

Recycling Trays Game

This set includes 5 trays which cover 5 of the main household recycling areas. There are 30 real life picture cards in each set with 6 cards for each of the 5 trays:

1. Glass

Wine Bottle
Beer Bottle
Curry Sauce Jar
Soft Drink Bottle
Coffee Jar
Pizza Topper Jar

2. Metals

Aluminium Foil
Aluminium Can
Can of Baked Beans
Can of Tuna
Aerosol
Can of Peas

3. Paper & Cardboard

Newspaper
Egg Carton
Magazines
Books
Post Cards
Brown Bag

4. Plastics

Milk Bottle
Plastic Food Tray
Plastic Bottles
Water Bottles
Screenwash Container
Bubble Bath Bottle

5. Non Recyclables

Nappies
Ceramics
Styrofoam Packing Chips
Mirrors
Crisp Packet
Non Recyclable Cup

First of all, write the names of the categories such as "Metals" on the trays. We have left the trays blank so you can match the colours of the tray with the colour scheme used by your local council.

The idea of the game is to have all the cards face up and try and decide which recycling tray to put them into. The child can check the answer on the back of the card and then put it into the correct tray. The idea of this game is not simply to talk about the 30 items on the cards but also to go into more depth and discussion about various items that can and cannot be recycled. This guide is designed to be a support aid for teachers when talking about recycling themes.

We would also stress that recycling differs enormously across different councils, local authorities, regions and countries. We have tried to give a balanced view of the most common ways of recycling materials but these will differ across areas. Indeed as new technology advances, it might become more economically viable to recycle certain materials that were previously deemed too expensive to recycle.

1. Glass

Glass is a great material to recycle. It is quite amazing that glass on supermarket shelves might have been recycled several times over a number of years. Glass does not degrade when recycled, so it can be recycled again and again. Depending on your area, glass is either collected from your house or from bottle banks. You can deposit glass into numerous bottle banks:



A lot of bottle banks or glass recycling points have separate areas for the different colours of bottles – clear, green and brown/amber. The reason for this is that glass tends to retain its colour after recycling. After your glass is collected, it will be taken to a glass treatment plant where it is sorted by colour and washed to remove impurities. After that it is crushed. Crushed glass is called cullet. The cullet is then melted and mixed with other raw materials before being moulded into new products such as bottles and jars.



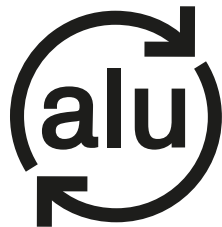
So how is glass made when not recycled?

It is made principally from silica in the form of sand, limestone and soda ash (sodium carbonate). The sand is put into a furnace and melted. Sand on its own has a very high melting point of about 1700° Celsius or 3090° Fahrenheit. The soda ash is added in order to reduce the melting point and therefore reduce the energy used. If you only used sand and soda ash, then you would produce a glass that would dissolve in water! Therefore, limestone is added to stop this happening.

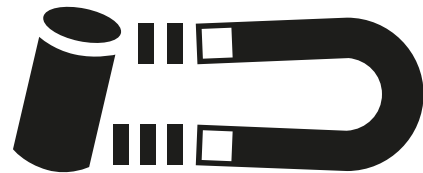
Glass is made into its molten form and then usually it is poured into moulds to make bottles, jars and containers. If you want to make sheets of glass, then the molten glass is floated on a bed of molten metal such as tin. This gives you a standard thickness of glass with a flat surface and modern windows are made from float glass.

2. Metals

Most metals can be recycled into high quality new metal. Two of the most commonly recycled metals are aluminium and steel. Some councils and authorities will collect both together, whereas others will want the metals separating or will only collect one of them. They are often represented by the symbols below:



Recyclable Aluminium



Recyclable Steel

The main way to tell the difference between aluminium and steel is that steel is magnetic and aluminium is non-magnetic. Drink cans are usually made from aluminium and food cans are usually made from steel. Both need to be cleaned before you recycle them.

Aluminium constitutes about 8% of the Earth's land mass and can be recycled numerous times. Recycling Aluminium means you only use 5% of the energy compared to when you first make it. Aluminium is a key metal as it is lightweight, strong, non corrosive, non magnetic, non toxic and non combustible.

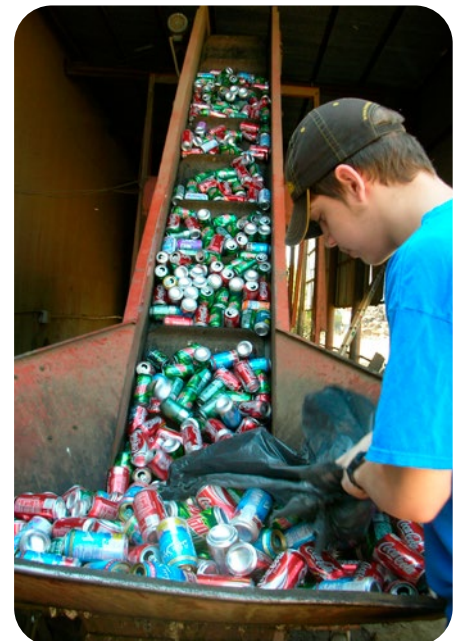
Steel is an alloy of carbon and iron, and there are over 3500 grades, each varying in physical and chemical properties.

After councils collect your aluminium and steel items, they may be mixed in with other items (such as card and plastics). Typically, the waste will go to a recycling centre in which the items are sorted by hand and/or by machine. Metal cans are sorted by magnets. A large magnet will attract the steel cans and electromagnetic technology repels and removes aluminium cans.

Not all of the metal can be recycled – the metal plastic film on chocolate bars is usually not recycled. Although it is usually only Aluminium and Steel which is collected by councils and local authorities, there are recycling schemes for many more metals including:

- ▶ **Iron**
- ▶ **Lead**
- ▶ **Zinc**
- ▶ **Bronze**
- ▶ **Copper**
- ▶ **Tin**
- ▶ **Brass**
- ▶ **Magnesium**

Large items would generally need to either be collected by a company specialising in metal recycling or taken to a recycling centre which accepts these metals. Some delivery companies pick up old household appliances (e.g. washing machines & refrigerators) when they deliver a new one in order to recycle the materials from the old appliance. You can also take your car to a recycling centre and be paid for the scrap metal. If you take large items to be recycled such as a metal gate, a weighing bridge will often be used to calculate the weight of the item and therefore the amount that the recycling centre is willing to pay you for it.



3. Paper & Cardboard

Your local council may provide you with separate paper and cardboard recycling containers, or it might be mixed with other recyclable materials such as plastics and metals. When the paper has been sorted, it is taken to a recycling plant where it is separated into types and grades of paper.

The paper is then pulped, washed and screened to remove inks, plastic film, staples and glue. Non recycled fibre may be added. It will then pass over a series of presses and drying cylinders to create jumbo reels of paper. These jumbo reels can be cut to the correct size depending on which product is to be made. Cardboard is recycled in a similar way to paper. The cardboard is first shredded into small pieces before being mixed with chemicals in the pulping stage.



There are certain forms of paper which cannot usually be recycled:

1. Shredded Paper

In shredding paper, you shorten the fibres and lower the grade of paper from a high grade to a mixed grade. While it is still recyclable, it costs more to recycle and most councils will not recycle this paper due to the high cost.

2. Paper and card contaminated by food products

A prime example is a pizza box. Before the pizza is put into the box, the box could be recycled. But, when the grease and oil contaminate the box, this makes it non recyclable in some areas. The reason is that when cardboard is being recycled, it is mixed with water to form a slurry. The oil and water do not mix well and causes major problems in the recycling of that paper.

4. Plastics

Plastics are split into their different polymer types. When recycling, it is important to check which polymer your household item is made from – you will usually see this indicated by a symbol and a number. We will look at the different polymer types below:



PET (Polyethylene Terephthalate)

You normally see the number 1 and PETE. Typical examples are fizzy drinks and water bottles. Polyethylene terephthalate (PET) is the easiest plastic to recycle and also the most commonly used.



HDPE (High Density Polyethylene)

You can normally see the number 2 and HDPE. Typical examples are washing up liquid and shampoo bottles. Most recycling centres will accept HDPE for recycling.



Polyvinyl Chloride

You can normally see the number 3 and PVC. They are becoming less common now. Although technically recyclable, not all councils and authorities will collect this type of plastic as it is less easy to recycle.



LDPE (Low Density Polyethylene)

You can normally see the number 4 and LDPE. These can occur in various packages. They generally make thin, flexible packaging materials and films. The most common use for LDPE is the disposable plastic bag. LDPE is sometimes recycled by councils and local authorities, but sometimes not because the soft plastic can easily get caught in the wheels and gears of sorting machines that are sorting other materials including bottles, cans and paper.



PP (Polypropylene)

You can normally see the number 5 and PP. These can occur in various packages. This plastic is lightweight, durable and can withstand high temperatures and is occasionally recycled. Some authorities will recycle this material whereas others will not do so.



PS (Polystyrene)

You can normally see the number 6 and PS. These can occur in various packages such as egg cartons and disposable cups. It is notoriously difficult to recycle and the vast majority of councils and authorities will not recycle it.



Other – All other resins and multi-materials

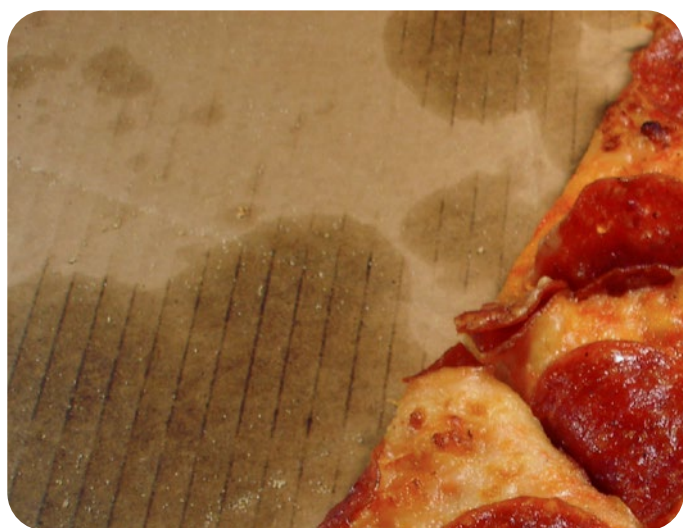
You can normally see the number 7 and OTHER. This is a broad category including plastics such as acrylic, nylon, polycarbonate and polylactic acid (PLA). Due to the broad nature of the plastics involved (a 'catch all' category), most councils and authorities do not collect this type of plastic.

When your plastic waste is collected, it is taken to a recycling facility where it is sorted into the different polymers. This is crucial because different polymers cannot be mixed when being recycled. The sorting is done by hand and/or with machines using technology that recognises the different polymers either by infrared, x-ray or cutting edge sensors. The plastics are shredded, washed, melted and reformed into pellets which are used for making new items.

5. Non Recyclables

The items which are classified as non recyclable differ by country and region. In some areas, certain plastics are non recyclable, whereas in other areas they are recyclable. Generally, items made from mixed materials cannot be recycled – they need to be separated before being recycled.

For example, if you have a product which contains both plastic and cardboard, then the products need to be separated in order to be recycled. Also, cardboard and paper which is stained with food waste (in particular oily and fatty food) cannot usually be recycled. The reason is that when paper and cardboard are recycled, they are mixed with water, and the fats and oils do not mix with the water which causes complications.



Shredded paper is also generally not recycled. In shredding paper, you shorten the fibres and lower the grade of paper from a high grade to a mixed grade. While it is still recyclable, it costs more to recycle and most councils will not recycle this paper due to the high cost.



Most crisp packets have a metallised plastic film and are not usually recycled. Other common items which are not commonly recycled are nappies, cat litter, Styrofoam and ceramics. Another product which cannot easily be recycled is a mirror. Mirrors, window glass and other large pieces of glass cannot be recycled at most recycling centres because they have a different chemical composition than standard glass.

Other Items

There are a number of items which require special attention which are:

1. Batteries

In the UK, shops selling large amounts of batteries have to provide recycling bins and facilities under the Battery Directive. They provide the bins in partnership with a battery compliant scheme to collect and recycle the batteries. An example in the UK is Battery Back. This means it is very easy to find a shop to recycle all of your batteries.



2. Garden Waste

With garden waste, some councils and authorities will collect this in standard bins. You simply put your garden waste into your collection bin. If you do not have this in your area, it is a great opportunity to produce compost in a compost bin. Councils collecting waste may provide special sacks. You can usually include in your bin or sack the following items:

- ▶ Leaves & flowers
- ▶ Grass & weeds
- ▶ Tree bark & pruned branches
- ▶ Clippings & twigs

3. Food Waste

Some councils and local authorities will collect food waste as part of a standard collection. Usually, you have to use compostable bags rather than standard bags. If you don't have this collection service and you have a compost bin, then it's a good idea to recycle your food waste in a compost bin.

4. Clothing and Textiles

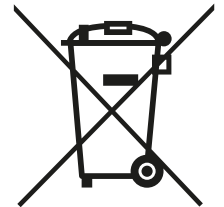
In the UK, a lot of supermarkets have collection bins for clothing and textile items. Alternatively, you can always donate clothes to charities.

5. Furniture

Furniture items such as sofas are hard for the average household to dispose of – normally councils will collect these items free of charge or for a small fee.

6. Electrical Items

The **Waste Electrical and Electronic Equipment (WEEE) Directive** which was first introduced in 2007 in Europe tells us how manufacturers and retailers in European countries should behave with recycling electrical items. Electrical items are classified as those requiring a plug, having batteries or a charger. They should show the symbol shown to the right:



Under the terms of the WEEE directive, all retailers must provide a way for customers to dispose of their old household electrical and electronic equipment when they sell them a new version of the same item, either through a collection service or a store take-back scheme. In the UK, most councils also allow for small electrical items to be disposed of at a recycling centre, and for larger electrical items to be collected. There are other electrical regulations that aid recycling of electrical items both in Europe and across the World.

7. Hazardous Waste

Examples of hazardous waste include:

- ▶ Batteries (see section 1 above)
- ▶ Pesticides
- ▶ Asbestos
- ▶ Non Edible Oils such as car oil
- ▶ Chemicals
- ▶ Equipment with ozone depleting substances such as fridges
- ▶ Solvents
- ▶ Hazardous waste containers

The regulations on what to do with each of these product categories differs by country and region. Generally speaking, there are laws and legislation governing the safe disposal of these items.

Downloadable Resources

For free downloadable resources on Recycling & other subject areas please visit:
www.educationaladvantage.co.uk/free-resources/

