

## UK Plastics Industry Guidelines

Nearly all types of plastics can be recycled, however the extent to which they are recycled depends upon technical, economic and logistic factors. As a valuable and finite resource, the optimum recovery route for most plastic items at the 'end-of-life' is to be recycled, preferably back into a product that can then be recycled again and again and so on. Plastic arisings in the UK are 3.7 million tonnes of which 32% is recycled and 70% recovered.

The UK has a plastic packaging recycling target of 57% by 2020. The BPF and Plastics Europe with the support of WRAP are implementing the Plastics Industry Recycling Action Plan (PIRAP) to help meet this target.

Nearly all UK councils now offer householders some form of plastics recycling as part of the local authority waste collection system and this is generating increasing annual tonnages of post-consumer plastics packaging waste as the input raw material to the recycling sector. Across the construction, manufacturing and retail sectors the importance of capturing potentially valuable streams of waste plastics and channelling them into efficient recycling and recovery processing routes is now recognised as a key way to save costs and reduce environmental impacts of organisations.

In the past few years the UK has seen rapid growth in the volumes of plastics collected and separated for recycling across both the public and private sector. These newly available tonnages of waste plastics present the industry with the challenge of how best to convert a waste resource into valuable new material and products.

Source of data: WRAP 2016 Plastic Market Situation Report

There are many benefits to be gained by the responsible recycling of plastics;

- Provides a sustainable source of raw materials to industry
- Greatly reduces the environmental impact of plastic-rich products
- Minimises the amount of plastic being sent to the UK's diminishing landfill sites
- Avoids the consumption of the Earth's oil stocks
- Consumes less energy than producing new, virgin polymers
- Encourages a sustainable lifestyle among children and young-adults

BPF Member, Axion Polymers', have done an analysis of their carbon footprint. This found that substituting 1 tonne of virgin PP for tonne of Axpoly® rPP would save nearly 1200 kg CO<sub>2</sub>, which is the equivalent to transporting the material from London to Milan in a stand lorry. Although this data is specific to Axion Polymers' process other methods are likely to show similar benefits.

### **Waste hierarchy**

The waste framework directive sets out that waste should be dealt with in accordance with the waste hierarchy with legislation aiming to move waste management up the waste hierarchy. The recycling of plastics fits into the Waste Hierarchy as an efficient and sustainable use of material resources.

Prevention – Reducing resource use in manufacture, ensuring products last for a long time and using less hazardous material

Preparing for reuse – Repairing, cleaning, refurbishing and checking

Other recovery – incineration with energy recovery, anaerobic digestion, gasification and pyrolysis which produce energy (fuel, heat and power)

Disposal – Landfill and incineration without energy recovery

Plastic can have multiple uses but once it needs to be disposed of recycling fits into the hierarchy as an efficient and sustainable use of material resources.

### **Post-Consumer Recycling**

#### **Plastic Packaging Recycling**

99% of local authorities are now collecting plastic bottles at the kerbside and 76% collect pots, tubs and trays [3]. This is enabling increasing annual tonnages of post-consumer plastic packaging waste to be collected and provides an input raw material into the recycling sector. The graph below shows how the quantity of plastic packaging has increased since 1994 to 512,475 tonnes in 2016 [3]. This gives a 58% plastic packaging collection rate for plastic bottles and 32% for pots, tubs and trays [3].

Both PET and HDPE milk containers provide examples of 'closed-loop' recycling as they can be recycled into food grade material. However, there are other end markets for plastic packaging allowing it to go into long-term applications such as plastic pipes.

Source: Recoup's UK Household Plastics Collection Survey 2017

## **Films**

Recycling of post commercial, industrial and agricultural films is well established in the UK. However, collection of post-consumer film is still developing with only 19% [3] of local authorities collecting it kerbside and it is currently not included as part of WRAP's consistency programme. However, as demand for used plastic films continues to grow on the world trading market, there is greater pressure for UK recyclers to invest in new technology enabling the more mixed, printed and dirty films from household sources to be recovered and recycled.

Plastic arisings for film in 2016 were estimated at 762,000 tonnes with 414,000 tonnes from consumers and 348,000 tonnes from non-consumer [1].

Products made from recycled films include refuse sacks, damp-proof membranes, fencing (garden, furniture etc).

## **Waste Electrical and Electronic Equipment (WEEE)**

Every year an estimated 2 million tonnes of WEEE items are discarded by householders and companies in the UK [4]. The items include anything which has a plug or battery.

Under the WEEE directive companies who sell to household consumer must offer take back scheme or join a distributor take back scheme (DTS) and make a financial contribution to helping set up WEEE collection facilities throughout the UK. This has led to an increase in plastics recycled from WEEE.

DEFRA have set a collection target for WEEE of 622,033 tonnes for 2017. In 2016 581,415 tonnes of WEEE was collected.

Plastic from WEEE can be used for a whole range of products including new electrical goods and stationary.

## **End of Life Vehicles (ELV)**

1.6 to 2 million vehicles reach the end of their life in the UK each year.

Under the End of Life Vehicles Directive by 2015 all member states needed to have a reuse and recovery rate of 95% and a reuse and recycling rate of 85%. Most vehicles are taken to shredders for separation of the materials which includes plastics. In 2014 86.9% of end of life vehicles were reused or recycled and 97.7% were reused or recovered.

Plastics from End of Life Vehicles can be recycled back into component part of vehicles or a whole range of other applications such as flower pots.

### **Biodegradable and degradable plastics**

Degradability is another area of growing importance in waste-management terms. Degradable plastics including biodegradable plastics are commercially available and are used in the packaging for example of fruits and vegetables. Solutions to the litter problem will not be found in the increased use of one material such as degradable plastics, over another. The problem is caused by the behaviour of people and not plastics products.

The impact of degradable materials on the recycling of conventional plastics is a concern for recyclers. Even a perceived risk of recycled material containing biodegradable /degradable material can prevent its use especially in long term applications.

### **Identifying Plastics**

There is no mandatory need to mark plastics however, as an aid to recycling; the BPF recommends that larger parts and packaging should be marked with an appropriate identification code. To identify plastics packaging materials, the BPF recommends the use of a coding system devised by the American Society of the Plastics Industry (SPI). In brief;

- polyethylene terephthalate PET polyethylene terephthalate Water bottles, soft and fizzy drink bottles, pots, tubs, oven ready trays, jam jars
- high-density polyethylene HDPE high-density polyethylene Chemical drums, jerricans, carboys, toys, picnic ware, household and kitchenware, cable insulation, carrier bags, food wrapping material.
- polyvinyl chloride PVC polyvinyl chloride Window frames, drainage pipe, water service pipe, medical devices, blood storage bags, cable and wire insulation, resilient flooring, roofing membranes, stationery, automotive interiors and seat coverings, fashion and footwear, packaging, cling film, credit cards, synthetic leather and other coated fabrics.
- low density polyethylene LDPE low density polyethylene Squeeze bottles, toys, carrier bags, high frequency insulation, chemical tank linings, heavy duty sacks, general packaging, gas and water pipes.
- polypropylene PP polypropylene Polypropylene can be processed by virtually all thermoplastic-processing methods. Most typically PP Products are manufactured by: Extrusion Blow Moulding, Injection Moulding, and General Purpose Extrusion. Expanded Polypropylene (EPP) may be moulded in a specialist process.

Moulded plastics items should be marked in accordance with ISO 11469 where practicable.

The On-Pack Recycling Label (OPRL) provides information to consumers on if a plastic product can be recycled. Retailers and brand owners are encouraged to use this help communicate with the public on what can and cannot be recycled.

Current examples of plastics recycling schemes in the UK

#### Recovinyl

One industry led scheme to improve a particular waste sector is Recovinyl. Recovinyl provides financial incentives to support the collection of PVC waste from sectors not covered by the ELV Directive. This European scheme, backed by the British Plastics Federation, aims to ensure a steady supply of post-consumer PVC waste for recycling.

#### Recofloor

Following the highly successful trial 'Recycle Your Vinyl Flooring', flooring manufacturers Altro and Polyflor have launched a new vinyl flooring take-back scheme: Recofloor. Waste vinyl flooring collected under the scheme will be recycled and diverted from landfill. Axion Consulting has been appointed agent for the new scheme.

#### Vinyl Plus

Vinyl plus The VinylPlus programme is built around five commitments aimed at: achieving a quantum leap in recycling rates of PVC and the development of innovative recycling technologies; addressing concerns about organochlorine emissions; ensuring the sustainable use of additives; enhancing energy efficiency and the use of renewable energy and raw materials in PVC production, and; promoting sustainability throughout the whole PVC value chain.

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