MEDIA BACKGROUNDER

Advances in PVC recycling in Europe

Overview

The first decade of the 21st century has seen huge advances in the recycling of polyvinyl chloride (PVC) in Europe. From a situation pre-2000 where there was virtually no infrastructure to support the recycling of PVC and it was dismissed by many as an "unrecyclable" material, today a network of companies across Europe recycles over a quarter of a million tonnes of of post-consumer PVC waste per year. At the same time, the ongoing research and development of innovative new technologies is helping to expand constantly the scope and volume of recyclable applications of PVC.

The catalyst for this recycling revolution has been Vinyl 2010 – an industry voluntary commitment launched in 2000 to enhance the sustainable production and use of PVC. Vinyl 2010 set ambitious targets for the collection and recycling of PVC waste not covered by existing regulation.

Ten years on, the industry has succeeded in meeting and exceeding the targets set in 2000. In the process, it has contributed to the creation of a new recycling industry in Europe.

PVC recycling pre-2000

PVC has always been considered to be a multi-functional highly durable product and has been used extensively in a variety of applications because of its strong cost-performance characteristics. It brings significant benefits to products and applications in the construction, automotive, medical electronic and retail sectors, making cars lighter, more resistant against corrosion, making windows that last longer, allowing fresh water saving through durable piping and storing blood for healthcare purposes.

However, 15 years ago there was a strong perception that PVC was not recyclable, and that "end-of-life' PVC was destined for landfills. As a result, there were only a handful of small scale pilot recycling schemes for PVC in Europe, and by the turn of the millennium the industry was facing the twin threat of de-selection by buyers on sustainability grounds and restrictive legislation.

Vinyl 2010 recycling commitments

In response to this challenge, representatives of the whole value chain – from raw materials producers to plastics converters – came together in 2000 to launch Vinyl 2010 with a view to improving the environmental impact of PVC throughout its life cycle.

One of the central commitments of Vinyl 2010 was a pledge by the industry to recycle 200,000 tonnes of additional post-consumer PVC waste by 2010[1].

[1] From 'Vinyl 2010 – Voluntary Commitment of the PVC industry', October 2001 (p.2): '*The recycling in 2010 of 200,000 tonnes of post-consumer PVC waste. This objective will come in addition to 1999 post-consumer recycling volumes and to any recycling of post-consumer waste as required by the implementation after 1999 of the EU*

Given the lack of existing infrastructure and the scale of investment and innovation required to deliver on this target, it was viewed by many to be overambitious and unrealistic.

Incorporating a new end-of-life phase into the PVC industry's business model inevitably did pose challenges, and increases in collection and recycling rates were slower than anticipated in the early years of the programme.

A key turning point for Vinyl 2010 was the creation of the Recovinyl recycling network in 2005 to facilitate the collection, dispatching and recycling of post-consumer PVC waste, primarily from the construction and demolition sector. Recovinyl was not set up to collect or recycle itself, but rather to encourage and incentivize existing waste management organisations to increase the recycling of PVC. As a result of these efforts, recycling rates began to increase exponentially in the second half of the decade.

Today, Recovinyl brings together a network of over 150 companies across Europe within the framework of Vinyl 2010 and has played a critical role in helping the European PVC industry to meet and exceed its ambitious recycling targets set in 2000, despite the global economic downturn in recent years.

Vinyl 2010 has helped to establish PVC as a recyclable material and enhance considerably its environmental impact throughout its life cycle. It has also stimulated the development of new recycling industry in Europe.

The programme has received broad recognition for its achievements both inside and outside the industry. As testimony to this, an independent report prepared for the European Commission in June 2010 with a view to developing the next set of green public procurement guidelines for windows specifically mentions the progress achieved through Vinyl 2010.[2]

PVC Recycling today

Post-consumer PVC covered by the Vinyl 2010 commitment includes PVC materials used in all applications and sectors once they come to be seen as scrap and does not include waste covered by different regulations such as packaging, automotive (ELV) and electronic appliances (WEEE).

There are two principal ways to recycle this waste:

- Mechanical recycling: whereby PVC waste is ground into small pieces that can be processed into new compounds ready for extrusion, calandering or injecting molding.

- Feedstock recycling: as a result of which PVC waste is broken down into its basic constituents, which can be used again to make PVC or other materials.

Directives on packaging waste, end-of-life vehicles and waste electronic and electrical equipment' *(www.vinyl2010.org/library/voluntary-commitment.html)*

[2] Green Public Procurement – Windows Technical Background Report – European Commission, DG Environment, 2010

The PVC industry has been investing voluntarily in research and pilot projects to demonstrate the technical feasibility of chemical recycling and reduce the costs associated with it, with a view to improving its commercial viability. In addition, one of the key objectives of Vinyl 2010 has been development of innovative new technologies to help increase further the amount of available collected waste. These include Vinyloop – a solvent-based technology that allows for the recycling of PVC composite waste that cannot by satisfactorily recycled by a grinding process.

PVC Recycling in figures

- In 2010, 260,842 tonnes of post-consumer PVC waste was recycled, exceeding the flagship Vinyl 2010 target set in 2000
- PVC can be recycled at least 7 times
- Profiles and pipes make up more than 50% of the total use of PVC in Europe and more than half of the waste from these applications is now recycled from a negligible starting point ten years ago;
- The total recycled PVC waste in 2009 alone was the equivalent weight of 4,500 airbus planes
- The amount of PVC profiles recycled in 2009 could cover 450 Empire State Buildings;
- With the amount of PVC pipes recycled in 2009 it would be possible to build a 20cm diameter pipe from New York to Paris.

Future ambitions

Building on the success of Vinyl 2010, the European PVC industry is committed to setting even more ambitious targets for the future. For the past 12 months, the industry has been working with the globally respected Swedish Sustainable Development NGO, The Natural Step, to develop a progressive new commitment for the next ten years.

Among the factors that will influence the success of this new initiative and contribute to closing the recycling loop for PVC will be the elimination of "free-riding" companies in the PVC value chain, increased recognition of the market value of recycled PVC and ever greater efforts by public authorities and other stakeholders to divert waste from landfills.

The new voluntary scheme, which will be known as VinylPlus, will be launched by the industry in June 2011.

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