


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 .

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 .



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.

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 recycle: pre-consumer recycle (also known as post-industrial recycle (PIR)) and post-consumer recycle (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 recycle.

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.

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

Logo for sustainable packaging optimization provides more transparency

To enable customers to understand which product packaging has been made more sustainable, a new packaging label has been introduced for own-brand products. In this way, the company transparently indicates the already implemented plastic reduction or the increased recyclability.

The logo is applied to the front or back of packaging that meets at least one of the following criteria :

- Recycled content: at least 30 %
- Recyclability: at least 80 %
- Material reduction: at least 20 %
(compared to own predecessor packaging or relevant competitor packaging)
- Alternative materials: at least 30 %
(for example, silphium perfolatum paper, chemical recycling)

The specification of the optimized criterion with the explanation of the improvement made is mandatory.



Figure 2: Logo "Consciously packed" (Kaufland)
(exact specification of what was optimized must always be added)

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
<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - Avoidance of non-packaging glass and harmful additives - Use of as much recycled material as possible - Use of transparent standard colors 	<ul style="list-style-type: none"> - Use of mono-materials with maximum possible PCR content

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 .

Detailed information under:



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 .

Detailed information under:



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 .

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:

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.

Plastics

Rigid packaging made from PET

PET bottle

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

Mandatory specifications	
<ul style="list-style-type: none"> - 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 plastic 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) - No dark material coloring using carbon black-based pigments that cannot be identified and sorted out by NIR 	<ul style="list-style-type: none"> - No biodegradable/oxo-degradable plastics - Best possible optimisation of the packaging design : <ul style="list-style-type: none"> - 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)		- Composite material
Material coloring	- Transparent clear or transparent light blue - Transparent light colors	- Transparent dark colors	- Other colored bottles - Opaque bottles - Fluorescence, metallic - Coloring using carbon black-based pigments (also when used in inner layers)
Barrier/coating	- Ideally: no barrier - SiOx coating - Carbon plasma-coating - PA-MXD6 multilayer with < 6 % PA.MXD6 and no tie layers	- PTN alloy - PGA multilayer - Max. 5 % PA-MXD6 multilayer with < 5 % PA-MXD6 and no tie layers	- EVOH layers - PA-MXD6 multilayer with > 5 % PA-MXD6 or with tie layers - Other blended barriers

Requirements PET bottle			
	Specifications	In exceptional cases	To be avoided
Barrier/ coating		<ul style="list-style-type: none"> - PA monolayers (PET/PA) - EVOH-Multilayer with < 3 % EVOH and no tie layers - Monolayer PA-MXD6 blend 	<ul style="list-style-type: none"> - EVOH multilayer with > 3 % EVOH or with tie layers
Additives	<ul style="list-style-type: none"> - Ideally: no additives 	<ul style="list-style-type: none"> - UV stabilizers - AA blockers - Optical brighteners - Oxygen scavengers - PA additives 	<ul style="list-style-type: none"> - Bio-/oxo-/photodegradable additives - Nanocomposites
Closures	<ul style="list-style-type: none"> - Slip lid, screw cap: PE/PP - Liners, seals and valves: PE, PE+EVA, PP Density < 1 g/cm³ - If no color is defined for the closure, use neutral PE/PP without masterbatch - Cetic 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 	<ul style="list-style-type: none"> - Silicone (density < 1 g/cm³) - Floatable TPE (for Liners, seals, and valves) 	<ul style="list-style-type: none"> - Thermosetting plastics Materials with a density > 1 g/cm³ (PETG, POM, PVC, silicone etc.) - Glass and metal springs in pump systems - Seals that cannot be completely removed - Non-detachable or welded closures (except PET) - Seals with different composite materials e.g., Plastic/Paper/Aluminum
Labels/ sleeves	<ul style="list-style-type: none"> - Ideally: labels/(full body) sleeves made from materials with a density < 1 g/cm³ with integrated tear perforation 	<ul style="list-style-type: none"> - EPS; foamed PET; lightly metallized labels (all with density < 0,95 g/cm³) 	<ul style="list-style-type: none"> - Large labels (taking up > 50 % of the surface) made from foreign material



Requirements PET bottle			
	Specifications	In exceptional cases	To be avoided
Labels/sleeves	<ul style="list-style-type: none"> - 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 - Indication label size of the bottle: < 500ml: < 70 % of the surface < = 500ml: < 50 % of the surface 	<ul style="list-style-type: none"> - Paper labels without fiber losses 	<ul style="list-style-type: none"> - Full sleeve labeling with light barrier - Labels/sleeves with density > 1 g/cm³ (PETG, POM, PVC, PS, PLA etc.) - Foamed PETG labels/sleeves (even with density < 1 g/cm³) - Metallized labels/sleeves - Paper labels with fiber losses - Non-washable labels - Foamed PETG labels (even with density < 1 g/cm³) - PET labels with washable inks - Heavy printed sleeves
Printing	<ul style="list-style-type: none"> - Direct printing: Inkjet and laser - Laser marked, embossing 	<ul style="list-style-type: none"> - Production or expiry date (with minimal direct printing) 	<ul style="list-style-type: none"> - Any other direct printing - Inks that bleed - Metallic inks
Other	<ul style="list-style-type: none"> - No further components are recommended - Good residual emptying must be ensured 		<ul style="list-style-type: none"> - Metal pigments applied on a large scale (taking up > 50 % of the surface) (lacquering, coating, or embossing) - Non-detachable or welded components (except PET) - PVC or PVDC components - Conventional glitter or biodegradable plastic glitter if removal/detachment/wash-off is not possible

PET tray

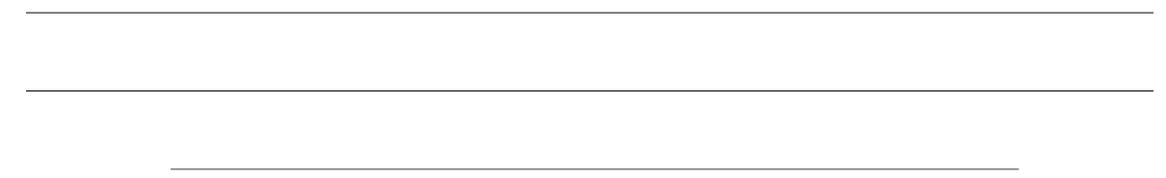
The packaging includes, among others,
products of the following product categories:

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
- No biodegradable/oxo-degradable plastics
- Best possible optimisation of the packaging design :
 - 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)		- PET based multilayer material (including PET/PE) - Expanded PET (LDPET)
Material coloring	- Transparent clear or transparent light blue		- Other transparent colors - Opaque - Use of metal pigments - Coloring using carbon black-based pigments (also when used in inner layers)



Requirements PET tray			
	Specifications	In exceptional cases	To be avoided
Barrier/ coating	<ul style="list-style-type: none"> - Ideally: no barrier - PET based oxygen scavenger without yellowing effect after EPBP oven test 	<ul style="list-style-type: none"> - PET based oxygen scavenger with limited yellowing effect after EPBP oven test 	<ul style="list-style-type: none"> - EVOH layers - PA layers - Any other oxygen scavenger - Any other barriers (except for sealing films, see "Closure")
Additives	<ul style="list-style-type: none"> - Silicone surface coating - Antiblocking masterbatch < 3 % 	<ul style="list-style-type: none"> - UV stabilizers - AA blockers - Optical brighteners - Antiblocking masterbatch > 3 % - Anti-stat agents - Antiblocking agents - Anti-fogging agents (on coated surfaces) 	<ul style="list-style-type: none"> - Bio/Oxo/Photodegradable additives - Nanocomposites
Closures	<ul style="list-style-type: none"> - Monomaterial (unprinted PET, PP, PE) - Plastics with density < 1 g/cm³ and easily removal from the tray and without glue residuals - SiO_x, AlO_x plasma for barrier 		<ul style="list-style-type: none"> - Any other film
Labels/ sleeves	<ul style="list-style-type: none"> - Ideally: labels/(full body) sleeves made from materials with a density < 1 g/cm³ 1st priority: PP, PE, OPP 2nd priority: PET 3rd priority: EPS, OPS 	<ul style="list-style-type: none"> - BPA-free paper labels without fiber losses 	<ul style="list-style-type: none"> - Large labels (taking up > 50 % of the surface) made from foreign material - Plastic labels with density > 1 g/cm³ (also in more heavily printed and glued area)

Requirements PET tray			
	Specifications	In exceptional cases	To be avoided
Labels/sleeves	<ul style="list-style-type: none"> - Adhesive: soluble in water/hot alkaline solution at 60–80 °C 		<ul style="list-style-type: none"> - Non floating paper labels - Paper labels with fiber losses - Paper labels containing BPA - Metallized labels/sleeves
Printing	<ul style="list-style-type: none"> - Direct printing: Inkjet and laser 1st priority: Laser marked 2nd priority: Production or expiry date (with minimal direct printing) 		<ul style="list-style-type: none"> - Any other direct printing - Inks that bleed
Other	<ul style="list-style-type: none"> - Other components (like Soaker pads) made from: PET or materials with density < 1 g/cm³, e.g., HDPE, LDPE, PP - For absorbent pads, the following applies: clear separation instructions on the packaging body, leave no traces and have a density of < 1 g/cm³ ; - Material: <ul style="list-style-type: none"> 1st priority: paper, paperboard, cardboard 2nd priority: EPS - Good residual emptying must be ensured 	<ul style="list-style-type: none"> - Paper/cardboard not losing fibers 	<ul style="list-style-type: none"> - Metal pigments applied on a large scale (taking up > 50 % of the surface) (lacquering, coating, or embossing) - Non-detachable or welded components (except PET) - PVC, PVDC, PS, EPS, PU, PA or PC/PMMA - Conventional glitter or biodegradable plastic glitter if removal/detachment/wash-off is not possible

Rigid packaging made from PS

Cup and tray from PS

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

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
- No biodegradable/oxo-degradable plastics
- Best possible optimisation of the packaging design :
 - 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	<ul style="list-style-type: none"> - Monomaterial PS - Substitution by PET and PP-based packaging systems 		<ul style="list-style-type: none"> - Composite material - Foamed PS with a density < 1 g/cm³
Material coloring	<ul style="list-style-type: none"> - Light colors 	<ul style="list-style-type: none"> - Dark colors (NIR detectable) 	
Barrier/coating	<ul style="list-style-type: none"> - Ideally: no barrier - EVOH ≤5 % with PE, which is provided with PMA tie layers with an EVOH/tie layers ratio ≤1 	<ul style="list-style-type: none"> - EVOH > 5 % with PE, which is provided with PMA tie layers and EVOH/tie layers ratio ≤1 - EVOH < 1 % without tie layer 	<ul style="list-style-type: none"> - PA barrier - PVDC barrier

Requirements Cup and tray from PS			
	Specifications	In exceptional cases	To be avoided
Additives	<ul style="list-style-type: none"> - Ideally: no additives - Additives that are unavoidable in processing, e.g., stabilizers, antioxidants, lubricants, nucleating agents, peroxides - Density: 1,0-1,07 g/cm³ 	<ul style="list-style-type: none"> - Mineral fillers (CaCO₃, talc) not increasing density > 1,07 g/cm³ 	<ul style="list-style-type: none"> - Additives not increasing density above 1,07 g/cm³ - Bio/Oxo/Photodegradable additives
Closures	<ul style="list-style-type: none"> - Ideally: closure made from PS 	<ul style="list-style-type: none"> - Sealing films made from PP, PE, paper without fiberloss - Removable aluminium lidding 	<ul style="list-style-type: none"> - PET, PETG, PVC, PLA - Materials other than PO or foamed materials of density < 1 g/cm³ - Metals or metal-containing closures - PET/paper multilayer 'composite - PET/PS multilayer composite (for sealing film) - Non-detachable or welded closures (except PS)
Labels/sleeves	<ul style="list-style-type: none"> - Ideally: labels/sleeves made from PS - Water-based adhesive - water-soluble or water-releasable (< 40 °C) 	<ul style="list-style-type: none"> - PP, PE, paper without fiber losses 	<ul style="list-style-type: none"> - Large labels (taking up > 50 % of the projected area) made from foreign material - IML - Paper labels with fiber losses - Other plastics or multilayers with density 1,00 - 1,08 g/cm³ (e.g., PET; PETG; PVC; PLA) - Metallized labels/sleeves

Requirements Cup and tray from PS			
	Specifications	In exceptional cases	To be avoided
Printing	<ul style="list-style-type: none"> - Laser marking or embossing - Production or best-before date - Direct printing (color + varnish) < 1 % of the total packaging (dark colors excluded) 		<ul style="list-style-type: none"> - PVC binders
Other	<ul style="list-style-type: none"> - Other components: ideally made from PS, easily detachable by user or during sorting process - Good residual emptying must be ensured 		<ul style="list-style-type: none"> - Metal pigments applied on a large scale (taking up > 50 % of the projected area) (lacquering, coating, or embossing) - Other materials with density > 1 g/cm³ - Metal, metal foil - PVC or PVDC components - Conventional glitter or biodegradable plastic glitter if removal/detachment/wash-off is not possible



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:

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
- No biodegradable/oxo-degradable plastics
- Best possible optimisation of the packaging design :
 - 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	<ul style="list-style-type: none"> - Monomaterial (> 95 %) HDPE od PP - Minimal proportion of other foreign materials (TPO < = 10 %) 	<ul style="list-style-type: none"> - Multilayer structure (excluding PE/PP EVOH) 	<ul style="list-style-type: none"> - Multilayer with PLA; PVC; PS; PET; PETG - Non-PO plastics with density < 1 g/cm³ - Foamed non-thermoplastic elastomers - Non-PO plastics
Material coloring			<ul style="list-style-type: none"> - TPO (containing rubber, e.g., EPDM) - PE-X components

Requirements Bottle from (HD)PE and PP			
	Specifications	In exceptional cases	To be avoided
Barrier/ coating	<ul style="list-style-type: none"> - EVOH < 5 % - SiOx Plasma coating 		<ul style="list-style-type: none"> - PA barrier - PVDC barrier - Aluminum - Metallization, PVOH - Plasma fluorination
Additives		<ul style="list-style-type: none"> - Additives that are unavoidable in processing, e.g., stabilizers, antioxidants, lubricants, nucleating agents, peroxides - Density < 0,97 g/cm³ 	<ul style="list-style-type: none"> - Additives changing the material density > 1 g/cm³ - Flame-retardant additives - Bio/Oxo/Photodegradable additives - PU > 4,5 %
Closures	<ul style="list-style-type: none"> - Ideally: same material as the main component - PP/PE with density < 1 g/cm³, easily separable without residues - Liner: plastic/paper composite/ aluminum 	<ul style="list-style-type: none"> - Silicone 	<ul style="list-style-type: none"> - Non-PO or foams (density < 1 g/cm³) - Aluminium, metal, PVC
Labels/ sleeves	<ul style="list-style-type: none"> - Ideally: Label/sleeve made of the same material as the main component (density < 1 g/cm³) 		<ul style="list-style-type: none"> - Large labels (taking up > 50 % of the surface) made from foreign material - Full sleeve label - Labels that hinder the recognition of the PE/PP

Requirements Bottle from (HD)PE and PP			
	Specifications	In exceptional cases	To be avoided
Labels/sleeves	<ul style="list-style-type: none"> - PE/PP sleeve (density < 1 g/cm³) - Labels containing fibers if the cellulose content peels off during cold washing - Water-based adhesive - water-soluble or water-releasable (< 40 °C) 		<ul style="list-style-type: none"> - Labels/sleeves in non-PO materials with density < 1 g/cm³ - Sleeves made from PET with density < 1 g/cm³ - Paper labels with fiber losses - IML made from paper/ cardboard - Aluminium/PVC/metallized labels/sleeves - Non-water-soluble adhesives that do not peel at < 40 °C - Non removable or partially removable labels - Labels containing fibers if the cellulose content does not peel off during cold washing
Printing	<ul style="list-style-type: none"> - Laser marking (Production or best-before date) 		<ul style="list-style-type: none"> - PVC binder
Other	<ul style="list-style-type: none"> - 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 		<ul style="list-style-type: none"> - Metal pigments applied on a large scale (taking up > 50 % of the surface) (lacquering, coating, or embossing) - PE-X components - Conventional glitter or biodegradable plastic glitter if removal/detachment/wash-off is not possible

Cup and bucket from (HD)PE and PP

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

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
- No biodegradable/oxo-degradable plastics
- Max. 30 % headspace (free space of the filling height), if product is not visible
- Best possible optimisation of the packaging design :
 - 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	<ul style="list-style-type: none"> - Monomaterial (> 95 %) HDPE od PP - Minimal proportion of other foreign materials (TPO < = 10 %) 	<ul style="list-style-type: none"> - Multilayer structure (excluding PE/PP EVOH) 	<ul style="list-style-type: none"> - Multilayer with PLA; PVC; PS; PET; PETG - Non-PO plastics with density < 1 g/cm³ - Foamed non-thermoplastic elastomers - Non-PO plastics - TPO (containing rubber, e.g., EPDM) - PE-X components
Material coloring	<ul style="list-style-type: none"> - Transparent, translucent, white, unpigmented 		<ul style="list-style-type: none"> - Coloring using carbon black-based pigments (also when used in inner layers)

Requirements Cup and bucket from (HD)PE und PP			
	Specifications	In exceptional cases	To be avoided
Barrier/ coating	<ul style="list-style-type: none"> - EVOH < 5 % - Metallization (in the middle layer) - SiOx plasma coating 		<ul style="list-style-type: none"> - PA barrier - PVDC barrier - Aluminium (lamination) - Metallization, PVOH - Plasma fluorination
Additives		<ul style="list-style-type: none"> - Additives that are unavoidable in processing, e.g., stabilizers, antioxidants, lubricants, nucleating agents, peroxides - Density < 0,97 g/cm³ 	<ul style="list-style-type: none"> - Additives changing the material density > 1 g/cm³ - Flame-retardant additives - Bio/Oxo/Photodegradable additives - PU > 4,5 %
Closures	<ul style="list-style-type: none"> - Ideally: same material as the main component 		<ul style="list-style-type: none"> - Non-PO or foams (density < 1 g/cm³)
Labels/ sleeves	<ul style="list-style-type: none"> - 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) - PE/PP sleeve (density < 1 g/cm³) 		<ul style="list-style-type: none"> - Large labels (taking up > 50 % of the surface) made from foreign material - Full sleeve label - Labels that hinder the recognition of the PE/PP - Labels/sleeves in non-PO materials with density < 1 g/cm³ - Paper labels with fiber losses - IML made from paper/ cardboard

Requirements Cup and bucket from (HD)PE und PP			
	Specifications	In exceptional cases	To be avoided
Labels/ sleeves	<ul style="list-style-type: none"> - Labels containing fibers if the cellulose content peels off during cold washing - Water-based adhesive - water-soluble or water-releasable (< 40 °C) 		<ul style="list-style-type: none"> - Aluminium/PVC/metallized labels/sleeves - Non-water-soluble adhesives that do not peel at < 40 °C - Non removable or partially removable labels
Printing	<ul style="list-style-type: none"> - Laser marking (Production or best-before date) 		<ul style="list-style-type: none"> - PVC binder
Other	<ul style="list-style-type: none"> - Good residual emptying must be ensured 		<ul style="list-style-type: none"> - Metal pigments applied on a large scale (taking up > 50 % of the surface) (lacquering, coating, or embossing) - Silicone components - PE-X components - Conventional glitter or biodegradable plastic glitter if removal/detachment/wash-off is not possible

Tray from (HD)PE and PP

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

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
- No biodegradable/oxo-degradable plastics
- Best possible optimisation of the packaging design :
 - 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	<ul style="list-style-type: none"> - Monomaterial (> 95 %) HDPE od PP - Minimal proportion of other foreign materials (TPO < = 10 %) 	<ul style="list-style-type: none"> - Multilayer structure (excluding PE/PP EVOH) - Plasma Fluorination 	<ul style="list-style-type: none"> - Different types of plastic used on front and back sides - Multilayer with PLA; PVC; PS; PET; PETG - Non-PO plastics with density < 1 g/cm³ - Foamed non-thermoplastic elastomers - Non-PO plastics - TPO (containing rubber, e.g., EPDM)
Material coloring	<ul style="list-style-type: none"> - Transparent, translucent, white, unpigmented 		<ul style="list-style-type: none"> - Coloring using carbon black-based pigments (also when used in inner layers)

Requirements Tray from (HD)PE and PP			
	Specifications	In exceptional cases	To be avoided
Barrier/ coating	<ul style="list-style-type: none"> - EVOH < 5 % - SiOx Plasma Coating 	<ul style="list-style-type: none"> - PVDC, PA - Metallization (except metallized inside/in the middle layer) 	<ul style="list-style-type: none"> - Aluminium (lamination) - PVOH > 1 %
Additives		<ul style="list-style-type: none"> - Additives that are unavoidable in processing, e.g., stabilizers, antioxidants, lubricants, nucleating agents, peroxides - Density < 0,97 g/cm³ 	<ul style="list-style-type: none"> - Additives changing the material density > 1 g/cm³ - Flame-retardant additives - Bio/Oxo/Photodegradable additives - Polyurethanes and water-based acrylics > 5 %
Closures	<ul style="list-style-type: none"> - Ideally: same material as the main component - PP/PE with density < 1 g/cm³, easily separable without residues 	<ul style="list-style-type: none"> - PET: PETG; PLA; PS (all with density > 1 g/cm³) 	<ul style="list-style-type: none"> - Non-PO or foams (density < 1 g/cm³) - Aluminium, metal, PVC

Requirements Tray from (HD)PE and PP			
	Specifications	In exceptional cases	To be avoided
Labels/sleeves	<ul style="list-style-type: none"> - Ideally: Label/sleeve made of the same material as the main component (density < 1 g/cm³) - PE/PP sleeve (density < 1 g/cm³) - Labels containing fibers if the cellulose content can be removed under cold wash conditions - Water-based adhesive - water-soluble or water-releasable (< 40 °C) 		<ul style="list-style-type: none"> - Large labels (taking up > 50 % of the projected surface) made from foreign material - Full sleeve label - Labels that hinder the recognition of the PE/PP - Labels/sleeves in non-PO materials with density < 1 g/cm³ - Sleeves made from PET with density < 1 g/cm³ - Paper labels with fiber losses - IML made from paper/ cardboard - Aluminium/PVC/metallized labels/sleeves - Non-water-soluble adhesives that do not peel at < 40 °C
Printing	<ul style="list-style-type: none"> - Laser marking (Production or best-before date) 		<ul style="list-style-type: none"> - PVC binder
Other	<ul style="list-style-type: none"> - Good residual emptying must be ensured 		<ul style="list-style-type: none"> - Metal pigments applied on a large scale (taking up > 50 % of the surface) (lacquering, coating, or embossing) - PE-X components - Silicone components - Conventional glitter or biodegradable plastic glitter if removal/detachment/wash-off is not possible



Tube from (HD)PE and PP

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

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
- No biodegradable/oxo-degradable plastics
- Best possible optimisation of the packaging design :
 - 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	<ul style="list-style-type: none"> - Monomaterial (> 95 %) HDPE od PP - Minimal proportion of other foreign materials (TPO < = 10 %) 		<ul style="list-style-type: none"> - Multilayer with PLA; PVC; PS; PET; PETG - Non-PO plastics with density < 1 g/cm³ - Foamed non-thermoplastic elastomers - Non-PO plastics - TPO (containing rubber, e.g., EPDM)
Material coloring	<ul style="list-style-type: none"> - Transparent, translucent, white, unpigmented 		
Barrier/ coating	<ul style="list-style-type: none"> - EVOH < 5 % - Metallization (in the middle layer) - SiOx Plasma Coating 		<ul style="list-style-type: none"> - PA barrier - PVDC barrier - Aluminium (lamination) - PVOH > 1 %

Requirements Tube from (HD)PE and PP

	Specifications	In exceptional cases	To be avoided
Additives		<ul style="list-style-type: none"> - Additives that are unavoidable in processing, e.g., stabilizers, antioxidants, lubricants, nucleating agents, peroxides - Density < 0,97 g/cm³ 	<ul style="list-style-type: none"> - Additives changing the material density > 1 g/cm³ - Flame-retardant additives - Bio/Oxo/Photodegradable additives - Polyurethanes and water-based acrylics > 5 %
Closures	<ul style="list-style-type: none"> - Ideally: same material as the main component - PP/PE with density < 1 g/cm³, easily separable without residues 		<ul style="list-style-type: none"> - Non-PO and/or foams (density < 1 g/cm³) - Aluminium, metal, PVC
Labels/sleeves	<ul style="list-style-type: none"> - Labels containing fibers if the cellulose content can be removed under cold wash conditions - Water-based adhesive - water-soluble or water-releasable (< 40 °C) 		<ul style="list-style-type: none"> - Aluminium/PVC/metallized labels/sleeves - Non-water-soluble adhesives that do not peel at < 40 °C
Printing	<ul style="list-style-type: none"> - Direct printing - Laser marking (Production or best-before date) 		<ul style="list-style-type: none"> - PVC binder
Other	<ul style="list-style-type: none"> - Good residual emptying must be ensured 		<ul style="list-style-type: none"> - Metal pigments applied on a large scale (taking up > 50 % of the surface) (lacquering, coating, or embossing) - PE-X components - Silicone components - Conventional glitter or biodegradable plastic glitter if removal/detachment/wash-off is not possible

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:

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
- No biodegradable/oxo-degradable plastics
- Best possible optimisation of the packaging design :
 - 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	<ul style="list-style-type: none"> - Monomaterial, PE or PP with proportion of other foreign materials < 5 % (printing inks and coating) - Composites of one material type (> 90 %) PE or PP with the use of barrier layer and adhesive/printing 	<ul style="list-style-type: none"> - PO (combinations of PP and PE) 	<ul style="list-style-type: none"> - Different types of plastic used on front and back sides - Multilayer with PET - Non-polymeric layers
Material coloring	<ul style="list-style-type: none"> - Light, translucent, unpigmented, transparent 		<ul style="list-style-type: none"> - Non NIR-detectable colors
Barrier/coating	<ul style="list-style-type: none"> - Barrier layers in the same polymer matrix - SiOx and AlOx without additional coating - EVOH < 5 % - Metallization (coating) in the middle layer 	<ul style="list-style-type: none"> - 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 	<ul style="list-style-type: none"> - PVC, PVDC, PA - Foaming agents used as expanding chemical agents - Laminated aluminum foil - EVOH > 5 % (in PO laminate)



Requirements Film and bag from PP and PE			
	Specifications	In exceptional cases	To be avoided
Additives	<ul style="list-style-type: none"> - Additives that do increase the density higher than 0,97 g/cm³ 		<ul style="list-style-type: none"> - Bio/Oxo/Photodegradable additives
Closures	<ul style="list-style-type: none"> - Ideally: same material as the main component 		<ul style="list-style-type: none"> - Metal, aluminium, PVC, PET, PETG, PS, PLA - Non-PO or foamed closures (density < 1 g/cm³) - Silicone components
Labels/sleeves	<ul style="list-style-type: none"> - Ideally: Label/sleeve made of the same material as the main component - Fiber-based labels that peel off during cold washing - Water-based adhesive - water-soluble or water-releasable (< 40 °C) 		<ul style="list-style-type: none"> - Large labels (taking up > 50 % of the surface) made from foreign material - Full sleeve label - Metallized labels - Paper labels with fiber losses - Non-water-soluble adhesives that do not peel at < 40 °C
Printing	<ul style="list-style-type: none"> - Laser marking and ink-jet (Production or best-before date) 	<ul style="list-style-type: none"> - NC-based printing inks in intermediate layer printing 	
Other	<ul style="list-style-type: none"> - Good residual emptying must be ensured 		<ul style="list-style-type: none"> - Metal pigments applied on a large scale (taking up > 50 % of the surface) (lacquering, coating, or embossing) - PE-X components - PVDC layers - PA layers - Silicone components - Conventional glitter or biodegradable plastic glitter if removal/detachment/wash-off is not possible

Applicators

Applicators for brushes

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

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
- No biodegradable/oxo-degradable plastics
- Best possible optimisation of the packaging design :
 - 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	- Brush made of PA if density > 1 g/cm ³ and proportion < 5 %	
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	
Other	- Packaging should be designed in such a way that it can be easily emptied of residues		

Applicators for lip gloss and similar

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

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
- No biodegradable/oxo-degradable plastics
- Best possible optimisation of the packaging design :
 - 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/cm ³)		
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	- Color design using carbon black-based paints
Barrier/coating			- Elastomers that are flocked with PA
Other	- Applicators are positively and non-positively connected - Packaging should be designed in such a way that it can be easily emptied of residues		- Material-locking connection (bonding/welding)

Paper, paperboard, cardboard

Fiber-based composite carton and liquid packaging board

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

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
- Use of FSC-certified raw materials
- No deviations from the standard structure (no wet-strength cardboard, PE ± aluminium)
- 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)
- Best possible optimisation of the packaging design :
 - 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	<ul style="list-style-type: none"> - Foreign material must be kept as low as possible - Unbleached cardboard 		<ul style="list-style-type: none"> - 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
Material coloring			<ul style="list-style-type: none"> - Coloring using carbon black-based pigments
Barrier/coating	<ul style="list-style-type: none"> - Ideally: no additional barrier - Use of recycled aluminum if an aluminum barrier is necessary 		

Requirements Liquid packaging board			
	Specifications	In exceptional cases	To be avoided
Additives	<ul style="list-style-type: none"> - Mineral fillers such as kaolin, talc, calcium carbonate and titanium dioxide (white pigment) - Starch (binder) 		<ul style="list-style-type: none"> - Wet strength agents - Exception: proof that recovery and recycling of the fibers is possible (PTS Method PTS-RH 021/97)
Closures	<ul style="list-style-type: none"> - Ideally: no closure - Use of tethered caps made of PP/HDPE, which can be easily separated from the other packaging components in the pulper 	<ul style="list-style-type: none"> - Unattached closures 	
Labels/sleeves	<ul style="list-style-type: none"> - 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) 		
Printing		<ul style="list-style-type: none"> - UV inks 	<ul style="list-style-type: none"> - Inks containing mineral oil - Fully lacquered surface (excluding clear protective lacquer up to a thickness of ≤ 5 micrometer) - Metal pigments applied over large areas
Other	<ul style="list-style-type: none"> - Good residual emptying must be ensured 		

Paper packaging and paper-based composites

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

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
- 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
- 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 INGEGE method 12)
- Best possible optimisation of the packaging design :
 - 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	<ul style="list-style-type: none"> - Check the possibility of using sulphur material - Use of recycled material (except in direct food contact) 		<ul style="list-style-type: none"> - Avoidance of MOSH/MOAH or the specified limit value from the contract documents must not be exceeded
Material coloring			<ul style="list-style-type: none"> - Coloring using carbon black-based pigments
Barrier/coating	<ul style="list-style-type: none"> - Ideally: no additional barrier 	<ul style="list-style-type: none"> - Single side internally coated material with foreign content < 5 % - Peelable coating 	<ul style="list-style-type: none"> - Wax coating - Lamination - Silicone paper/siliconization. Exception: water-based agents

Requirements Paper packaging and paper-based composites			
	Specifications	In exceptional cases	To be avoided
Additives	<ul style="list-style-type: none"> - Mineral fillers such as kaolin, talc, calcium carbonate and titanium dioxide (white pigment) - Starch (binder) 		<ul style="list-style-type: none"> - Wet strength agents - Exception: proof that recovery and recycling of the fibers is possible (PTS Method PTS-RH 021/97) - Per- and polyfluorinated chemicals
Labels/sleeves	<ul style="list-style-type: none"> - 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) 		<ul style="list-style-type: none"> - Additional adhesive applications for sealing folding boxes or pressure-sensitive labels
Printing		<ul style="list-style-type: none"> - UV inks 	<ul style="list-style-type: none"> - Inks containing mineral oil - Fully lacquered surface excluding clear protective lacquer up to a thickness of $< = 5$ micrometer
Other	<ul style="list-style-type: none"> - Good residual emptying must be ensured 	<ul style="list-style-type: none"> - Staples, adhesive tapes, viewing windows and other plastic components that can be separated from the paper without fiber loss 	<ul style="list-style-type: none"> - Viewing windows and other plastic components that cannot be easily separated from the paper



Glass

Bottle, container and jar from glass

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

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 :
 - Adjustment of the wall thickness and the bottom

Requirements Bottle, container and jar from glas

	Specifications	In exceptional cases	To be avoided
Material	<ul style="list-style-type: none"> - Use as much recycle as possible (CO₂ emissions from packaging production can be reduced by up to 30 % using waste glass) 		<ul style="list-style-type: none"> - Heat resistant glass e.g., borosilicate glass - Lead crystal or cryolite glass - Enamel constituents - Glass packaging with metal nets - Demijohns (bottles covered with a basket) - Glass packaging with ceramic components - Barium glass
Material coloring	<ul style="list-style-type: none"> - Transparent clear (white) - Transparent green - Transparent brown 	<ul style="list-style-type: none"> - Other colors - Metallic colors 	<ul style="list-style-type: none"> - Coloring that falls below an optical transmittance of 10 %

Requirements Bottle, container and jar from glas			
	Specifications	In exceptional cases	To be avoided
Closures	<ul style="list-style-type: none"> - Ferromagnetic metals (alloys) - Plastic - Aluminium 		<ul style="list-style-type: none"> - Ceramic - Spray heads with components made of polyoxymethylene - Swing tops with non-ferromagnetic metal shares only - Clip-on closures with ceramic/porcelain content - PVC - BPA
Labels/sleeves	<ul style="list-style-type: none"> - Paper labels (wet strength) and sleeves < 50 % of the packaging surface - Adhesives: water-/ hot caustic soluble at 60-80° 		<ul style="list-style-type: none"> - Labels with a low permeability e.g., lacquered labels, plastic labels - Non-washable plastic labels - Full-surface sleeves (exception: perforated and separable) - Waterproof/hydrophobic adhesive labels
Printing	<ul style="list-style-type: none"> - Unprinted - Direct printing 	<ul style="list-style-type: none"> - Fully printed/coated 	<ul style="list-style-type: none"> - Coating that causes the optical transmittance to fall below 10 % - Ceramic colors

Metal

Aluminium packaging

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

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 :
 - 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
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		
Other		- "Widget" nitrogen balls in beer cans	- PVC coatings and BPA coatings (please observe current legislation)

Tinplate packaging

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

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 :
 - Reduction of the thickness
 - Minimization of non-steel and non-ferrous components

Requirements Tinline 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 tinline)		- Spray cans that have not been emptied of residues - Plastic and ferrous composites
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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Glossary

Abbreviation	Definition
AA	Acetaldehyde
AIOx	Aluminium oxide
Alu	Aluminium
BPA	Bisphenol A
BPS	Bisphenol S
CO²	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 recycle
PE	Polyethylene
PEFC	Programme for the Endorsement of Forest Certification
PET	Schemes Polyethylene terephthalate

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	Poly lactide
PMA	Proportion of maleic anhydride
PO	Polyolefin
POM	Polyoxymethylene
PP	Polypropylene
PS	Polystyrene
PTN	Polytrimethylene naphthalate
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

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
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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.

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