



## **The VinyLoop<sup>®</sup> Eco-Footprint**

**Benchmarking of the environmental impact of PVC compound recycled in the VinyLoop<sup>®</sup> process with PVC compound produced in conventional route (virgin PVC compound and incineration)**

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Practitioner: Solvay SA; Joseph Villers.  
Critical Review: DEKRA Industrial GmbH; Ivo Mersiowsky.

## Executive Summary

The recycling of PVC composite waste has been challenging due to the complexity of the composite materials. The VinyLoop process, through selective dissolution and filtration, is able to eliminate contaminations and produce recycled PVC (R-PVC) of a quality similar to virgin compound.

After several years of successful operation and optimization, the plant and the production at the VinyLoop Ferrara site are running well. The shareholders of VinyLoop have decided to perform a Life Cycle Assessment of the environmental impact of the regenerated product.

The objective of this study is to assess the environmental impact of producing one kilogram of R-PVC from the VinyLoop process and benchmark it against one kilogram of PVC compound produced by the conventional route. This route consists of incinerating the PVC waste and using virgin PVC compound.

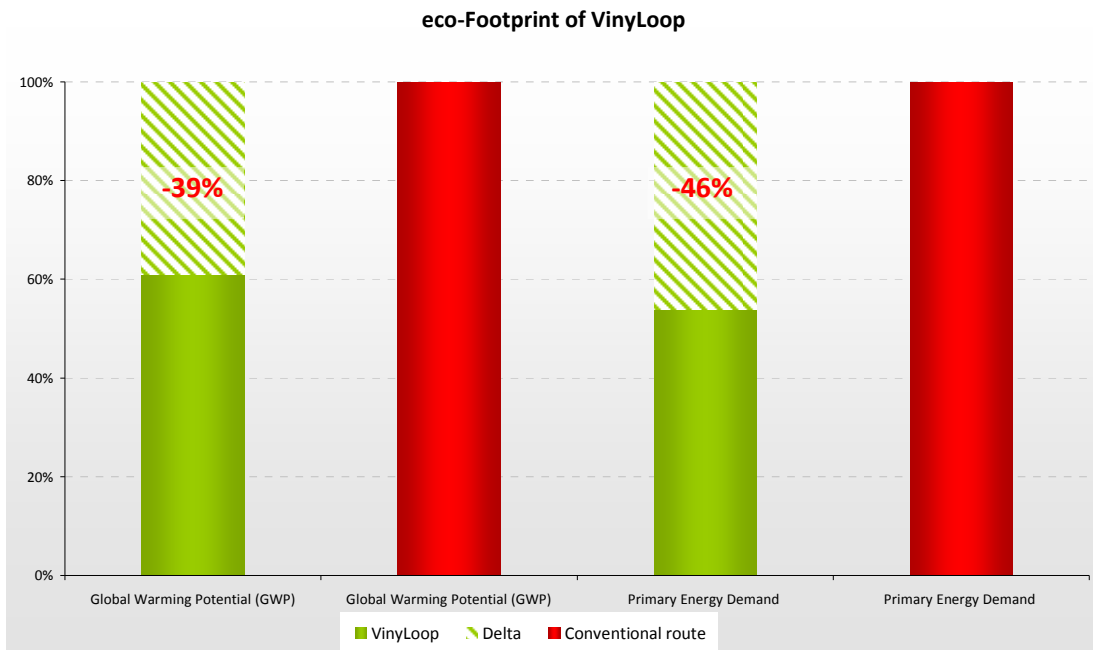
The study is conducted primarily for the commissioners who request sound results in order to use them for their communication activities and their promotion of recycling. The target groups are therefore the general public, customers and policy makers. The aim of the study is further to serve as a general base of methodological function, in order to conduct further product specific studies addressing downstream products containing PVC.

The independent testing organization DEKRA has reviewed and approved the methodologies used in the study and confirmed that it is in compliance with the set of ISO standards 14040-44 for Life Cycle Assessment.

The VinyLoop Recycled PVC from cable waste reduces the environmental footprint. For each kilogram of PVC compound (functional unit) recovered through the VinyLoop process, the production of 1kg of PVC compound and the incineration of the corresponding amount of PVC waste are avoided.

If focused on significant impact categories, such as the Global Warming Potential and the Primary Energy Demand, a significant difference is visible. When benchmarked against PVC Compound in conventional route, R-PVC from VinyLoop has a 39% less global warming potential (GWP) and a 46% lower primary energy demand (PED).

Impact Category	Unit	VinyLoop®	PVC conventional route	Delta
Global Warming (GWP 100a – IPCC 2007)	kg CO2-Eq	61%	100%	-39%
Primary Energy Demand	MJ	54%	100%	-46%



For more information please consult the [VinyLoop Eco-Footprint Study](#).

VinylLoop is a partnership between:



SolVin Italia, part of the SolVin joint venture (75% Solvay, 25% BASF), one of the largest PVC producers in Europe

[www.solvinpvc.com](http://www.solvinpvc.com)



Serge Ferrari SAS, a leading French manufacturer of composite membranes

[www.sergeferrari.com](http://www.sergeferrari.com)

VinylLoop supports the VinylPlus Voluntary Commitment



# VinyLoop: Eco-Footprint

Critical Review of Life Cycle Assessment  
Report No. 555063024

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# CRITICAL REVIEW SUMMARY

The Life Cycle Assessment (LCA) of the **VinyLoop** process operated at Ferrara, Italy, was conducted in a gate-to-gate approach based on site data for the year 2010. The goal of the study was to assess the potential environmental impacts per kg of R-PVC (functional unit) against the benchmark of the European production average of a conventional plasticised PVC compound (cradle-to-gate).

While the LCA study can be disclosed to interested parties when positioning VinyLoop as a recycling process, it is not expected to affect the interests of competitors (virgin PVC producers). Key results are:

- The VinyLoop process produces a high-quality secondary PVC compound (R-PVC) which can replace virgin PVC compound produced with conventional technologies for use in relevant downstream applications.
- The Primary Energy Demand of VinyLoop R-PVC is 46% lower than the benchmark;
- The Global Warming Potential of VinyLoop R-PVC 39% lower than the benchmark;
- In addition to preserving raw material resources, the VinyLoop process avoids incineration of post-consumer PVC waste;
- Aside from plastics recovery, the recovery of other valuable materials, such as copper from cables, can further improve the advantageous performance of the VinyLoop process.

Further, this critical review<sup>2</sup> confirms that –

- The LCA was conducted in accordance with the applicable international standards on LCA, ISO 14040–44.
- The data are appropriate with respect to the stated goal and scope.
- The conclusions are supported by the data and calculations.



A handwritten signature in blue ink, appearing to read "I. Mersiowsky".

i.V. Dr.-Ing. Ivo Mersiowsky  
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<sup>2</sup> As per ISO 14040–44, this critical review does not imply an endorsement of the LCA method, nor of any comparative assertion based on this LCA.