



Adventures of a TV cable – comparative life cycle assessments of PVC production

Your old TV cable still has a lot of life left in it: in its next incarnation it could cross oceans, fly through the skies or keep out wind and weather in your new home. After having served its time as an entertainment provider, your cable – together with the TV – usually ends up at a recycling station. This is where, for one company, it turns into a valuable resource.



“Recycling still has to prove that it’s environmentally friendly!”

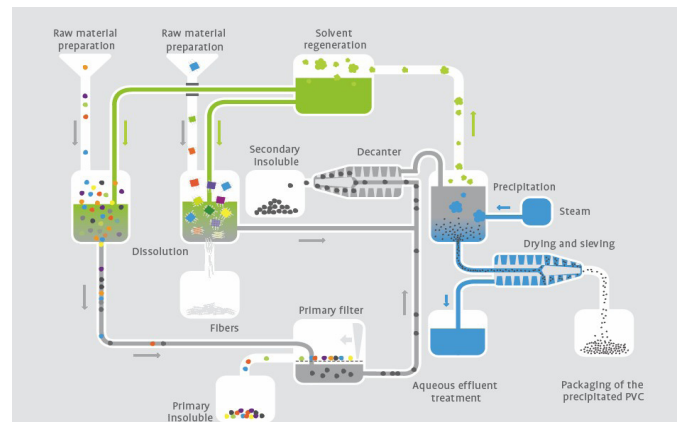
“It’s time we let go of the concept of waste”, Christian Thamm, marketing manager at VinyLoop® said. VinyLoop® is a partnership between SolVin, one of the largest PVC producers in Europe, and Serge Ferrari, the leading producer of PVC membranes in France. “Waste simply means there is no further use for a product’s residual materials. With the help of modern technologies we can transform waste into new resources – which is in keeping with the general lifecycle concept”, Thamm continued. One of these modern processes is the VinyLoop® process developed by SolVin to recycle PVC.

A TV cable, for instance, is made of copper with a PVC coating. In order for PVC recycling to be a viable alternative to the traditional manufacturing process, the quality of the recycled material has to be comparable with that of the new product. That’s just what the VinyLoop® process is able to do.

The PVC waste used in the VinyLoop® process, such as old cables, is delivered to the production facility in Italy. If the cable contains more than 1% copper, it is preprocessed to remove most of that copper. Cables with less than 1% go directly to a reactor where the PVCs are gradually dissolved in methyl-ethyl-ketone-based solvents. Non-soluble foreign substances are separated through a filtration process. The copper is later recycled. In accordance with EU law, all other substances that are found during the process and which aren’t recyclable are incinerated. The end products of this process, then, are recycled copper and PVC compounds (PVCs with additives).

“This alternative production only makes sense if it also is more environmentally friendly”, Thamm explained. People often blindly trust the recycling-equals-more-environmentally-friendly formula, but recycling processes, too, consume energy and materi-

als. Thamm went on: “A comparative eco balance analysis helps us to know for sure. This is not just important information for us, but also for our clients who use the recycled PVC in their own production processes.” Therefore, the demand for a declaration of a product’s environmental impact, including the entire value-added chain, is highly market-driven.



Procedure of one of many ways the VinyLoop® process can be applied

“The end of the value chain is a new beginning”

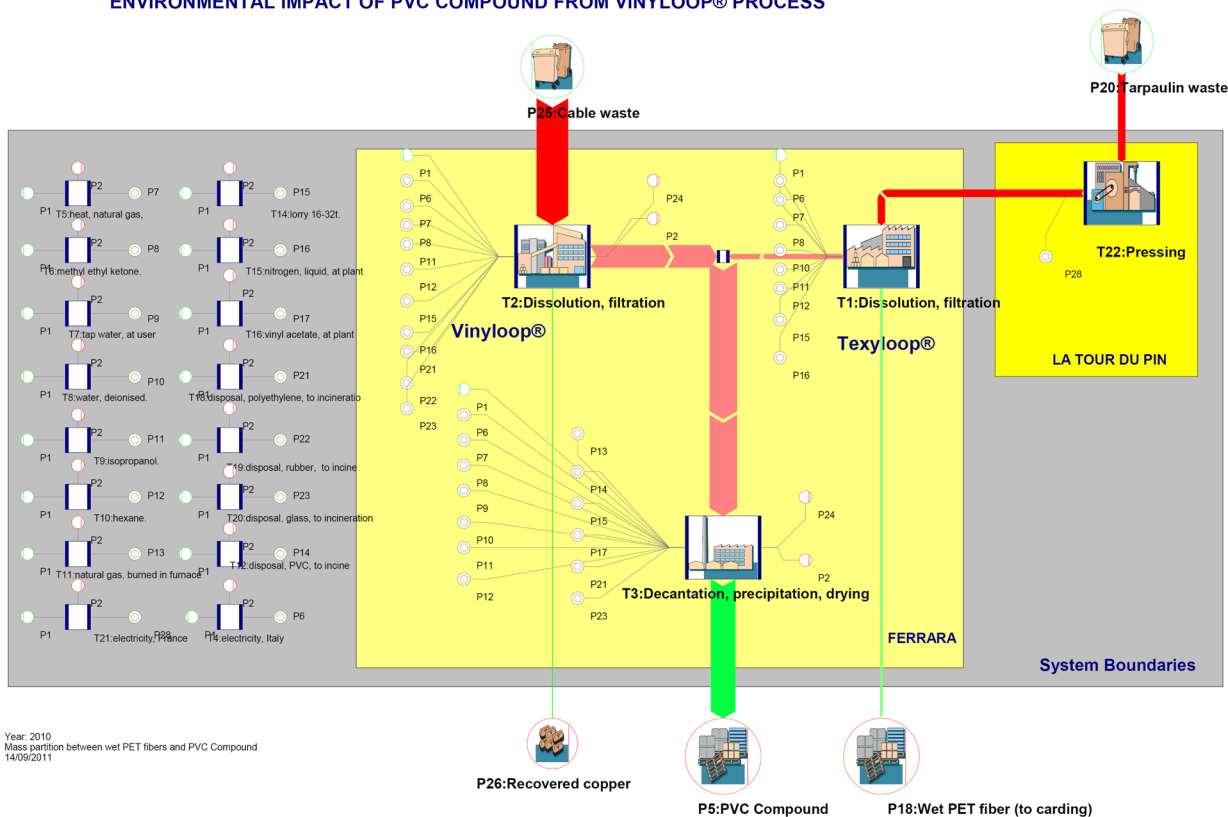
“VinyLoop® is basically the end and beginning of the value chain since the resource consists mostly of cable waste”, said Joseph Villers of Solvay SA. The company, of which VinyLoop® is part of, was engaged to perform the eco balance analysis because of its extensive experience in compiling them.

In making an eco balance analysis for both the recycling and the conventional production processes, Villers bases it on the ISO 14040-44 standard as well as the “cradle-to-gate” approach, which is common practice in the business-to-business trade. Both production processes use kg PVC compound (PVCs with additives) as their functional base unit. “Comparability is made possible because of the high quality of the recycled PVC. That way we can assume that the same amount of plastic is being used in subsequent processing”, continued Villers. “In accordance with Plastics Europe’s recommendation, the cable waste goes into the

production process without any initial level of pollution load”.

In order to evaluate environmental impact, Villers relies on direct data compilation as well as the ecoinvent database which is part of the Umberto® software for life cycle assessment. “The database represents a wide spectrum of possible processes. Where we don’t have access to specific data sets, I can easily create individual modules with the software.” For example, Villers pointed out that steam and electricity produced in the waste incineration process don’t show up in the ecoinvent database. He therefore created a specific module in the software that will take both into account in the modeling process. “The software enables me to do a lot, but I still have to think on my own”, Villers noted with a smile as he summed up the challenges of creating a valid life cycle assessment.

ENVIRONMENTAL IMPACT OF PVC COMPOUND FROM VINYLOOP® PROCESS



Umberto® model of recycling process

“Today, my old TV cable is watering my lawn”

“Of course the result wasn’t really a surprise to us. We already were convinced that the VinyLoop® process is environmentally friendly. Nevertheless, we commissioned an analysis in order to avoid the impression of green washing and to instead rely on scientifically proven results”, Thamm expounded.

In all of the analyzed categories, production based on the VinyLoop® process shows significantly lower environmental impact than the production of new PVC compounds. In particular, the 46% lower energy requirements have a positive impact on the balance. In the area of greenhouse gas emissions, the VinyL-

oop® process clocks in at only 61% of the conventional process. “The copper extracted from the waste cables also has a positive impact”, Villers added. “As a byproduct, the reduction of the environmental impact can be credited to the PVC production process by deducing the primary production of copper.”

The PVC produced in the VinyLoop® process is applied in many different products, even in garden hoses. “So it’s possible that my old TV cable is now watering my lawn”, Thamm noted with a laugh.