When your green bin is collected by your local authority, it makes its way to EnviroSort. EnviroSort is a Commingled Materials Reclamation Facility (CMRF). Your recycling is sorted into the key material types such as glass; paper, card and cartons; steel tins; aluminium cans; and plastics. Once sorted, each material type then leaves EnviroSort for reprocessors within the U.K.

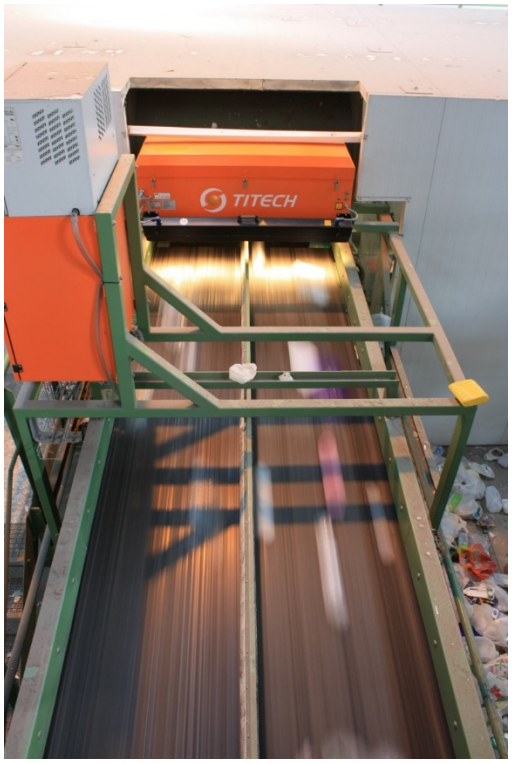
Previously, we have looked at how to recycle glass; paper, card, cardboard and cartons; and metals. This month/issue we're looking at which plastics can be recycled using the green bin collections. Plastic bottles, tubs, trays, punnets and pots are the fourth material type to be separated from the commingled collection.

Most plastics are made from chemicals that come from petroleum (oil), natural gas, or coal. When these chemicals are heated, they break down into molecules. Molecules are groups of more than a single atom. These molecules are then joined in to chains. These long chains of atoms are called polymers. Each time they are recycled, the polymer chains shorten, these plastics can generally be recycled 2-3 times before their quality degrades to the point they cannot be recycled. In addition, each time these plastics are recycled, their strength weakens and sometimes virgin plastic is added to off-set the shortened polymers and add strength. These plastics are **thermoplastics.**

Other plastics are formed when their polymers are crosslinked to form an irreversible chemical bond. These plastics are **thermoset**. These plastics are not recyclable as no matter how much heat is used; they can't be remelted in to new products.

Only plastic bottles, trays, tubs, punnets and pots (including non-black plant pots) can be placed in the green bin. All items need to be clean and dry. Any food or liquid left in any plastics will contaminate the other items in the green bin, and will also contaminate the sorted materials when they leave EnviroSort to go to the reprocessors. Remove any soft film lids. Please don't squash plastics and do keep lids on the plastic bottles as it helps them keep their 3-D shape and helps ensure they don't get mistaken for flat materials such as paper, card and squashed cartons.

The plastics are sorted from your other recyclables by a machine, **The Optical Sorter**. It works by shining beams of light down on to the plastics. The plastic reflects the light back to the Optical Sorter, identifying it as plastic. A jet of air then blows the plastic onto another conveyor belt.



The Optical Sorter

The plastic then goes through three more optical sorters. The first Optical Sorter is looking for **clear PET plastics**. These are numbered **1**, and are used for clear plastic drinks bottles. Over 7.7 million PET water bottles are used daily in the U.K.

The next Optical Sorter is looking for **white HDPE plastics**. These are numbered **2** and are used for white milk bottles. The third Optical Sorter is looking for the other types of plastic, these are primarily pots, punnets, trays, tubs and bottles that are not either clear PET or white HDPE plastics. Once each type of plastic has been identified, it's blown down a chute into its own bunker. When each bunker is full, it is emptied separately onto a central conveyor belt into the baler.

Black plastic can't be recycled in the green bin. Black plastic absorbs light so it is invisible to the Optical Sorters. Even carbon-free black plastic isn't always recyclable, as not every Optical Sorter is able to be reprogrammed to identify carbon-free black plastic. It is also worth noting that not all black plastic in the recycling stream will be carbon-free.

Non-carbon-free black plastic is a low-grade plastic. It was commonly used as it was a cheaper plastic made up of leftover plastic pieces of all different colours then dyed black to hide the imperfections. More manufacturers are now moving away from black plastic as it cannot be recycled.

Hard plastics such as drainpipes and children's toys can't be recycled as they are manufactured from thermoset plastics. If toys are in good condition, they can be donated to a charity shop or passed on to friends. Some toy manufacturers now operate toy recycling schemes.

Soft plastics such as bread bags, carrier bags, crisp packets, food pouches and film lids can't be recycled in the green bin. They are too soft to be recycled via the green bin as they will cause blockages at the CMRF and can also be a source of contamination in the paper stream. These can be recycled at a supermarket soft plastic collection. (Supermarket soft plastics collections can't take bubble-wrap, cling film and biodegradable/compostable soft plastics.) All soft plastics need to be clean.

Blister packs cannot be recycled from the green bin as they are manufactured from plastic and foil which are glued together so they are not easy to recycle due to being mixed materials. As they are flat/2D in appearance, they may be mistaken for paper or card by the Ballistic Separator and contaminate the paper stream.

Soft plastics and blister packs are major contaminants of recycled paper. Once paper leaves EnviroSort and arrives at the paper mill, it is shredded and pulped to be made into paper. Any plastic will also be shredded and pulped with the paper. Pulp is combined with water and placed on a paper making machine where it is flattened, dried, and cut into sheets and rolls. The plastic will fall out of the paper during the drying process leaving holes in the paper.

Polystyrene and Styrofoam can't be recycled from a green bin collection. Recycling these items is a specialised process. It is also a fragile product as it easily breaks into pieces, and it would contaminate the other recycling.

Pump top plastic lids and trigger spray lids can't be recycled as they contain metal and are classed as mixed materials.

Make-up, sunscreen, lip gloss, mascara tubes, make-up palettes, lipstick cases, roll-on/stick deodorants etc. can't be recycled from your green bin due to the size and/or product residue. Many retailers now operate make-up recycling schemes.

Cotton buds cannot be recycled as they are small enough to fall through the gaps in the glass breaker and contaminate the glass.

Plastic cutlery and straws are designed to be single use and the shape and types of plastics used make them unrecyclable.

Many clothes are now manufactured using plastic or recycled plastic. Plastics are melted down and spun into fine threads. However, once plastic has been turned into clothing, it cannot be recycled. Take it to a charity shop or clothing bank at your HRC.

Biodegradable plastics, compostable plastics and any plastics made from non-petroleum components such as potato starch, sugar cane or wheat (plant biomass) can't be recycled in the green bin or via a supermarket's soft plastic collection. Whilst these plastics are manufactured from more sustainable sources, mixing these plastics with conventional petroleum-based plastics will cause contamination in the plastic recycling streams. These plastics are also unable to be composted in garden waste collections as they have to be composted at industrial temperatures in order to biodegrade.

Last year EnviroSort recycled 6,918 tonnes of plastic. This was made up of 1,549 tonnes of clear PET plastic, 680 tonnes of white HDPE plastic and 4,689 tonnes of mixed plastics.

Recycling one tonne of plastic can save 3,114 litres/19.5 barrels of oil and can reduce carbon emissions by 30-40%.

For more information on *Reducing, Reusing, Recycling*, please visit:
https://www.worcestershire.gov.uk/lets-waste-less

For any questions on domestic recycling please contact:
enquiries@severnwaste.co.uk