RETURPACK

APPENDIX 2

TECHNICAL SPECIFICATION AND MARKING MANUAL

METAL CANS

PLASTIC BOTTLES

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Returpack Svenska AB

CONTENTS

1. SPECIFICATION FOR METAL CANS

1.1 Material and technologies

Only cans of aluminium or steel are allowed.

Not allowed: Cans combining aluminium/steel and plastic materials
Cans of three parts made of thicker material (see 1.3)
Metal bottles of thicker material (see 1.3)

Cans containing a small gas compartment, or a so-called ”widget” containing N_2, CO_2 or a mixture of gases may be accepted, but Returpack must be consulted first in each case, as some of the gas containers may harm the compression machinery in the reverse vending machines.

1.2 Dimensions and form

The barcode reading methods used by majority of the reverse vending machines require the cans to be rotatable. Therefore, the cans must be cylindrical and not irregular in shape. Neither must they have long necks that may cause them wobble in the course of rotation.

The following dimensions are acceptable for cans:

	Min	**Max**
Diameter	50 mm	85 mm
Height	85 mm	195 mm

1.3 Material thickness

The hardness of the can is an important parameter in the approval of new products. This is particularly relevant for cans that are much thicker and/or have harder bottom structure compared to their conventional counterparts. Hard cans can cause problems in the reverse vending machine when compressed. There is a risk that parts get stuck in the compactor, causing blockage and machine failure. Material thickness is tested by compression tests.

1.4 Barcode marking

The packaging must be marked with a barcode according to EAN-13, EAN-8, UPC-A or UPC-E standard (ISO/IEC 15420).
The standard requires that the barcode has a quality of "Grade C" ANSI (equivalent to "Grade 2" ISO / IEC 15416) during the entire lifetime of the packaging.
For general specification of the format and coloring of barcodes, refer to www.gs1.se.

1.4.1 Barcode format

The barcode shall have the following format:

Factor	EAN-13	EAN-8	UPC-A	UPC-E
	Width x height (mm)	Width x height (mm)	Width x height (mm)	Width x height (mm)
1.0	37,3 x 25,9	26,7 x 21,3	37,3 x 25,9	26,7 x 21,3

The barcode must be at least of normal size, i.e. factor of 1.0. Maximum acceptable height reduction is 30% of the height of the bars.
For best readability, strive to let the barcode have full height.

1.4.2 Light margin

To the left and right of the bar code there shall always be a light margin (quiet zone). A light margin is an empty area required for the adjacent information, such as package decoration, not to interfere with the reading.

1.4.3 Barcode position

The barcode must be printed vertically, i.e. like a ladder up the side of the can. The lowest bar of the barcode must be situated from 8 to 35 mm from the lower rim of the decoration. If there is no decoration, the distance of 15 - 35 mm from the lower edge of the can is applicable.

1.4.4 Barcode colors

The barcode readability is based on the contrast between the dark bars on a light background. Black lines on a white background give the highest contrast, but other color combinations can work. It is important to carry out performance checks in each case.

For more information about possible color combinations, refer to www.gs1.se.

1.4.5 Unique barcode

Each brewery or importer is responsible for arranging its barcodes via GS1 Sweden. Within Sweden, barcodes shall only be used on products belonging to the Returpack recycling system. Breweries and importers are responsible to Returpack for the barcodes that they have attached to the Returpack recycling system.

1.5 Deposit symbol

A deposit symbol, depicted below, must be printed in the close vicinity of the barcode. The smallest acceptable size for the deposit symbol is 10 x 15 mm. Black text on white background is recommended. Also other combinations may be permitted after approval by Returpack. Only the original format may be used.

1.6 Registration

Packaging samples along with registration form and any specifications needed must be sent to Returpack for approval at least three weeks before a new product is planned to be made available on the market.
The packaging will be checked to meet the requirements of this specification. Practical tests are made for measuring the quality of the barcode. Reverse vending machines and certified equipment for barcode reading are used. If needed, material thickness is tested by compression tests.
After having approved the product, Returpack will register its code in the article register. The reverse vending machines are updated by its suppliers on a weekly basis.

When changing the materials or the design (shape/labelling) of a packaging already attached to the system, new packaging samples and specifications must be sent to Returpack for approval.

Note that all the planned changes in already registered products must first be approved by Returpack before launch can take place. New packaging samples and any specifications shall be sent to Returpack for approval.

1.7 Labels

If it is not possible to design the original label of the packaging in order to comply with the Returpack marking requirements, the requirements must be fulfilled by using adhesive labels. The labels can only be ordered from Returpack. The company must not use self-made labels to cover the original label.

2. SPECIFICATION FOR PLASTIC BOTTLES

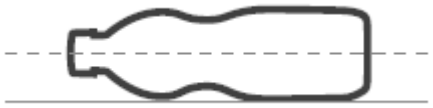
2.1 Material and technologies

See section 3.

2.2 Dimensions and form

The barcode reading methods used by majority of the reverse vending machines require the bottles to be rotatable. Therefore, the bottles must be cylindrical and not irregular in shape. Neither must they have long necks that may cause them wobble in the course of rotation.

Practical test: Place the bottle with the cap fastened on a flat surface. If the upper part of the bottle hits the surface, or if the bottle balances on its shoulder, there is a risk that the bottle can not be accepted. Contact Returpack for assessment.



The following dimensions are acceptable for bottles:

	Min	**Max**
Diameter	50 mm	120 mm
Height	130 mm	360 mm (incl. cap)

2.3 Material thickness

The hardness of the bottle is an important parameter in the approval of new products. This is particularly relevant for bottles that are much thicker and/or have harder bottom structure compared to their conventional counterparts. Hard bottles can cause problems in the reverse vending machine when compressed. There is a risk that parts get stuck in the compactor, causing blockage and machine failure. Material thickness is tested by compression tests.

2.4 Barcode marking

The packaging must be marked with a barcode according to EAN-13, EAN-8, UPC-A or UPC-E standard (ISO/IEC 15420).
The standard requires that the barcode has a quality of "Grade C" ANSI (equivalent to "Grade 2" ISO / IEC 15416) during the entire lifetime of the packaging.
For general specification of the format and coloring of barcodes, refer to www.gs1.se.

2.4.1 Barcode format

The barcode shall have the following format:

Factor	EAN-13	EAN-8	UPC-A	UPC-E
	Width x height (mm)	Width x height (mm)	Width x height (mm)	Width x height (mm)
0.8	29,8 x 20,7	21,4 x 17,0	29,8 x 20,7	21,4 x 17,0
1.0	37,3 x 25,9	26,7 x 21,3	37,3 x 25,9	26,7 x 21,3

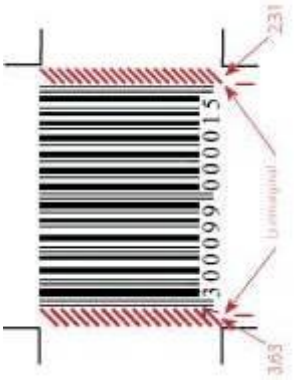
Returpack recommends the use of factor 1.0. Minimum factor 0.8 is required.

2.4.2 Barcode position

The barcode shall be placed vertically, i.e. like a ladder up the side of the bottle, not more than 35 mm from the bottom of the bottle and not more than 60 mm from the top of the bottle.

2.4.3 Light margin

To the left and right of the bar code there shall always be a light margin (quiet zone). A light margin is an empty area required for the adjacent information, such as package decoration, not to interfere with the reading.



2.4.4 Barcode colors

The barcode readability is based on the contrast between the dark bars on a light background. Black lines on a white background give the highest contrast, but other color combinations can work. It is important to carry out performance checks in each case.

For more information about possible color combinations, refer to www.gs1.se.

2.4.5 Unique barcode

Each brewery or importer is responsible for arranging its barcodes via GS1 Sweden. Within Sweden, barcodes shall only be used on products belonging to the Returpack recycling system. Breweries and importers are responsible to Returpack for the barcodes that they have attached to the Returpack recycling system.

2.5 Deposit symbol

A deposit symbol, depicted below, must be printed in the close vicinity of the barcode. The smallest acceptable size for the deposit symbol is 10 x 15 mm. Black text on white background is recommended. Also other combinations may be permitted after approval by Returpack. Only the original format may be used.

Volume ≤ 1 liter

Volume > 1 liter

2.6 Registration

Packaging samples along with registration form and material specifications must be sent to Returpack for approval at least three weeks before a new product is planned to be made available on the Swedish market.
The packaging will be checked to meet the requirements of this specification. Practical tests are made for measuring the quality of the barcode. Reverse vending machines and certified equipment for barcode reading are used. If needed, material thickness is tested by compression tests.
After having approved the product, Returpack will register its code in the article register. The reverse vending machines are updated by its suppliers on a weekly basis.

When changing the materials or the design (shape/labelling) of a packaging already attached to the system, new packaging samples and specifications must be sent to Returpack for approval.

Note that all the planned changes in already registered products must first be approved by Returpack before launch can take place. New packaging samples and any specifications shall be sent to Returpack for approval.

2.7 Labels

If it is not possible to design the original label of the packaging in order to comply with the Returpack marking requirements, the requirements must be fulfilled by using adhesive labels. The labels can only be ordered from Returpack. The company must not use self-made labels to cover the original label.

3. MATERIAL REQUIREMENTS FOR PLASTIC BOTTLES

Below is a list of material requirements Returpack put on products that are registered to the recycling system. Returpack reserves the right to change the rules in accordance with paragraph 4.1 of the Agreement Terms and Conditions (Appendix 1).

The bottles are divided into two fractions; colorless and colored. A fundamental requirement for the colorless fraction is that all the materials in the packaging are approved for the colorless fraction.

- If the product consists of materials that are not allowed, the product cannot be connected to the return system.
- If the product consists of materials that are not specified in the list, Returpack shall be contacted for assessment and eventual approval.

Specifications on all materials used should always be submitted when notifying new products and when making changes to products that are already registered to the recycling system.

3.1 Bottle

	Colorless bottles	Colored bottles	Not allowed	Notes/Conditions
Material				
PET	X	X		Color of the bottle and size of the label determines the fraction. Sorting fee is applied if the label covers more than 44% of the total bottle surface.*
PP, PE		X		Conditions: colored bottle
PVC			X	

* 100% of the area includes the shoulder of the bottle and 15 mm from the base of the bottle

Color				
Colorless	X			
Light blue transparent	X			
Other colors		X		A sorting fee is applied, see Appendix 3 – Fees (Colored fraction)
Metallic colors			X	Color with metallic pigments is not allowed

Barriär/Coating/Additiv				
PET-G, PET-N (max 5 %)	X	X		If colorless bottle: Certificate is required that the material works in Returpack recycling
Plasma coating (max 5 %)	X	X		If colorless bottle: Certificate is required that the material works in Returpack recycling
Glaskin		X		
MXD6, CPTX312, PHAE		X		
Scavengers AA blockers UV stabilizers		X		
EVOH, PEN			X	

3.2 Cap and liner

	Colorless bottles	Colored bottles	Not allowed	Notes/Conditions
Cap				
PE, PP	X	X		
Metal crown cap	X	X		
Metal others			X	
Liner				
PE, EVA, TPE	X	X		
PVC, Silicone, Metal			X	

3.3 Label

Sorting fee applies if the label covers more than 44 % of the total bottle surface.

	Colorless bottles	Colored bottles	Not allowed	Notes/Conditions
Material				
Paper	X	X		
PP	X	X		
PE	X	X		
TPE	X	X		
PET		X		Conditions: The label must cover the entire bottle and be colored
Metallised labels			X	
PVC			X	
OPS			X	
Printing ink				
Water soluble			X	
Heavy metal			X	

3.4 Glue

	Colorless bottles	Colored bottles	Not allowed	Notes/Conditions
Water soluble in 70°C	X	X		Both label and glue has to come off the bottle
Hotmelt, Others				Hotmelt glue and other adhesives can function in the recycling process. Contact Returpack for information and testing.