APPENDIX 2

Technical specification and labelling manual

for metal and plastic packaging in the Swedish deposit system

VERSION 2025-03-01

RETURPACK

Contents

1. Introduction

This document describes the necessary requirements for a package to be included in the return system. The requirements must ensure that the package functions optimally throughout the recycling process, from collection through materials recovery to new product. The requirements are also applicable to products included voluntarily, such as dairy-based beverages. See the Regulation on producer responsibility for packaging (2022:1274) and pantamera.nu for more information on the product types included in the Returpack return system.

Returpack strives to increase the availability of high-quality recycled materials in the Swedish market for the production of new beverage packaging. We make this possible through our requirements for packaging design, separate collection via deposit machines, sorting, and recycling processes. As the system owner, we have a responsibility to secure and improve the circular material flows in the system, and we rely on collaboration with all actors in the chain. We closely follow technological and material developments and adjust packaging requirements, sorting techniques, and recycling processes to meet market demands and fulfill our mission. Should new technologies or scientific findings emerge, Returpack commits to reconsider its contractual terms and established packaging requirements to ensure they continuously meet all regulatory demands.

Returpack updates the packaging requirements in accordance with section 4.2 of the General Terms and Conditions of the Connection Agreement. The packaging requirements are also governed by regulation 2022:1274 and must be reasonable and non-discriminatory. The packaging requirements and other contractual conditions for joining are approved by the Swedish Environmental Protection Agency.

2. Package shape

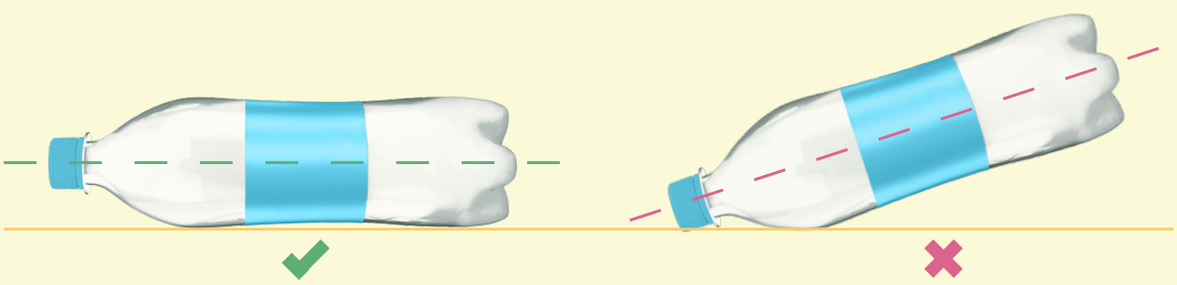
The optimal package shape is cylindrical, symmetrical and stable (not top heavy).

Flat PET bottles are approved for use in the Returpack return system if they are symmetrical and have a capacity of at least 50 cl. To work in the return system, flat bottles have to be labelled with barcodes on both the front and the back, on the flat side of the bottle.

If a package deviates from these forms, Returpack and the RVM suppliers need to further evaluate the package before approval can be provided.

TEST FOR TOP-HEAVY PACKAGE

Place the package with the cap attached on a flat surface. If the upper part of the package tips and touches the surface, or it balances on the shoulder, there is a risk that the package cannot be approved. Contact Returpack for evaluation.



3. Dimensions

The following package dimensions are permitted:

	Min. measurement	Max. measurement
Outer diameter	45 mm	130 mm
Height	85 mm	370 mm (including cap)

4. Material thickness

The hardness of the package is an important parameter when approving a new package.

This is most relevant for packages with a considerably larger material thickness and/or base compared to more traditional designs. Thicker packages can cause problems when being compressed in the reverse vending machine. There is a risk of hard parts fastening in the compactor, blocking the machine and causing parts of the compactor to fail.

The material thickness is evaluated in compression tests. The force required to compress the package to 15 mm is measured and must not exceed 3.0 kN. This is tested by compressing the bottom and neck as illustrated below.

5. Barcode marking

The package must be marked with a barcode in compliance with the EAN-13, EAN-8, UPC-A or UPC-E standard (ISO 15420). According to the standard, the barcode must be of sufficient quality to achieve “Grade 1.5”, as defined in ISO 15416, when read throughout the life of the package.

5.1 Barcode format

The barcode must be in one of the formats shown in the table below. Returpack’s recommendation is to use recommended (Rec.) sizes only. The module width, also known as the X dimension, is the width of the narrowest line in the barcode. See GS1 and their barcode guide, **Storleksguide » GS1 Sweden** (Size guide » GS1 Sweden) for more information about the barcode.

Barcode	EAN-13		EAN-8		UPC-A	UPC-E
	Module width (mm)	Width x height (mm)	Module width (mm)	Width x height (mm)	Width x height (mm)	Width x height (mm)
Min.	0.264	29.8 x 18.3	0.264	21.4 x 14.6	29.8 x 20.7	21.4 x 17.0
Rec.*	0.330	37.3 x 22.9	0.330	26.7 x 18.2	37.3 x 25.9	26.7 x 21.3

5.2 Light margin

There must always be a light margin (silent zone) on either side of the barcode. The light margin is a blank area needed to prevent adjacent information, such as the decoration of the packaging, interfering with the barcode being read and rendering the barcode unreadable. The light margin must be 11 times the module width of the barcode.

5.3 Placement

The barcode must be printed upright (vertically), that is, like a ladder in the direction of the height of the package. The barcode label shall be placed on the flattest part of the package surface possible to avoid deforming the barcode, which can make the barcode more difficult to read.

For cans, the barcode shall be placed vertically and at least 10 mm from the lower and upper edges of the package.

For bottles, the barcode must be placed vertically on the bottle's main label and never on a smaller label around the bottleneck.

5.4 Colours

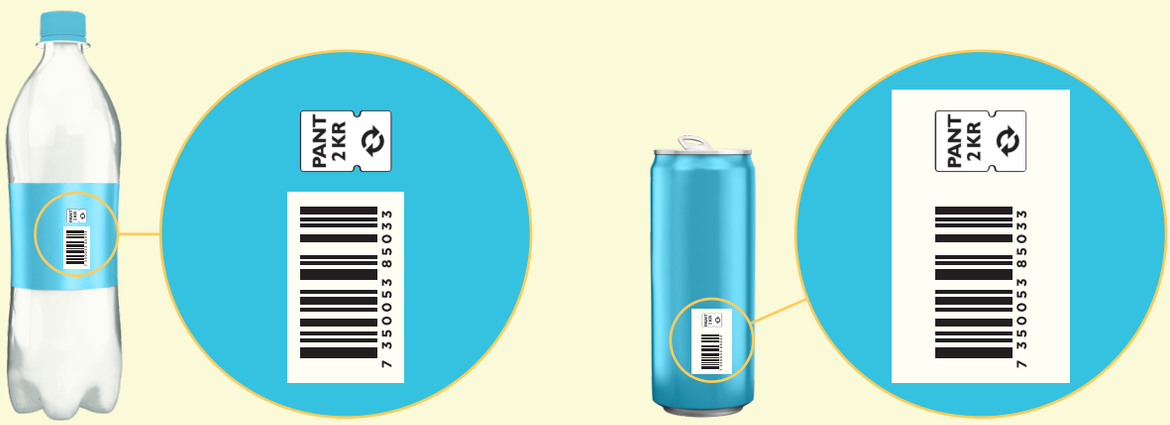
The barcode's readability is dependent on the contrast between the dark lines on a light-coloured background. Black lines on a white background provide the best contrast and hence the best readability, but other colour combinations may work. Never use a transparent background for the barcode. The barcode's readability is checked when registering all new products.

6. Deposit marking

A deposit mark as illustrated here, must be printed close to the barcode. The minimum permitted size is 10 x 15 mm. Black text on a white background is recommended. Other combinations may also be used if approved by Returpack beforehand. Only Returpack's original format may be used.

2 SEK deposit is applicable to all metal and plastic packaging up to and including 1 litre*.

3 SEK deposit is applicable to plastic packaging over 1 litre*.



** Increased deposit value (2 SEK & 3 SEK) from September 1st 2025.*

7. Rules for deposit and barcode markings

All producers and importers are liable to Returpack for the barcodes which they include in the return system and for the deposits collected using those codes. Accordingly, it is important that the barcode used on the package is unique, to both the producer or importer and the return system.

A product which has previously been sold without a deposit in Sweden must be issued with a new barcode if the product is now to be sold with a deposit.

The producers and importers are directly responsible for procuring barcodes through GS1 Sweden. Read more at **GS1.se**.

7.1 Labelling of export products

Duty-free and export items which are only to be sold outside Sweden should not be labelled with a visible Swedish deposit mark and should not use a barcode that is affiliated with Returpack.

Sales of all items sold with a Swedish deposit mark must be reported to Returpack (and deposit and packaging fees paid), even if they are exported and sold outside Sweden.

7.2 Exemptions for low-volume products sold in Sweden and Norway

For products with a sales volume of less than 600 000 items per calendar year, it is possible in exceptional cases to sell the products with both Swedish and Norwegian deposit markings and to report only sales made on the Swedish market to Returpack (and sales made on the Norwegian market to Infinitum). A producer who sells a product with dual deposit markings accepts responsibility for and is obliged to pay for all packages for which a deposit is collected in Sweden from Returpack, even if this exceeds the number of products sold on the Swedish market.

8. Barcode labels

The labelling requirements for the barcode and deposit mark must be met with adhesive labels if it is not possible to modify the original label on the packaging to meet Returpack's labelling requirements.

Adhesive labels are ordered from Returpack. The barcode labels must be applied vertically over the previous barcode on the packaging: see the illustration.

Proprietary adhesive labels to meet the marking requirements are not permitted.

** Increased deposit value (2 SEK & 3 SEK) from September 1st 2025.*

9. Registration

The registration of a new product must be submitted to Returpack for approval no later than six weeks before the planned introduction. The product is registered via *Mina sidor* (My pages) at **pantamera.nu**. Specifications describing the material composition of the bottle material, the label, the adhesive and the cap must be enclosed when registering plastic bottles. These specifications are usually available from the package manufacturer. All product registrations are handled in confidence.

When registration has been completed at *Mina sidor* (My Pages), **three samples** of PET bottle packaging and **one sample** of aluminium can packaging must be submitted to:
Returpack AB
Attn: Product registration
Hanholmsvägen 67
602 38 Norrköping, Sweden

The packaging samples submitted to Returpack for approval must be of the final design and look like the item will look at the time of the launch. The packaging must not be compressed and must be labelled with the correct materials for labels and adhesives. Also include the company's contact details when registering for feedback on the item.

The package is checked against the requirements set out in this document. The shape of the package and the quality and readability of the barcode are tested in a reverse vending machine as well as in ISO-certified control equipment. The material thickness is measured in compression tests. If further evaluation is required, the package is sent to RVM suppliers or materials recovery facilities in consultation with the producer or importer.

Following approval, the barcode is registered in Returpack's product database. The reverse vending machines are updated with new barcodes at least once a week.

9.1. Changes to shape, size, label, design or material

All changes to products already included in the return system must be approved by Returpack before being introduced. Major changes in shape and size may mean that the packaging can no longer be recognised by the reverse vending machines and so it will no longer be possible to use the deposit system. New sample packages and material specifications must be submitted to Returpack for approval.

10. Material requirements for metal packages

Metal packages must be made from aluminium or steel. Packages made from a combination of aluminium or steel and plastic are not permitted. The exception is metal packages with plastic labels and sleeves. Following an assessment, Returpack can allow an exception and approve small plastic details on a metal package. PVC is not permitted under any circumstances.

Packages with designs or materials which do not meet the material thickness requirements of Chapter 4 are not permitted. This can include, for example, hard bottles and packages comprised of three components of thicker material which are welded together.

Some gas cartridges risk damaging the compactors in the reverse vending machines. Packages with a small gas cartridge, what is known as a widget, containing N_2, CO_2 or a mixture of gases, must be assessed by Returpack before they can be approved.

11. Material requirements for plastic packages

At present, plastic packaging is divided into three fractions when sorted: clear PET bottles, coloured PET and HDPE/PP caps. The material fractions are sorted and separated using various techniques, including NIR spectroscopy and swim-sink separators. To enable high-quality materials recovery, well-separated fractions are a must, which in turn necessitates package design requirements.

Specifications of all materials used in the package must always be submitted when registering a new product or changes to products already included in the return system.

The table below describes which materials are approved for each fraction, and which materials are not permitted in any of the fractions. All materials in the package must be approved. If the product contains a material which is not permitted in that fraction, the product cannot be included in the return system.

If the product contains a material which is not listed, Returpack must be contacted for an evaluation and approval. A more comprehensive evaluation process is required when introducing packaging that differs significantly from previously included packaging in the return system in terms of its design, shape or material composition (e.g. a non-cylindrical shape or containing a significantly increased proportion of recycled raw material) in order to investigate the potential impact and consequences on collection and recycling. That is why it is important for Returpack to be contacted early on in the development process. This is also applicable to the introduction of bottle materials other than PET, such as bottles made of HDPE, PP or biomaterial. Returpack handles all product cases in confidence.

Besides the requirements defined by Returpack, all materials used in the packaging must be compliant with food safety rules and legal requirements.

Fraction:	CLEAR PET	COLOURED PET	Prohibited materials
Bottle material	Max 80% mechanically recycled PET*	Max 80% mechanically recycled PET*	PLA, PVC, PS, PET-G, PEN, PEF
Colour	L* ≥ 93 a* > -0.7 b* < 4	Transparent colours	Metallic colours, opaque bottles with added titanium dioxide (TiO_2) or carbon black.
Barrier	Not permitted	Permitted to an extent	EVOH, PVDC, PEN
Label	Paper, PP, LDPE, TPE (material with density <1 g/cm3)	Paper, PP, LDPE, TPE (material with density <1 g/cm3)	PVC, metal foil, OPS, PS, PLA
Sleeve	PET, PP, LDPE	PET, PP, LDPE	PVC, metal foil, OPS, PS, PLA
Printing ink	As per EuPIA Guideline	As per EuPIA Guideline	Water-soluble inks, substances in the EuPIA exclusion policy.
Adhesive	Water/alkali-soluble at 65 °C and non-reactivating (sticky)	Water/alkali-soluble at 65 °C and non-reactivating (sticky)	
Cap	HDPE, PP, crown cap	HDPE, PP, crown cap	Metal screw cap, PET, Wooden cap
Liner	HDPE, EVA, TPE	HDPE, EVA, TPE	PVC, silicone, metal

** For definition and implementation terms, see Chapter 11.1.1.*

11.1 Bottle material

11.1.1 PET

Virgin PET (vPET) used for beverage bottles must be manufactured in accordance with EU Regulation 10/2011.

Recycled PET (rPET) used in beverage bottles must be manufactured in accordance with EU Regulation 2022/1616. PET bottles may contain no more than 80% mechanically recycled PET. Mechanically recycled PET means that the material undergoes a mechanical process after being shredded and washed in order to remove impurities from the beverage and consumption phase to a level that does not present any risks to health. Please see EU 2022/1616 for further definition (*Suitable material recycling techniques in Table 1 of Annex I in 2022/1616: "Post-consumer mechanical PET recycling"*).

The limitation to 80% mechanically recycled PET is based on current scientific findings regarding risks to the overall material quality. A limit of 80% aims to reduce the proportion of accumulated particles in the recycled material that the mechanical recycling process, with current technology, cannot remove. This requirement applies to bottles produced and filled after May 15, 2025.*

The following information concerning the bottle material must be enclosed with the registration:

- Percentage of vPET/rPET in the packaging
- PET manufacturer and product name of PET resin
- Confirmation of legal compliance with EU 10/2011 and/or EU 2022/1616 regarding mechanically recycled PET.
- Presence of any additive or barrier

11.1.2 Legal requirements for recycled PET

New legislation concerning recycled material in disposable PET beverage bottles on the Swedish market will enter into force on 1 January 2025.

Chapter 3, 6§ of SFS 2022:1274:
Single-use beverage bottles containing polyethylene terephthalate (PET) as their main component may only be made available on the Swedish market by a producer if the bottle contains at least 25 per cent recycled plastic.

The recycled plastic content shall be calculated as an average of the content of the bottles made available by the producer on the Swedish market during a calendar year.

This legislation will be updated on 1 January 2030 to 30% recycled PET in single-use beverage bottles on the Swedish market.

** The implementation date provided a transition period of approximately 14 months from its first communication in March 2024. Returpack considers this transition period reasonable given current scientific findings. Should new technology or scientific findings emerge during the implementation period, Returpack commits to reassessing whether the amended contractual terms meet all regulatory requirements at the intended time of implementation.*

11.2 Colour

11.2.1 Opaque colours

Opaque black and white bottles are difficult to sort. Dyes containing titanium dioxide and carbon black that are used to create opaque materials are not permitted as these substances cause discolouration and make it impossible to recycle PET.

11.2.2 Definition of clear bottles

To measure the colour quality of bottles, transmittance is measured in a spectrophotometer which displays the result in the CIELAB colour space with the variables L*, a* and b*.

L* represents the lightness of the material and ranges from 0 black/opaque to 100 white/transparent. The a* value ranges from green to red, and b* blue to yellow.

Bottles in the clear material fraction are not allowed to contain any addition of colour pigments and shall measure a value of L* of at least 93 ($L^* \geq 93$). This requirement will enter into force on May 15 2025.

Bottles in the clear fraction shall also measure an a* value of no less than -0.7 and a b* value of no more than 4 ($a^* > -0.7$ and $b^* < 4$).

11.3 Barrier

The use of barriers is not permitted for clear PET packaging. Exceptions are made for a few barriers and UV blockers which have been approved by Returpack following extensive testing. If a barrier is to be introduced in a clear PET fraction, the barrier must be tested and approved by Returpack before it can be used.

Barriers may be permitted to a greater extent for coloured PET packaging. If the package contains a barrier, this must be presented in the material specification.

11.4 Label and sleeve

There are two types of label solutions for PET bottles: label and sleeve.

The label is attached to the bottle with glue. The glue can either be applied as a glue strip or cover the entire label. Labels can be made from PP, LDPE, TPE, and Paper. All label sizes are allowed as long as the barcode and deposit symbol fit.

Sleeve is a label solution without glue, consisting of a shrink film. Approved materials for the sleeve are PP, LDPE, and PET. All sleeve sizes are allowed as long as the barcode and deposit symbol fit.

11.5 Printing ink

Printing ink used on the label must not be water-soluble as the ink may contaminate the material during the washing process during recycling. Note in particular that use of printing inks containing antimony, arsenic, cadmium, chromium, lead and mercury is prohibited.

Substances included in *the EuPIA Exclusion policy for printing inks and related products* must not be present in the printing ink. Find out more at **eupia.org**.

11.6 Adhesive

Adhesives shall be washable or soluble in 65°C water containing a 1% alkali solution.

The adhesive on the label must not be reactivated at lower temperatures when it has come off. No adhesive or label residues should remain on the plastic after washing, and the loose pieces of the label must not be sticky.

Reactivation means that an adhesive that has been washed off in warm water becomes sticky again after the label/adhesive has cooled and dried, which may cause the pieces of label to stick to the plastic again, or to the equipment.

A list of recommended adhesives and labelling solutions is published under **Mina sidor** (My Pages) at *pantamera.nu* and is updated regularly. The current list is also available by email on request.

11.7 Cap

Except for crown caps, metal screw tops and caps are not permitted on plastic packages. PET and wooden caps are not permitted.

11.7.1 Cap with liner

Liner refers to the seal which is sometimes used on the inside of the cap to ensure a tight seal. See approved liner materials in the table in Chapter 11.

11.7.2 Legal requirements for attached caps

Caps must be tethered and remain attached to the bottle throughout the use phase as set out in chapter 3, 7§ of 2022:1274.

The following points are important aspects of the design of attached caps that influence recyclability:

- Length of the fastening arrangement: the further away from the bottle the cap hangs, the greater the risk of impact in the reverse vending machine.
- Use the same plastic (HDPE or PP) in the fastening arrangement as in the cap, additional polymer types make it more difficult to sort and recycle materials.
- It must be possible to separate the fastening arrangement and the bottle material after the bottle and cap have been shredded into flakes, so avoid moulding the fastening arrangement into the bottle.

12. Forthcoming changes

12.1 Dairy products in the return system in 2029

The current exemption in the legislation, which excludes dairy products from the return system, will be removed as of 1 January 2029. From this date, it will be mandatory for all categories of beverages in plastic and metal packaging to be part of an approved return system.

More information can be found in SFS 2022:1274, chapter 3, 11§.

12.2 Transition to 2D codes

As of 2027, there will be a global transition for marking of consumer products, from the current linear barcodes to two-dimensional codes of QR or data matrix type. Returpack is monitoring this development and is working in partnership with reverse vending machine suppliers to adapt the return system. Returpack will inform all members when the return system is ready to use only 2D codes for identification in reverse vending machines, and we predict that there will be a transition period after 2027 when labelling with linear barcodes will continue to be required.

Abbreviations

EFSA	European Food Safety Authority
EuPIA	European Printing Ink Association
EVA	Ethylene-vinyl acetate
EVOH	Ethylene vinyl alcohol
HDPE	High-density polyethylene
ISO	International Organization for Standardization
LDPE	Low-density polyethylene
NIR	Near infrared
OPP	Oriented polypropylene
OPS	Oriented polystyrene
PA	Polyamide nylon
PEF	Polyethylene furanoate
PEN	Polyethylene naphthalate
PET	Polyethylene terephthalate
PET-G	Polyethylene terephthalate glycol
PLA	Polylactic acid
PP	Polypropylene
PS	Polystyrene
PVC	Polyvinyl chloride
PVDC	Polyvinylidene chloride
rPET	Recycled PET
vPET	Virgin PET
TPE	Thermoplastic elastomers
RVM	Reverse Vending Machines

Revision history

Version/Date	Change
2016-05-01	New template and structure, new Chapter 6.1, changes to 11.4
2016-05-04	Clarification regarding definition of heavy metals in 11.5
2018-02-05	Changes to Chapter 3 of permitted dimensions, reworking of Chapter 10, new requirements in Chapter 11 regarding adhesive and labels. Changed wording.
2018-11-13	Corrected a mistake in the barcode format table in Chapter 5
2019-06-26	Changes to Chapter 11.6.1, extension of transition period
2020-05-28	Chapter 5 Barcode marking, added X dimension, changed rules on placement Chapter 7.2 new requirement, use of multiple deposit symbols Chapter 11.1.1, new requirements concerning recycled PET New layout
2021-10-01	Chapter 11 deletion of requirements for HDPE and PP bottles in the table and amendments to the text Chapter 11.2.1 new colour requirements for clear PET bottles Chapter 11.6.1 deletion of transition period for adhesives that are not approved Chapter 11.7.1 new guidelines for retained caps
2023-02-01	Chapter 1 Adaptation to the new Regulation 2022:1274 replacing 2005:220, and reference to the general conditions of the affiliation agreement
2025-03-01	Chapter 2 New requirement for flat bottles Chapter 3 Dimensions amended Chapter 4 Amended to approved force for compression of items Chapter 5 New illustrations for clarification purposes and clarification of requirements in the text Chapter 6 New illustration for clarification purposes Chapter 8 New illustration for clarification purposes Chapter 11 Updated table containing material requirements Chapter 11.1.1 Updated according to the new Regulations 2022/1616 and 10/2011 and updated according to the new requirement of 80% rPET Chapter 11.2.1 New section on opaque colours Chapter 11.2.2 Limit values for a* and b* have become mandatory requirements and the clear fraction must contain no pigments. Chapter 11.3 Deleted approval for barrier in clear bottle with sleeve Chapter 11.6 Attached cap and liner Chapter 11.4 New chapter on label and sleeve 11.6.2 New section Legal requirements for attached caps Chapter 12 New chapter with forthcoming changes that impact the deposit system New layout Increased deposit value