



MYTH BUSTING

WHAT HAPPENS TO YOUR RECYCLED DRINKS CAN?

AN OPINION ARTICLE BY THE UK CAN MAKERS

“It ain’t what you don’t know that gets you into trouble. It’s what you know for sure that just ain’t so.”

- Mark Twain (1835 - 1910), American writer & lecturer

We all know that recycling is important. We read the papers. We see the news. We may even know some of the stats. However, that doesn’t mean that we know all of the facts. The truth is there are a lot of myths out there about what happens to our recycling, specifically beverage cans. Do our drinks cans end up in landfill? How much metal is really recycled? Isn’t it just a bit *too* complicated?

A myriad of myths exist, partly because there is an element of mystery in the act of recycling itself. Materials go into a special bin and a truck comes and takes them away, meaning you don’t actually see what happens to the recyclables with your own eyes. It is this general lack of knowledge that has caused the misconceptions to grow to fabricated proportions. This article aims to dispel the key myths about drinks cans recycling and rid the common misunderstandings that can confuse those trying to do the right thing for a more sustainable environment.

Busting the myth – not much metal packaging is recycled

There is a general concern that metal packaging does not get recycled as much as it should or as much as other packaging materials are recycled.

In fact, the UK achieved a recycling rate of 60% for all drinks cans in 2011, an increase of more than 6% from 2010. The recycling rate for aluminium drinks cans, specifically, increased by 6% alone in 2011, according to Alupro. For all aluminium packaging, rates have increased by more than 4% since 2010.

Steel packaging also performs well in the UK. In 2010, 59% of all steel can packaging was recycled, according to Defra.

In 1997, Government implemented the EU Packaging and Packaging Waste Directive in the UK, which applies to all packaging placed on the market and requires materials used to be minimised and designed for recovery and re-use. It also requires recovery targets to be met by the UK for waste packaging. Since 2008, the UK has met, and in some cases exceeded, the minimum recovery and recycling targets set in the Directive¹. Looking specifically at what the metal industry is doing since the Directive came into force, the UK has invested £300 million into steel recycling², collection and infrastructure over the past two decades and £120 million into aluminium³.

The reality is that a lot of metal is recycled and the metals industry is investing heavily to increase this number further.

Busting the myth – collecting metals is difficult

¹ Government Review of Waste Policy in England, 2011

² TATA, 2012

³ Alupro, 2012

So, it is clear that a great deal of metal packaging is being recycled. But how exactly is it collected in the first place? It is, in fact, very straight forward. There are multiple ways in which metal packaging for recycling can be collected.

Many people believe that kerbside boxes are the only ways in which metals can be recycled. While it is a convenient way, it is not the only way. Drinks cans can be taken to their own separate can banks, at supermarket car parks for example, and put into recycling bins.

In addition to consumer activated recycling, there is a large aspect of collection that goes on that consumers are not aware of and requires no effort on their part. Energy recovery facilities, for example, offer a waste treatment process that involves the combustion of organic substances in waste materials. Extraction from mixed domestic waste is another method of recovering valuable metal packaging that consumers are not as familiar with, in which raw materials are removed from waste to be used to produce more products. In both cases, metal is extracted and reprocessed. We will explore this stage later on in this article.

The metals industry is investing in developing programmes to actively enable and encourage people to recycle. MetalMatters, for example, works in partnerships with local authorities and their waste collection partners to promote metal packaging recycling directly to householders, and thereby improve capture rates for metal packaging at the kerbside. The programme encourages householders to recycle their metal packaging in existing household recycling boxes or bins, rather than disposing of it in general waste. 27 local authorities have the MetalMatters programme across the UK so far, covering 1.7 million households, communicating the benefits of metal recycling to each of them.

Every Can Counts is another example of how the industry is helping make recycling drinks cans easier both at work and on the go. A lot of drinks cans are consumed out of the home and, as people are unlikely to keep these cans to put in their collection bins at home, the programme targets on the go locations – from universities to offices, high streets to events, and more. The away from home drinks can recycling programme helped collect 51 million used beverage cans from workplaces and ‘on the go’ locations across the UK in 2011. This equates to 774 tonnes of aluminium and steel collected and around 5,800 tonnes of greenhouse gas emissions saved as a result of the programme.

Collecting metals is very straightforward, whether its consumers using the various collection facilities available, or recovering metal from mixed domestic waste.

Busting the myth – recycling one thing is just the same as the next

Of course, all of this does not mean much if the general public does not really understand the recycling process to begin with. So how exactly do beverage cans get recycled?

For aluminium cans, the recycling process has five stages. After collection (which we have already explored), shredding is next, in which mechanical hammers shred the flattened cans into small pieces. Next comes decoating, where the decoration is removed from the can through the shreds. This is followed by melting, where the shreds are heated to 750 degrees Celsius in a furnace. The final part of the process is casting, where the hot metal flows into moulds and is cooled by jets of

water, forming 'ingots'. Each ingot weighs 27 tonnes and contains enough metal to make 1.5 million drinks cans.

Steel cans are recycled by being put into a converter before molten iron is added. Because the process is undertaken at high temperatures, there's no need for further cleaning of the cans. To make steel from molten iron, oxygen is then blasted into the converter which heats up to around 1700 degrees Celsius. The cans in this process act as a cooling agent, meaning no additional energy is needed to turn the old cans into liquid metal. This makes it a very effective and energy efficient process. The liquid metal is subsequently processed into slabs which are rolled into flat sheets which are then coiled and can then be used to make other steel products. This process uses only steel, so it's referred to as a closed material loop. However, as the steel can go into any number of new products, this next stage is called an open product loop. Going back to the recycling process, in the case of steel for cans, the coils are then tin coated. From these coils new cans are made by can makers and the cycle can recommence.

A can is always a can, but aluminium and steel are very different materials which require different processes to recycle them.

Busting the myth – a lot of packaging just goes to landfill

A common concern seems to be that actively recycling does not ensure packaging is actually recycled. People are fearful that it still tends to go to landfill.

The truth is that the proportion of local authority collected waste disposed of into landfill between January and December 2011 was 39%, half of the 78% disposed of in 2001 and 2002, so a real improvement is evident. In tonnage terms, more waste was recycled, composted or reused (10.8 million tonnes) than was landfilled (10.1 million tonnes)⁴. The Department of Environment, Food and Rural Affairs (Defra) took further action in 2012 to ensure these improvements continued, issuing directives to councils saying they have a key role to play in making sure recycling is increased and Britain heads towards a zero waste economy.

There is also a commonly held view that everything, given enough time, will eventually decompose anyway, meaning that some consumers think rubbish is only a problem as long as it persists and takes up space. So what is the big deal if our refuse goes to landfill? The problems are very complex, with the time taken for many different materials to break down being a lot longer than is commonly believed. Landfill is not a solution and biodegradation will not just make rubbish disappear.

The good news is that the metal used in a drinks can is a valuable secondary resource. High recycling rates help ensure that metal is used again and again, therefore making it an efficient material as well as economically sound. Recycling saves 70% of the energy required for the production of steel if new materials were being used and 95% of the energy required for aluminium production⁵. Therefore, it is economically important to recycle steel and aluminium.

⁴ Source: DEFRA, August 2012

⁵ European Metal Packaging, 2012

More waste is now being recycled than is being sent to landfill, but the challenge is to increase this number further and capture the remaining 39%.

Busting the myth – separating metals is complicated

Now the recycling process is a bit clearer, the next myth that needs to be busted is that separating metals is complicated. In fact, both aluminium and steel are easy to separate and to recycle. But why are the two different metals used and what is the best process for separating them?

Some drinks cans are made with steel and some aluminium for commercial, manufacturing, filling and distribution reasons. The good news is that the separation of steel and aluminium does not need to happen at home, making recycling very simple for consumers. Drinks cans are collected in any of the ways mentioned previously and are separated from the rest of the materials. They are then crushed, baled and sent to the recycling plant where aluminium and steel cans are separated. Cans are fed along a conveyor belt, steel cans stick to a magnet, whilst aluminium cans drop off into a separate storage bay, to be recycled when ready. This is known as magnetic recovery. This is the most efficient and cost effective way of extracting steel packaging from non-sorted domestic waste.

The other technology available is Eddy Current Separation (ECS), which is used to extract aluminium typically from a mixture of aluminium and steel packaging and plastic bottles, and is often used at Materials Recycling Facilities (MRFs). ECS is based on the use of a magnetic rotor spinning rapidly inside a non-metallic drum driven by a conveyor belt. Magnetic fields create eddy currents which repel the material away from the conveyor. While other materials drop off at the end of the conveyor, the non-ferrous metals are propelled forward for separation. This is used for aluminium, because, unlike ferrous metals, such as steel, it is not possible to extract aluminium from waste using conventional magnetic extraction.

With two effective ways to separate metals already explained, an additional benefit of beverage cans is that metals can also be recovered for recycling after incineration, a process where non-separated wastes are burned. During the incineration process aluminium melts into a liquid which, once cooled, forms drops and steel, due to its high melting point, stays solid. From here aluminium can be separated using the ECS process while steel is easily separated using magnetic extraction. As an increasing proportion of wastes are being incinerated in the UK, this recycling technique will become increasingly important.

Separating metals is not as complex as you might think. With ECS, magnetic separation and incineration processes, separating steel and aluminium is relatively simple.

Busting the myth – closed loop recycling is ‘real’ recycling

If separating metals is straight forward, what happens next and which recycling method is the best? Aluminium and steel are recycled separately in what’s referred to as a closed material loop – just one type of material is processed – but what about the products that are made from this metal?

Closed loop recycling is the most commonly known form of recycling and, therefore, sometimes considered to be the only real recycling option. This is simply not true. But what do closed and open loop recycling really mean and what is the difference?

Closed loop recycling is the remanufacturing of a product back into the same product, for example, an aluminium can could be turned back into another aluminium can, keeping the product loop closed. Closed loop recycling has becoming a very popular choice amongst manufacturers and consumers as there is a 'feel good' factor in knowing something is made from '100% recycled material'.

Open loop recycling is the process where material from one or more products is recycled and made into another product, for example, a steel can could become part of a new bridge or a car next time around.

Both open and closed recycling mean that metal can get used over and over again. What is important here is the percentage of the overall material recycled in the UK, not the percentage of recycled material in a particular product.

Busting the myth – recycling does not benefit the environment

So this article has explained what happens to drinks cans when recycled, where they go, how they are separated and that one recycling process is not better than the other. The question is – does it really matter? The answer is, of course it does.

The good news is that with aluminium, for example, 75% of the metal ever used is still in productive use today. In fact, the best thing about metals is that, since they are 100% recyclable, they save more carbon every time they pass through the recycling loop.

Every tonne of aluminium recycled saves four tonnes of bauxite, nine tonnes of CO₂ emissions, 95% of the energy needed to make aluminium from raw materials and 97% of the greenhouse gas emissions⁶. Every tonne of steel packaging recycled saves 1.5 tonnes of iron ore, 40% of the water required in production, 75% of the energy needed to make steel from virgin material and reduces CO₂ emissions by 80%, air emissions by 86% and water pollution by 76%⁷.

To further highlight how recycling drink cans will benefit the environment: the energy saved by recycling four aluminium drink cans would run a washing machine for one hour or run an electric blanket for eight hours. The energy savings made by recycling steel packaging from the average UK household in 2010 were enough to boil a kettle over 130 times.

Not only does recycling metal save valuable resources, there are significant energy and CO₂ emissions savings as a result, so it makes environmental sense to recycle.

Busting the myth – the lifecycle of metals is finite

⁶ Every Can counts, 2012

⁷ Alupro, 2012

It is easy to see why metals might be wrongly seen as being finite materials (those that are not infinitely recyclable), as lots of other materials are, however this simply is not the case.

Metal packaging has no end of life. As metals used in cans are basic in their makeup and, therefore, unique from other drink packaging formats, they are not lost in the recycling process. Subsequently, metal can be defined as a permanently available material. The permanent nature of metal means it has a unique material loop that is hugely energy, carbon and resource efficient if the metals are recycled and re-used.

Some other packaging materials can use non-renewable resources, meaning they exist in nature in a fixed amount, or are consumed at a faster rate than nature can create them. This means that these resources will eventually be used up. As a permanently recyclable resource, metal makes a good choice for packaging.

Next time you consume a canned drink, remember that its life doesn't have to end once its empty. Because it's made from permanently available material, it can be recycled infinitely with no loss of quality.

Busting the myth – it's difficult for the public to recycle and that they do not care

So this is the point where nearly all the myths of metals recycling have been dispelled. It's straight forward to recycle, it does make a difference and, in fact, as drinks cans are made from infinitely recyclable material they absolutely *should* be recycled. Now for the final myth, that the public do not care.

It's fair to say that consumers do want to recycle, but they also want a better understanding of the recycling process and how their contribution can make a difference. In 2011, a report was commissioned by the Can Makers in which a team of students from across the UK was challenged to develop recommendations to increase recycling rates amongst young people whilst "on the go". The findings showed that despite a willingness to recycle more, there is a knowledge barrier often expressed as some of the myths above. Therefore, helping to bust these myths and make recycling an easier process to understand is step one to increasing recycling rates amongst young people.

In 2012, research was conducted by GfK to understand attitudes of consumers towards drinks packaging and recycling. The GfK results confirm that recycling is growing in importance to consumers. Attitudes towards recycling have improved overall. 51% of respondents said that they try to recycle everything they can. 32% of people stated they try to recycle most things. Asked about how to encourage recycling, 81% of people said "more bins in public places", suggesting convenience is a key motivator, a similar result to that of the student report.

The real truth is that the public does care about recycling, as both the GfK research and student report show. However, convenience is a key factor in encouraging more people to recycle the packaging they use.

Conclusion

It's fair to say there are a lot of myths around the recycling of drinks cans. Is it just too complicated? Does it really make a difference? Does recycling really have a positive impact on the environment? All recycling myths need to be busted. Removing these misconceptions has the potential to increase public participation in drinks can recycling and see the UK's recycling rates continue to grow.