

PLASTIC BOTTLES WITH A DEPOSIT

– GUIDELINES FOR DESIGNING CONTAINERS AND CONTAINER SYMBOLS

1 GENERAL

In order to connect a plastic bottle to the Palpa deposit-based return system, it must meet certain material, dimension and shape requirements and be reliably identifiable as a container with a deposit by reverse vending machines.

The purpose of these guidelines is to guide beverage manufacturers and beverage importers in designing the shape and layout of containers and in registering their products in the deposit-based return system.

2 CONTAINER SHAPE AND DIMENSIONS

The reverse vending machine identifies beverage containers returned by consumers based on the bar code on the bottle and the shape of the bottle. The bottle must be cylinder-shaped so that the reverse vending machine can rotate it if necessary in order to locate the bar code. Other bottle shapes can be accepted as part of the return system on a case-by-case basis, provided that they work in all reverse vending machine models on the market.

Reverse vending machines place restrictions on container dimensions:

| | |
|-----------------------------------|------------|
| External diameter of bottle | 50–120 mm |
| Bottle height (including closure) | 130–380 mm |

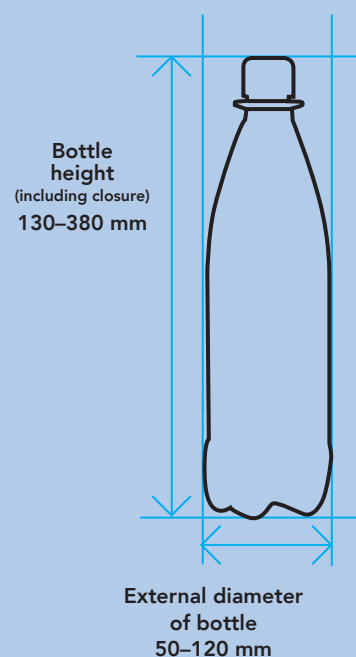
CHANGES TO CONTAINERS

Palpa must be notified of all changes made to beverage containers with a deposit.

If changes are made to the shape or dimensions (diameter, height, weight) of a container that has been approved for the deposit system, the beverage manufacturer/importer must register the product with a new bar code in the return system.



DIMENSIONS OF PLASTIC BOTTLES



3 BAR CODE

Containers connected to the return system must have a bar code. The bar code can be of the type EAN-13, EAN-8, UPC-A or UPC-E. Beverage containers connected to the deposit-based return system may be sold with the bar code in question only in Finland. A bar code that has been used earlier may not be used for a beverage container with a deposit, nor can a bar code used on a beverage container with a deposit be reused on other containers. The reverse vending machine reads the bar code automatically, so special attention must be paid to the placement, size and quality of the code.

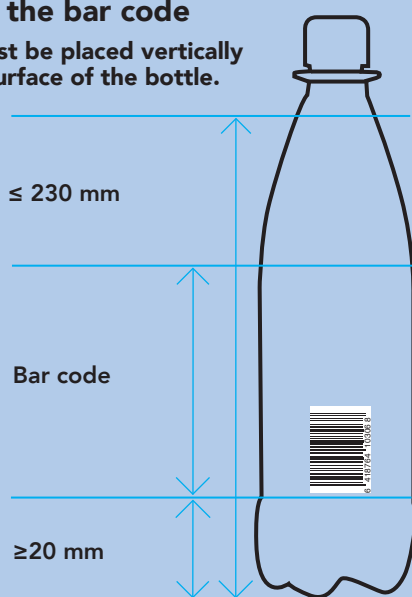
The nominal size of an EAN-13 bar code is 37.29 mm x 22.85 mm and the nominal size of an EAN-8 bar code is 26.73 mm x 18.23 mm. The minimum size of an EAN-13 bar code is 29.83 mm x 18.28 mm and that of an EAN-8 bar code is 21.38 mm x 14.58 mm. A sufficiently wide clearance area must be left at the beginning and end of the bar code in the background colour.

The bar code must be placed on the bottle vertically (in the "ladder rung" position), so that the bars are horizontal. The bar code must be placed on the straight surface of the bottle at a height between 20 mm and 230 mm when measured from the bottom of the container.

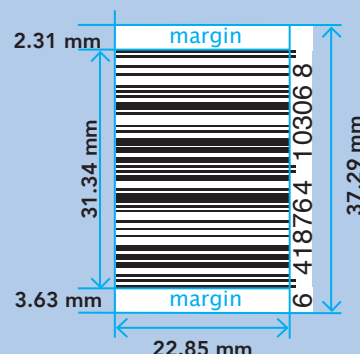
In order for a product to be accepted as part of the return system, it must be accepted by all reverse vending machine models on the market. The beverage manufacturer/importer is responsible for ensuring that the bar code of all product batches released for sale is identifiable by the machines.

Placement of the bar code

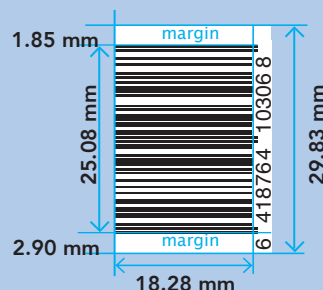
The bar code must be placed vertically on the straight surface of the bottle.



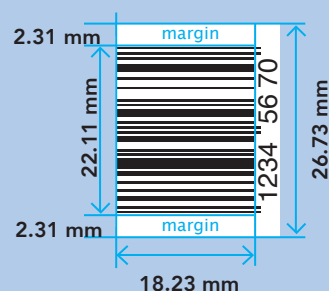
EAN-13 (nominal size)



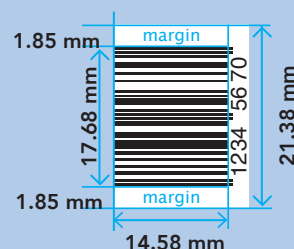
EAN-13 (minimum size)



EAN-8 (nominal size)



EAN-8 (minimum size)



4 DEPOSIT SYMBOLS

The consumer identifies a deposit-based container on the deposit symbol. The smallest permissible size for the symbol is 11 mm x 8 mm and its colouring can be adapted to the other colours of the container. A solid-colour background and high contrast make it easier to find the symbol on the container.

The value of the deposit is determined by the decree on beverage containers. The value of deposits for plastic bottles is €0.10, €0.20 or €0.40 depending on the volume of the product.

- | | |
|--------------------------------------|-------|
| • 0.35 l or less | €0.10 |
| • more than 0.35 l and less than 1 l | €0.20 |
| • 1.0 l or more | €0.40 |

5 MATERIAL SYMBOL

Plastic bottles and/or their labels must have symbols indicating the container material. The minimum size of the material symbol is 6 mm x 5 mm.

6 MATERIAL SPECIFICATION

Clear PET bottle

YES

- Bottle**
 - PET
- Colour**
 - clear
 - transparent light blue
- Closure**
 - HDPE
 - PP
- Seals, valves**
 - PE
 - EVA
- Barrier**
 - monolayer
- Coatings, additives**
 - Glaskin
 - Bestpet
- Label, sleeve***
 - OPP
 - PP
 - PE
 - PET
 - paper
- Label glue**
 - water or alkali soluble (label detaches when washed at +65°C)

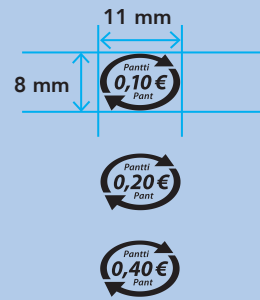


NO

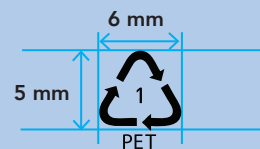
- Bottle**
 - PP
 - PE
 - PLA
- Closure**
 - PS
 - PVC
 - metal
 - thermoset
- Seals, valves**
 - metal
 - PCV
 - silicon
- Barrier**
 - multilayer
- Coatings, additives**
 - all
- Label, sleeve***
 - OPS
 - PVC
 - metallised materials
 - heavy metal printing inks
- Label glue**
 - hotmelt

*If sleeve label cover used
 ≤ 40% of bottle surface area – transparent bottle recycling fee
 > 40% of bottle surface area – coloured bottle recycling fee

Minimum size of deposit symbol



Minimum size of material symbol



Coloured PET bottle

YES

- Bottle**
 - PET
- Colour**
 - transparent colours
- Closure**
 - HDPE
 - PP
 - PET
- Seals, valves**
 - PE
 - EVA
- Barrier**
 - monolayer
 - multilayer without tie layers
- Coatings, additives**
 - Glaskin
 - Bestpet
- Label, sleeve***
 - OPP
 - PP
 - PE
 - PET
 - paper
- Label glue**
 - water or alkali soluble (label detaches when washed at +65°C)



NO

- Bottle**
 - PP
 - PE
 - PLA
- Colour**
 - metal colours
- Closure**
 - PS
 - PVC
 - metal
 - thermoset
- Seals, valves**
 - metal
 - PCV
 - silicon
- Barrier**
 - multilayer with tie layers
- Coatings, additives**
 - all
- Label, sleeve***
 - PVC
 - metallised materials
 - heavy metal printing inks
- Label glue**
 - hotmelt

Clear PET bottle containing metal parts

YES

- Bottle**
 - PET
- Colour**
 - clear
 - transparent light blue
- Closure**
 - HDPE
 - PP
 - metal
- Seals, valves**
 - PE
 - EVA
 - metal
- Barrier**
 - monolayer
- Coatings, additives**
 - Glaskin
 - Bestpet
- Label, sleeve***
 - OPP
 - PP
 - PE
 - PET
 - paper
 - foiling**
- Label glue**
 - water or alkali soluble (label detaches when washed at +65°C)



NO

- Bottle**
 - PP
 - PE
 - PLA
- Closure**
 - PS
 - PVC
 - thermoset
- Seals, valves**
 - PCV
 - silicon
- Barrier**
 - multilayer
- Coatings, additives**
 - all
- Label, sleeve***
 - OPS
 - PVC
 - metallised materials
 - heavy metal printing inks
- Label glue**
 - hotmelt

* If sleeve label cover used
 ≤ 40% of bottle surface area – transparent bottle recycling fee
 > 40% of bottle surface area – coloured bottle recycling fee
 ** Metallised materials ≤15% of total label surface area

Coloured PET bottle containing metal parts

YES

Bottle

- PET

Colour

- transparent colours

Closure

- HDPE
- PP
- PET
- metal

Seals, valves

- PE
- EVA
- metal

Barrier

- monolayer
- multilayer without tie layers

Coatings, additives

- Glaskin
- Bestpet

Label, sleeve*

- OPP
- PP
- PE
- PET
- paper
- foiling*

Label glue

- water or alkali soluble (label detaches when washed at +65°C)



NO

Bottle

- PP
- PE
- PLA

Colour

- metal colours

Closure

- PS
- PVC
- thermoset

Seals, valves

- PCV
- silicon

Barrier

- multilayer with tie layers

Coatings, additives

- all

Label, sleeve*

- PVC
- metallised materials
- heavy metal printing inks

Label glue

- hotmelt

* Metallisation $\leq 15\%$ of total label surface area

7 OTHER RELATED INSTRUCTIONS

- Joining the deposit-based return system (general guidelines)
- Price list
- Instructions for sending sample containers

Deposit and material symbols can be downloaded at

<https://www.palpa.fi/materials/materialbank/#plastic-bottle>