



THE **MIGHTY**

EMPTY



GREEN DEEDS COME IN EMPTY PACKAGES

EVERYDAY ECOLOGICAL ACHIEVEMENT

WHEN did you last buy water, soft drinks or juice from a shop? And what happened when the bottle was empty? Let me guess – it ended up in a reverse vending machine. Returning bottles and cans is an ecological achievement that reduces littering, consumption of raw materials and saves energy, which helps combat climate change.

Every year, Finns drink millions of litres of beverages. Most of them are packaged into returnable bottles and cans with a deposit for returning them. Finns are, in fact, excellent in returning them: nine out of ten bottles and cans bought are returned. We're great!

But let's get back to the beverage container you last bought and returned. Think about

what happens when over five million Finns do the same. How many containers are returned annually? And where do they end up after being returned?

This booklet contains the answer to these and many other questions. You can reflect on what you have read with the exercises marked **Think!**.



There is a quiz at the end of the booklet for testing what you have learned!

THE MIGHTY EMPTIES

Green deeds come in empty packages

This booklet was published by Suomen Palautuspakkaus Oy (PALPA), a company whose task it is to take care of recycling beverage containers with a deposit and promoting it in Finland.



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WHAT DOES
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9



HOW MANY CANS
& BOTTLES
DOES THE
AVERAGE
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10

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TEST YOUR
KNOWLEDGE IN A QUIZ!

CONTAINERS WITH A DEPOSIT



- On average, 40 cans are returned every second.
- Cans with a deposit are made from aluminium. The actual can is disposable, but the aluminium used for it can be reused almost infinitely.
- Beverages sold in cans include soft drinks, energy drinks, beer and cider.
- On average, 12 recycleable plastic bottles are returned every second.
- The actual bottle is disposable, but the PET plastic used for it can be reused in a number of ways.
- You should also return the cap as it can also be recycled.
- Beverages sold in recycleable plastic bottles include soft drinks, mineral water and cider.



THINK!

1

When did you last return bottles or cans with a deposit to a shop?

2

If you put the deposit money received for returns in a week/month/year, what could you do with the accumulated money?

RETURNS
PER SECOND



GLASS BOTTLE

RETURNS
PER SECOND



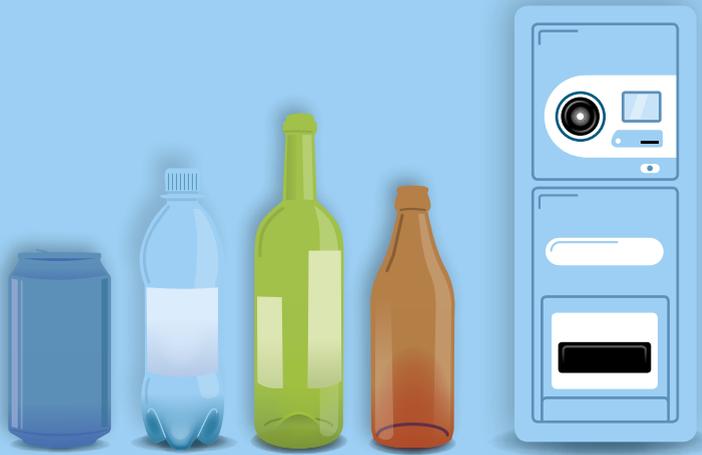
**REFILLABLE
GLASS BOTTLE**

- On average, 4 recyclable glass bottles are returned every second.
- The actual bottle is used only once, but the scrap glass obtained from it can be recycled almost infinitely.
- Alcoholic beverages are often packaged in a glass bottle.
- On average, 1 refillable glass bottles are returned every second, and they are reused approximately 33 times.
- The Finnish deposit-based returning system was established in the 1950s specifically to recycle these bottles.
- Most refillable glass bottles are used for soft drinks and alcoholic beverages for restaurants.

WHAT HAPPENS TO BOTTLES AND CANS IN RECYCLING?

1 RETURNING

A beverage bottle or can is returned to the shop.



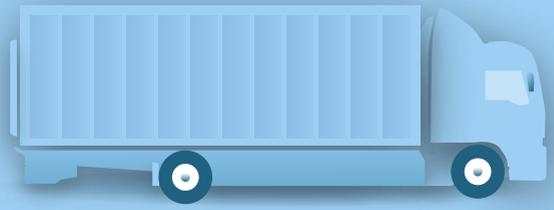
2 PACKING

The reverse vending machine sorts the packages and they are packed at the shop for transport.



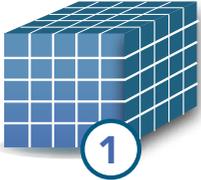
3 TRANSPORT

The bottles and cans are transported to the processing plant or brewery.

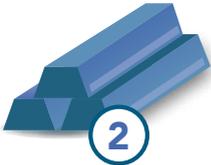


4 PROCESSING

CAN



At the processing plant, the cans are compressed into large bales...

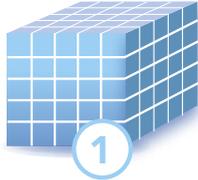


... which are taken to an aluminium melting plant and melted into aluminium bars.



The aluminium blocks are compressed into thin sheets that are used to manufacture new cans. Aluminium can be recycled almost indefinitely.

PLASTIC BOTTLE



At the processing plant, the bottles are compressed into large bales and taken to the recycling plant.

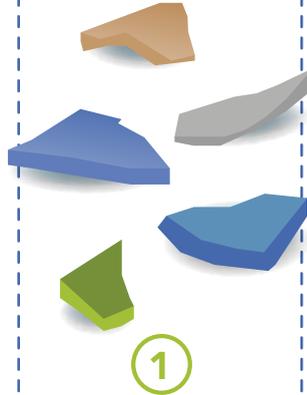


The bottles are milled and sorted by colour for reuse at the recycling plant.



The recycled plastic is used to manufacture new bottles, packaging materials, textiles, backpacks and pencils, among other things.

GLASS BOTTLE



At the processing plant, the glass bottles are crushed, cleaned and sorted for recycling according to the colour of the glass.



Recycled glass is used to make new glass bottles and jars. In addition, it is used to make glass wool and foam glass, which are used in construction.

REFILLABLE GLASS BOTTLE



At the brewery, the bottles are washed and rinsed.



The bottles are refilled and relabelled.



THINK!

What and who are needed to get a beverage bottle or can bought from a shop from recycling back into use?

IDENTIFYING A CONTAINER WITH A DEPOSIT

PURPOSE OF THE DEPOSIT MARKING:

The deposit marking tells the buyer of the beverage that the bottle or can is a beverage container with a deposit.

THE DEPOSIT MARKING CONSISTS OF TWO PARTS:

deposit value and the surrounding arrow pattern. The deposit marking is usually found close to the barcode.



DEPOSIT VALUE:

The sum at the centre of the arrow symbol is the value of the deposit. Depending on the container, it is 10, 15, 20 or 40 cents.

THE BARCODE HAS TWO USES:

it is used for reading the price of the beverage at the counter and the value of the deposit in the reverse vending machine. Therefore, it is important that the barcode is not torn, broken or smudged.



DID YOU KNOW?

Some glass bottles do not have a deposit marking even though they have a deposit. In this case, the deposit can be checked from the price tag on the shelf or the receipt. The deposit of any beverage container whatsoever can be checked using the barcode at extra.palpa.fi/palpa/pantillisuus



THINK!

- 1
- 2

Have you ever tried to return a beverage can or bottle that was not good to be returned? Can you say why?

Think about why it is important to sort waste correctly.

WHAT IS THE PROBLEM WHEN A REVERSE VENDING MACHINE IS NOT WORKING?

What kind of container does a reverse vending machine accept? Which does it not?

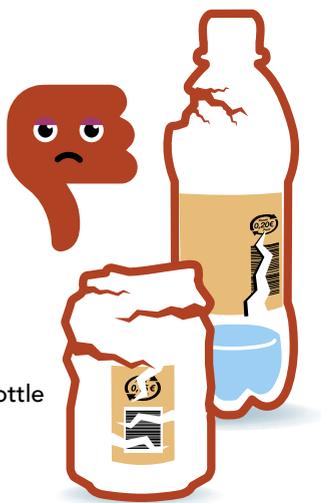


YES

- + Empty can or bottle
- + Intact can or bottle
- + Intact label

NO

- Can or bottle that still contains fluid
- Crushed can or plastic bottle, broken glass bottle
- The label is badly torn or loose



At times, the containers in the machine are full or it runs out of receipt paper in the middle of returning. Litter and fluids at the bottom of cans and bottles, on the other hand, can soil the reverse vending machine so that it begins to malfunction.



INFO

Why must bottles and cans be labeled and in their original shape when returned? The reverse vending machine identifies the cans and bottles based on their barcode and shape. If a can has been crushed or the label of a bottle has become loose, identification is not possible.

Why is it important to identify the containers? Identification is needed so that the reverse vending machine knows how much money it needs to return. In addition, the reverse vending machine sorts the containers for recycling. If identification is not possible, sorting can go wrong. You should not put the wrong kind of waste in a biowaste container or paper collection at home – in the same way, beverage containers need to be sorted correctly so that they can be used as efficiently as possible!



DID YOU KNOW?

It makes sense to recycle also containers that do not have the deposit marking. It is the better alternative for the environment.

- Cans that do not have a deposit can be returned to reverse vending machines or a metal collection point.
- Plastic bottles that do not have a deposit can be recycled as energy fraction or household waste
- Glass bottles that do not have a deposit can be returned to a glass collection point.
- Small shops and kiosks also receive containers with a deposit, even if they do not have a reverse vending machine.

RETURNED VOLUMES

The average volume of used bottles and cans returned annually for recycling is:

CANS



Each year, the average Finn returns:

PLASTIC BOTTLES



GLASS BOTTLES



REFILLABLE GLASS BOTTLES



THINK!

1

Cans and bottles are used for making a lot of other things besides new beverage containers. Think about all of the things made from bottles or cans that you could find in your own home. And could something that is with or on you be made from a recycled plastic bottle?

2

Think about what would happen if beverage containers were not returned. Would you return beverage containers if they didn't have a deposit?

QUIZ

1 How many cans, plastic bottles, glass bottles and refillable glass bottles are returned on average...

- a) Per second?
- b) Per hour?

2 What percentage of all cans and bottles sold annually is recycled on average?

- a) 50–60%
- b) over 90%
- c) 70–80%

3 What phases does the recycling of cans and bottles involve?

4 Connect the beverage container with the outcome of the recycling chain.

Glass bottle
Plastic bottle
Refillable glass bottle
Can

Refillable glass bottle
New can
New glass bottle
New plastic bottle
Glass wool
Backpack
Umbrella
Shirt

5 How can you know whether there is a deposit on the can or bottle?

6 Where would you return the following containers without a deposit? Connect the right options.

Plastic bottle
Can
Glass bottle
Mixed waste

Reverse vending machine
Glass collection point
Energy fraction
Metal collection point

7 How does a reverse vending machine identify a bottle or can having a deposit?

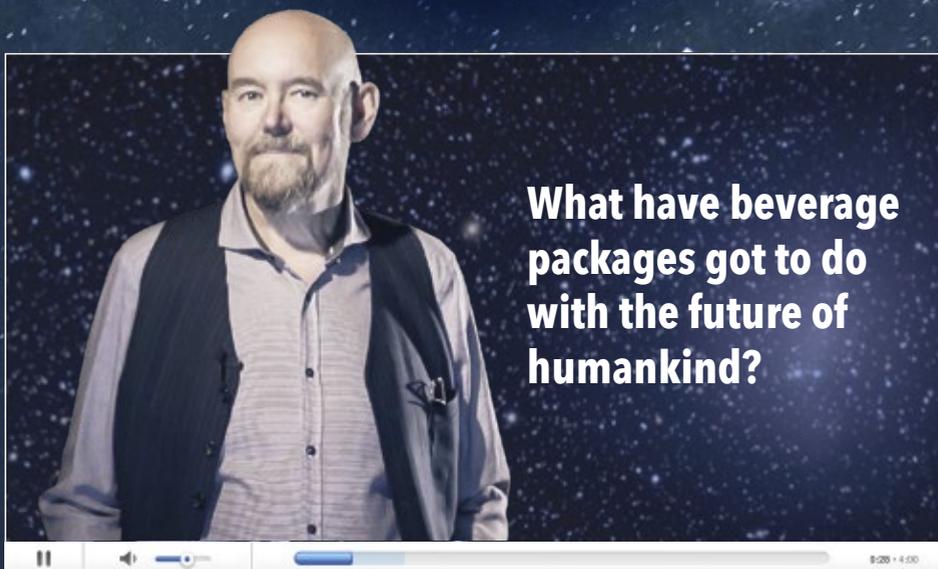
8 a) Why must bottles and cans be empty when returned?
b) And why must the bottles and cans and their labels be intact?

9 What could be the problem when a reverse vending machine does not work? Mention three causes

10 The value of the deposit is stated at the centre of the deposit marking. What are the different deposit values in Finland?

1) 4–5 2) 10 3) 6–7 4) 6–7 5) 8 6) 9 7) 9 8) a) ja b) 9 9) 9 10) 8
Look here for the page for finding the answer:

A SMALL DEED FOR A HUMAN BEING, BUT A GIANT DEED FOR HUMANKIND



Find out by watching the video of Professor Esko Valtaoja! Please find the education material on circular economy for schools (the video, the instructions for teachers and an assignment form for pupils) at palpa.fi/kouluille.

1.7 BILLION ENVIRONMENTAL ACTS PER YEAR

