	In exceptional cases	To be avoided
Material	– Made from an elastomer & remaining components from PE/PP (density < 1 g/cm³) [13]		
Material coloring	– Paint/metal coatings on a maximum of 50 % of the surface	– Dark/black color scheme without the use of carbon black-based paints [13]	– Color design using carbon black-based paints [13]
Barrier/ coating			– Elastomers that are flocked with PA [13]
Other	– Applicators are positively and non-positively connected [13] – Packaging should be designed in such a way that it can be easily emptied of residues [13]		– Material-locking connection (bonding/welding) [13]

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Paper, paperboard, cardboard

Fiber-based composite carton and liquid packaging board

The packaging includes, among others, products of the following product categories:

→ Beverages and liquid foods (e.g., orange juice) **Page 07**
→ Detergents and cleaning agents **Page 10**
→ Dairy products - liquid (e.g., milk) **Page 11**
→ Dairy products – pasty **Page 12**
→ Delicatessen sauces **Page 17**
→ Canned food **Page 20**

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Mandatory specifications

- All national legal requirements must be complied with at all times (even in the event of changes)
- Max. 50 % of the surface in full-tone black printing
- Use of recyclable, non-hazardous, non-toxic printing inks [19]
- Use of FSC-certified raw materials
- No deviations from the standard structure (no wet-strength cardboard, PE ± aluminium) [7]
- Water-soluble or redispersible adhesive applications as well as polymeric thermoplastic dispersion coatings with proof that they do not cause incompatibility in the recycled material (PTS - RH 021/97 or INGEDE Method 12) [7]
- Best possible optimisation of the packaging design [1]:
  - Reduction of the plastic content (alternative closure concepts, use of formats/models with low plastic content)
  - Reduction of wall thicknesses
  - Reduction of the opening
  - Elimination of aluminum barrier

Requirements Liquid packaging board

	Specifications	In exceptional cases	To be avoided
Material	– Foreign material must be kept as low as possible – Unbleached cardboard		– Avoidance of bio-PE from sugar cane as an alternative raw material – Avoidance of MOSH/MOAH or the specified limit value from the contract documents must not be exceeded [14, 15]
Material coloring			– Coloring using carbon black-based pigments
Barrier/ coating	– Ideally: no additional barrier – Use of recycled aluminum if an aluminum barrier is necessary		

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Requirements Liquid packaging board			
	Specifications	**In exceptional cases**	**To be avoided**
Additives	– Mineral fillers such as kaolin, talc, calcium carbonate and titanium dioxide (white pigment) [16] – Starch (binder) [16]		– Wet strength agents [16] – Exception: proof that recovery and recycling of the fibers is possible (PTS Method PTS-RH 021/97) [7]
Closures	– Ideally: no closure – Use of tethered caps made of PP/HDPE, which can be easily separated from the other packaging components in the pulper [8]	– Unattached closures [8]	
Labels/ sleeves	– Ideally: no additional label – Softening temperature of the adhesive (according to R&B): ≥ 68 °C, layer thickness (non-reactive adhesives): ≥ 120 µm, layer thickness (reactive adhesives): ≥ 60 µm, horizontal dimension of the adhesive application (in either direction): ≥ 1.6 mm) [7]		
Printing		– UV inks	– Inks containing mineral oil [8] – Fully lacquered surface (excluding clear protective lacquer up to a thickness of < = 5 micrometer) [7] – Metal pigments applied over large areas
Other	– Good residual emptying must be ensured [7]		

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Paper packaging and paper-based composites

The packaging includes, among others, products of the following product categories:

→ Meat and fish (e.g., minced meat in cardboard cup with plastic coating) **Page 08**
→ Sausage and cheese (e.g., cream cheese) **Page 09**
→ Detergents and cleaning agents (e.g., dishwashing salt) **Page 10**
→ Dry food range (e.g., pasta) **Page 13**
→ Convenience (e.g., mashed potatoes) **Page 14**
→ Frozen products (e.g., creamed spinach) **Page 15**
→ Cosmetics (e.g., cosmetic wipes) **Page 16**
→ Pet food (e.g., dry food) **Page 18**
→ Spices (e.g., bay leaves) **Page 19**
→ Fruits and vegetables (e.g., tomatoes) **Page 21**

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Mandatory specifications

- All national legal requirements must be complied with at all times (even in the event of changes)
- Max. 50 % of the surface to be printed in solid black
- Use of recyclable, non-hazardous, non-toxic printing inks [19]
- Use of FSC-certified raw materials
- For paper-based composites: preference is given to packaging solutions, in which the coating can be separated from the paper/board without fiber losses
- No dark material coloring using carbon black-based pigments that cannot be identified and sorted out by NIR [7]
- No water-insoluble or non-redispersible adhesive applications and polymeric thermoplastic dispersion coatings, unless it is proven that they do not lead to incompatibilities in the recyclate (PTS - RH 021/97 or INGEDE method 12) [7]
- Best possible optimisation of the packaging design [1]:
  - Reduction of the grammage
  - Reduction of the thickness
  - Adaptation of the dimensions to the product
  - Reduction of coating for laminates

Requirements Paper packaging and paper-based composites

	Specifications	In exceptional cases	To be avoided
Material	– Check the possibility of using silphium material – Use of recycled material (except in direct food contact) [17]		– Avoidance of MOSH/MOAH or the specified limit value from the contract documents must not be exceeded [14, 15]
Material coloring			– Coloring using carbon black-based pigments
Barrier/ coating	– Ideally: no additional barrie	– Single side internally coated material with foreign content < 5 % [7] – Peelable coating [17]	– Wax coating [16] – Lamination – Silicone paper/siliconization. Exception: water-based agents [16]

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Requirements Paper packaging and paper-based composites			
	Specifications	**In exceptional cases**	**To be avoided**
Additives	– Mineral fillers such as kaolin, talc, calcium carbonate and titanium dioxide (white pigment) [16] – Starch (binder) [16]		– Wet strength agents [16] – Exception: proof that recovery and recycling of the fibers is possible (PTS Method PTS-RH 021/97) [7] – Per- and polyfluorinated chemicals [18]
Labels/ sleeves	– Ideally: no additional label – Softening temperature of the adhesive (according to R&B): ≥ 68 °C, layer thickness (non-reactive adhesives): ≥ 120 µm, layer thickness (reactive adhesives): ≥ 60 µm, horizontal dimension of the adhesive application (in either direction): ≥ 1.6 mm) [7]		– Additional adhesive applications for sealing folding boxes or pressure-sensitive labels
Printing		– UV inks	– Inks containing mineral oil [8] – Fully lacquered surface excluding clear protective lacquer up to a thickness of < = 5 micrometer [7]
Other	– Good residual emptying must be ensured [7]	– Staples, adhesive tapes, viewing windows and other plastic components that can be separated from the paper without fiber loss	– Viewing windows and other plastic components that cannot be easily separated from the paper [8]

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Glass

Bottle, container and jar from glass

The packaging includes, among others, products of the following product categories:

→ Beverages & liquid food (e.g., mineral water) **Page 07**
→ Dairy products - liquid (e.g., milk) **Page 11**
→ Dry food range (e.g., sweets) **Page 13**
→ Cosmetics (e.g., face creams) **Page 16**
→ Delicatessen sauces (e.g., cocktail sauce) **Page 17**
→ Spices (e.g., pepper) **Page 19**
→ Canned food (e.g., jam) **Page 20**

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Bottle, container and jar from glass

Mandatory specifications

- All national legal requirements must be complied with at all times (even in the event of changes)
- Use of recyclable, non-hazardous, non-toxic printing inks
- Lead, cadmium, mercury and chromium VI must not be deliberately added as components during production
- Best possible optimisation of the packaging design [1]:
  - Adjustment of the wall thickness and the bottom

Requirements Bottle, container and jar from glas

	Specifications	In exceptional cases	To be avoided
Material	– Use as much recyclate as possible (CO_2 emissions from packaging production can be reduced by up to 30 % using waste glass)		– Heat resistant glass e.g., borosilicate glass) [7, 8] – Lead crystal or cryolite glass [7] – Enamel constituents [8] – Glass packaging with metal nets [7] – Demijohns (bottles covered with a basket) [7] – Glass packaging with ceramic components [7] – Barium glass
Material coloring	– Transparent clear (white) – Transparent green – Transparent brown	– Other colors – Metallic colors	– Coloring that falls below an optical transmittance of 10 % [7]

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Bottle, container and jar from glass

Requirements Bottle, container and jar from glas			
	Specifications	**In exceptional cases**	**To be avoided**
Closures	– Ferromagnetic metals (alloys) – Plastic – Aluminium		– Ceramic – Spray heads with components made of polyoxymethylene – Swing tops with non-ferromagnetic metal shares only [7] – Clip-on closures with ceramic/porcelain content [8] – PVC [8] – BPA [8]
Labels/ sleeves	– Paper labels (wet strength) and sleeves < 50 % of the packaging surface – Adhesives: water-/ hot caustic soluble at 60-80°		– Labels with a low permeability e.g., lacquered labels, plastic labels – Non-washable plastic labels – Full-surface sleeves (exception: perforated and separable) [8] – Waterproof/hydrophobic adhesive labels [7]
Printing	– Unprinted – Direct printing	– Fully printed/coated	– Coating that causes the optical transmittance to fall below 10 % [7] – Ceramic colors

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Metal

Aluminium packaging

The packaging includes, among others, products of the following product categories:

→ Beverages & liquid food (e.g., energy and soft drinks) Page 07
→ Dry food range (e.g., chocolate) Page 13
→ Cosmetics (e.g., hair and deodorant sprays) Page 16
→ Delicatessen sauces (e.g., mustard tubes) Page 17
→ Pet food (e.g., wet food) Page 18
→ Canned food (e.g., mackerel fillets) Page 20

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Aluminium packaging | Tinplate packaging

○ ●

Mandatory specifications

- All national legal requirements must be complied with at all times (even in the event of changes)
- Use of recyclable, non-hazardous, non-toxic printing inks
- Best possible optimisation of the packaging design [1]:
  - Elimination of unnecessary components
  - Reduction of the thickness (wall thicknesses partly below 0.1 mm)
  - Optimum surface/volume ratio
  - Reduction of the heat-sealing lacquer layer (aluminum blanks), if possible

Requirements Aluminium packaging

	Specifications	In exceptional cases	To be avoided
Material	– Monomaterial with maximum PCR content (CO_2 emissions from packaging production can be reduced by up to 30 % using waste aluminum)		– Plastic and ferrous composite materials [8]
Closures	– Material-identical closures and foils made of aluminum	– Plastic closures and valve caps, provided that these can be separated before disposal or during the sorting process	– Pull-on bands with aluminum content, plastic films – Other types of closures made of composite materials with plastic and iron content
Labels/ sleeves	– Labels and sleeves should be able to be separated before the recycling process		– PVC
Printing	– Lacquer coating – Direct printing [8]		
Other		– "Widget" nitrogen balls in beer cans [8]	– PVC coatings and BPA coatings (please observe current legislation)

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Tinplate packaging

The packaging includes, among others, products of the following product categories:

→ Beverages & liquid food (e.g., energy and soft drinks) **Page 07**
→ Dry food range (e.g., chocolate) **Page 13**
→ Cosmetics (e.g., hair and deodorant sprays) **Page 16**
→ Delicatessen sauces (e.g., mustard tubes) **Page 17**
→ Pet food (e.g., wet food) **Page 18**
→ Spices (e.g., seasoning mixtures) **Page 19**
→ Canned food (e.g., mackerel fillets) **Page 20**

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Mandatory specifications

- All national legal requirements must be complied with at all times (even in the event of changes)
- Use of recyclable, non-hazardous, non-toxic printing inks
- Best possible optimisation of the packaging design [1]:
  - Reduction of the thickness
  - Minimization of non-steel and non-ferrous components

Requirements Tinplate packaging

	Specifications	In exceptional cases	To be avoided
Material	– Ferromagnetic metals (alloys) with maximum PCR content (CO_2 emissions from packaging production can be reduced by up to 30 % using waste tinplate)		– Spray cans that have not been emptied of residues – Plastic and ferrous composites [8]
Closures	– Ferromagnetic metals (alloys)	– Plastics	– PVC
Labels/ sleeves	– Paper banderoles Labels and sleeves should be able to be separated before the recycling process – Adhesive: wet glue		– PVC
Printing			– PVC coatings and BPA coatings (please observe current legislation) – BPS in coating

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Bibliography

[1] Lidl/Kaufland, Nachhaltige Verpackungsoptimierung, [Online]. Available: https://media.kaufland.com/images/PPIM/AP_Download/deu/47/00/7964700.zip

[2] Plastikstrategie der Schwarzgruppe (REset Plastic), [Online]. Available: https://gruppe.schwarz/nachhaltigkeit/kreislaufsysteme#verpackung.

[3] Lidl, „Onepager - Biobasierte Kunststoffe," 23 02 2023. [Available on request].

[4] Lidl, „Onepager – Pre-Consumer vs. Post-Consumer Kunststoffrezyklat," 23 02 2023. [Available on request]

[5] Kaufland, Bewusster verpackt, [Online]. Available: https://unternehmen.kaufland.de/nachhaltigkeit/unsere-nachhaltigkeitsmassnahmen/plastik/bewusster-verpackt.html.

[6] Plastics Recyclers Europe, „Design for Recycling Guidelines," [Online]. Available: https://recyclass.eu/recyclability/design-for-recycling-guidelines/.

[7] Mindeststandard zur Bemessung der Recyclingfähigkeit von Verpackungen, [Online]. Available: https://www.verpackungsregister.org/stiftung-behoerde/mindeststandard-21/ausgabe-2023.

[8] FH Campus Wien, „Circular Packaging Design Guideline. Empfehlung für recylinggerechte Verpackungen," 2022. [Online]. Available: https://digital.obvsg.at/obvfcwacc/download/pdf/8086818?originalFilename= true.

[9] European PET Bottle Platform, „Design Guidelines," [Online]. Available: https://www.epbp.org/design-guidelines/products.

[10] Plastics Recyclers Europe, „RecyClass design book," Oktober 2023. [Online]. Available: https://recyclass.eu/wp-content/uploads/2023/10/RecyClass-Design-Book_October-2023.pdf.

[11] Lidl, Onepager - Standpunkt zu Bioabbaubaren Glitzerprodukten. [Available on request]

[12] Institut cyclos-HTP GmbH, „Prüfung und Testierung der Recyclingfähigkeit. Anforderungs- und Bewertungskatalog des Institutes cyclos-HTP zur EU-weiten Zertifizierung. CHI- Standard," 2021. [Online]. Available: https://www.cyclos-htp.de/publikationen/a-b-katalog/.

[13] Forum Rezyklat, „Recyclingfähigkeit von Verpackungen für dekorative Kosmetik nach Mindeststandard ZSVR 2023 und Hinweis darüber hinaus," 2024. [Online]. Available: https://p586802.mittwaldserver.info/fileadmin/user_upload/20240131_Forum_Rezyklat_-_Lounge_Dekorative_Kosmetik_V1.0.pdf.

[14] Kaufland, Allgemeine Qualitätsanforderungen - Food (AQA - Food) (Vertragsunterlage).

[15] Kaufland, Datenübermittlungsplattform NEO PLM (Vertragsunterlage).

[16] 4evergreen, „Circularity by Design Guideline for Fibre-Based Packaging," [Online]. Available: https://4evergreenforum.eu/wp-content/uploads/4evergreen-Circularity-by-Design-Guideline-version-2.pdf.

[17] Entwurf des Bundesministeriums für Ernährung und Landwirtschaft, „Zweiundzwanzigste Verordnung zur Änderung der Bedarfsgegenständeverordnung," [Online]. Available: https://members.wto.org/crnattachments/2021/SPS/DEU/21_2072_00_x.pdf. [Zugriff am 15 03 2021].

[18] cpi confederation of paper industries, „Design for Recyclability Guidelines," [Online]. Available: https://thecpi.org.uk/library/PDF/Public/Publications/Guidance %20 Documents/Recyclability-Guidelines-2024.pdf.

[19] Umweltbundesamt, „Einsatz von PFC in der Papierindustrie," [Online]. Available: https://www.umweltbundesamt.de/einsatz-von-pfc-in-der-papierindustrie.

[20] Lidl, Onepager - Schwarzes Plastik. [Available on request]

[21] Bedarfsgegenständeverordnung, [Online]. Available: https://www.gesetze-im-internet.de/bedggstv/BedGgstV.pdf.

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Abbreviation	Definition
AA	Acetaldehyde
AlOx	Aluminium oxide
Alu	Aluminium
BPA	Bisphenol A
BPS	Bisphenol S
CO^2	Carbon dioxide
EPBP	European PET Bottle Plattform
EPDM	Ethylene propylene diene rubber
EPS	Expanded polystyrene
EUPIA	European Printing Ink Association
EVA	Ethylene vinyl acetate
EVOH	Ethylene vinyl alcohol copolymer
FSC	Forest Stewardship Council
HDPE	High-density polyethylene

Abbreviation	Definition
IML	In-Mould-Label
LDPE	Low-density polyethylene
MAP	Modified atmosphere packaging
MOSH/MOAH	Mineral oil hydrocarbons
N	Newton
NC	Nitrocellulose
NIR	Near infrared
OPP	Oriented polypropylene
OPS	Oriented polystyrene
PA	Polyamide
PCR	Post-consumer recyclate
PE	Polyethylene
PEFC	Programme for the Endorsement of Forest Certification
PET	Schemes Polyethylene terephthalate

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Abbreviation	Definition
PET-A	Amorphous polyethylene terephthalate
PETG	PET modified with glycol
PE-X	Cross-linked polyethylene
PGA	Polyglycolic acid
PIR	Post Industrial Recycled
PLA	Polylactide
PMA	Proportion of maleic anhydride
PO	Polyolefin
POM	Polyoxymethylene
PP	Polypropylene
PS	Polystyrene
PTN	Polytrimethylene napthalate
PTS	Paper Technology Foundation
PU	Polyurethane

Abbreviation	Definition
PVC	Polyvinyl chloride
PVDC	Polyvinylidene chloride
PVOH	Polyvinyl alcohol
rPET	Recycled PET
SiOx	Silicon oxide
TPE/TPO	Thermoplastic elastomer
UV	Ultraviolet radiation

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Do you have any questions?

If you have any general questions about the style guide or the use of Silphium-Material or plastic recyclates, please contact

PreZero Sustainable Packaging
sustainablepackaging@prezero.com

Analyze recyclability, life cycle assessment and packaging costs: The web-based solution PreZero SPOT in cooperation with the software provider Packaging Cockpit enables packaging manufacturers and distributors of packaging to make their packaging portfolio more recyclable.

If you have any questions about SPOT, please contact spot@prezero.com or use the QR code below to access the contact form.

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