

PROGRESS REPORT 2018

REPORTING
ON 2017 ACTIVITIES



VinylPlus Partners

IN 2017, THE CONTRIBUTORS WERE:

CONVERTERS:

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Alfatherm SpA (Italy)
Aliaxis Group (Belgium)
Alkor Draka SAS (France)
Altro (UK)
Altro Debolon Dessauer Bodenbeläge GmbH & Co. KG (Germany)
alfer® aluminium GmbH (Germany)*
aluplast Austria GmbH (Austria)
aluplast GmbH (Germany)
alwitra GmbH & Co (Germany)
AMS Kunststofftechnik GmbH & Co. KG (Germany)
Amtico International (UK)
Avery Dennison Materials Europe BV (Netherlands)*
Beaulieu International Group (Belgium)
Berry Plastics (Germany)
Bilcare Research (Germany)
BM S.L. (Spain)
BT Bautechnik Impex GmbH & Co. KG (Germany)
BTH Fitting Kft. (Hungary)
CF Kunststoffprofilen (Netherlands)
Chieftain Fabrics (Ireland)*
CIFRA (France)
Coveris Rigid Hungary Ltd (Hungary)
Danosa (Spain)
Deceuninck Ltd (UK)
Deceuninck NV (Belgium)
Deceuninck SAS (France)
Dekura GmbH (Germany)
DHM (UK)
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Döllken Kunststoffverarbeitung GmbH (Germany)
Draka Polymer Films BV (Netherlands)
Dyka BV (Netherlands)
Dyka Plastics NV (Belgium)
Dyka Polska Sp. z o.o. (Poland)
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Gerflor Mipolam GmbH (Germany)
Gerflor SAS (France)
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Gruppo Fabbri Vignola SpA (Italy)
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Heytex Neugersdorf GmbH (Germany)
Holland Colours NV (Netherlands)
Icopal Kunststoffverarbeitungs GmbH (Germany)
IKA Innovative Kunststoffaufbereitung GmbH & Co. KG (Germany)
Imerys (UK)
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RENOLIT Ibérica SA (Spain)
RENOLIT Milano Srl (Italy)
RENOLIT Nederland BV (Netherlands)
RENOLIT Ondex SAS (France)
RENOLIT SE (Germany)
Resysta International GmbH (Germany)
Riuvert (Spain)
Roehling Engineering Plastics KG (Germany)
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Sattler PRO-TEX GmbH (Austria)
Schüco Polymer Technologies KG (Germany)
Serge Ferrari SAS (France)
Sika Services AG (Switzerland)
Sika Trocal GmbH (Germany)
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Verseidag-Indutex GmbH (Germany)
Vescom BV (Netherlands)
Vulcaflex SpA (Italy)
Wavin Baltic (Lithuania)
Wavin Belgium BV (Belgium)
Wavin BV (Netherlands)
Wavin France SAS (France)
Wavin GmbH (Germany)
Wavin Hungary (Hungary)
Wavin Ireland Ltd (Ireland)
Wavin Metalplast (Poland)
Wavin Nederland BV (Netherlands)
Wavin Plastics Ltd (UK)

PVC RESIN PRODUCERS:

Ercros (Spain)
INOVYN (Belgium, France, Germany, Italy, Norway, Spain, Sweden, UK)
Shin-Etsu PVC (Netherlands, Portugal)
VESTOLIT GmbH (Germany)
Vinnolit GmbH & Co. KG (Germany, UK)
Vynova Group (Belgium, France, Germany, Netherlands, UK)

PVC STABILISER PRODUCERS:

Akdeniz Kimya A.S.
Asua Products SA
Baerlocher GmbH
Chemson Polymer-Additive AG
Galata Chemicals
IKA GmbH & Co. KG
LANXESS Deutschland GmbH
PMC Group
Reagens SpA
Valtris Specialty Chemicals

PVC PLASTICISER PRODUCERS:

BASF SE
DEZA a.s.
Evonik Performance Materials GmbH
ExxonMobil Chemical Europe Inc.
Grupa Azoty ZAK SA
LANXESS Deutschland GmbH
Perstorp Oxo AB
Proviron

ASSOCIATE MEMBERS:

AGPU – Arbeitsgemeinschaft PVC und Umwelt e.V. (Germany)
British Plastics Federation (BPF) Vinyls Group (UK)
PVC Forum Italia (Italy)

* Companies that joined VinylPlus in 2017

Launched in 2011, VinylPlus® is the renewed 10-year Voluntary Commitment to sustainable development by the European PVC industry. The VinylPlus programme was developed through open dialogue with stakeholders, including industry, NGOs, regulators, civil society representatives and PVC users. The regional scope is the EU-28 plus Norway and Switzerland.

This report summarises VinylPlus' progress and achievements in 2017 in each of the five key sustainability challenges identified for PVC on the basis of The Natural Step System Conditions for a Sustainable Society (www.thenaturalstep.org/pvc).

The Progress Report 2018 has been independently verified by SGS, while tonnages of recycled PVC waste and expenditures have been audited and certified by KPMG.

A full glossary of abbreviations appears at the end. For detailed descriptions of the projects and activities please visit www.vinylplus.eu.

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Governance

MANAGEMENT BOARD

VinylPlus is managed by a board representing all European PVC industry sectors.

VinylPlus Board

Mr Fabrice Barthélemy – *EuPC¹ (Flexible PVC sector)^(a)*

Mr Dirk Breibach – *EuPC (Compounding sector)*

Mr Filipe Constant – *ECVM 2010²*

Mr Alexandre Dangis – *EuPC*

Dr Brigitte Dero – *General Manager (ECVM 2010)*

Mr Joachim Eckstein – *EuPC*

Mr Stefan Eingärtner – *Technical Director (VinylPlus)*

Dr Josef Ertl – *Chairman (ECVM 2010)*

Mr Rainer Grasmück – *Treasurer^(b) (ESPA³)*

Mr Andreas Hartleif – *Vice Chairman^(c) (EuPC – Rigid PVC sector)*

Dr Zdenek Hruska – *ECVM 2010*

^(a) From 10 May 2017

^(b) Until 5 October 2017

^(c) From 1 May 2017

Dr Ettore Nanni – *Treasurer^(d) (ESPA)*

Mr Hans-Christoph Porth – *ECVM 2010*

Mr Maarten Roef – *EuPC (Rigid PVC sector)*

Mr Nigel Sarginson – *European Plasticisers⁴*

Mr Arjen Sevenster – *Controller (ECVM 2010)*

Dr Karl-Martin Schellerer – *ECVM 2010^(e)*

Mr Stefan Sommer – *ECVM 2010*

Mr Remco Teulings – *EuPC (Flexible PVC sector)^(f)*

Mr Geoffroy Tillieux – *Controller (EuPC)*

Mr Joachim Tremmel – *European Plasticisers*

Mr Christian Vergeylen – *EuPC (Flexible PVC sector)*

^(d) From 5 October 2017

^(e) From 10 May 2017

^(f) Until 10 May 2017

MONITORING COMMITTEE

The VinylPlus Monitoring Committee is the independent body supervising the implementation of the Voluntary Commitment. It thus plays a fundamental role in ensuring the transparency, participation and accountability of VinylPlus, as well as in providing guidance and advice. Open to all external stakeholders, it currently includes representatives of the European Commission, the European Parliament, trade unions and consumer organisations, as well as representatives of the European PVC industry. The Committee met formally twice in 2017, in April and in December.

To ensure maximum transparency, the minutes of each Monitoring Committee meeting are published on the VinylPlus website after formal approval.

Members

Mr Werner Bosmans – *Directorate-General Environment (DG ENV), European Commission*

Prof. Alfons Buekens⁵ – *Chairman of the Monitoring Committee*

Dr Alain Cavallero – *Secretary General of ESPA*

Mr Alexandre Dangis – *VinylPlus Board Member*

Mr Armand De Wasch – *Director General, Euroconsumers Group⁶*

Dr Brigitte Dero – *General Manager of VinylPlus*

Ms Martina Dlabajová^(a) – *Member of the European Parliament*

Mr Joachim Eckstein – *VinylPlus Board Member*

Mr Rainer Grasmück – *Treasurer of VinylPlus^(b)*

Mr Sylvain Lefebvre – *Deputy General Secretary, industriAll European Trade Union⁷*

Mr Eric Liégeois – *Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW), European Commission*

Mr Nuno Melo^(c) – *Member of the European Parliament*

Dr Ettore Nanni – *Treasurer of VinylPlus^(d)*

^(a) From 11 April 2017

^(b) Until 5 October 2017

^(c) From 11 April 2017

^(d) From 5 October 2017

*VinylPlus Board
representatives.*

¹ EuPC: European Plastics Converters (www.plasticsconverters.eu)

² ECVM 2010: the formal legal entity of ECVM (The European Council of Vinyl Manufacturers – www.pvc.org), registered in Belgium

³ ESPA: The European Stabiliser Producers Association (www.stabilisers.eu)

⁴ European Plasticisers: formerly ECPI, is a sector group within CEFIC, the European Chemical Industry Council. European Plasticisers (www.europeanplasticisers.eu) is legally represented in VinylPlus by PlasticisersPlus, the legal entity registered in Belgium

⁵ Formerly Professor at the Vrije Universiteit Brussel (VUB, Free University of Brussels – www.vub.ac.be) and currently Invited Professor at Zhejiang University, China (www.zju.edu.cn)

⁶ European consumer organisation (www.euroconsumers.org)

⁷ IndustriAll: European Trade Union (www.industriall-europe.eu)



**JOSEF ERTL**

Chairman of VinylPlus

Foreword

The European Commission's recent release of its European Strategy for Plastics in a Circular Economy marks a crucial step for our industry and our Voluntary Commitment. With the adoption of the strategy, recycling is gaining a steadily more prominent place at the centre of European policies, and it will have a strong influence on the entire plastics value chain.

VinylPlus is certainly ready to take up the challenge. Together with five other organisations from the plastics value chain, we have committed⁹ – in cooperation with the European Commission – to further expand existing plastics recycling activities, and hence, as VinylPlus, to contribute to the recycling and reuse of 50% of plastics waste by 2040, as well as 70% of plastic packaging.

Recycling is a critically important aspect of our Voluntary Commitment. I am therefore very pleased to say that the volume of recycled PVC registered further growth in 2017, reaching 640,000 tonnes. Recovinyl plays a central role in the achievement of our recycling targets. That's why in 2017 we carried out a strategic reorganisation of both its management structure and its system for collecting and reporting data in order to further improve its performance.

I will never get tired of saying that our Voluntary Commitment targets can be achieved only if we can recycle also products that were put on the market many years ago. Around 70% of PVC is used in durable applications with a long service time. We trust that the great amount of work and large number of studies we are contributing to the discussion on legacy additives can lead to pragmatic solutions that allow PVC recycling to continue and develop, saving valuable resources.

However, our Voluntary Commitment does more than contribute to the circular economy. It also tackles many other sustainable development themes,

including energy and climate change, social progress and research and innovation. All these have been integrated into our VinylPlus[®] Product Label, which was implemented for the window profile sector in 2017, with the first four companies completing audits to obtain certification.

In 2017 we also made substantial progress in the implementation of the innovative Additives Sustainability Footprint methodology, developed with The Natural Step to evaluate the use of additives in PVC products. We have now finalised the first ASF, for window profiles. Other applications will follow soon.

To continue our journey towards sustainability and inspire more and more companies in Europe, we recognise the need to cascade further our progress within the value chain. To facilitate this process three national organisations (BPF in the UK, AGPU in Germany, PVC Forum Italia) have joined VinylPlus as associate members to share resources and expertise. I am looking forward to their support to step up our efforts in 2018 and extend the VinylPlus community!

Josef Ertl

Chairman of VinylPlus

⁹ The European Plastics Industry Circular Economy Voluntary Commitments. Towards 50% Plastics Waste Recycling (<https://vinylplus.eu/documents/46/57/The-European-Plastics-Industry-Circular-Economy-Voluntary-Commitments>)

PVC-PVDF roof stimulates natural ventilation for an optimal internal climate in the new Alliander's offices, in Duiven, The Netherlands.

PHOTO: COURTESY OF MARCEL VAN DER BURG



CHALLENGE 1

CONTROLLED-LOOP MANAGEMENT:

“We will work towards the more efficient use and control of PVC throughout its life cycle.”⁹

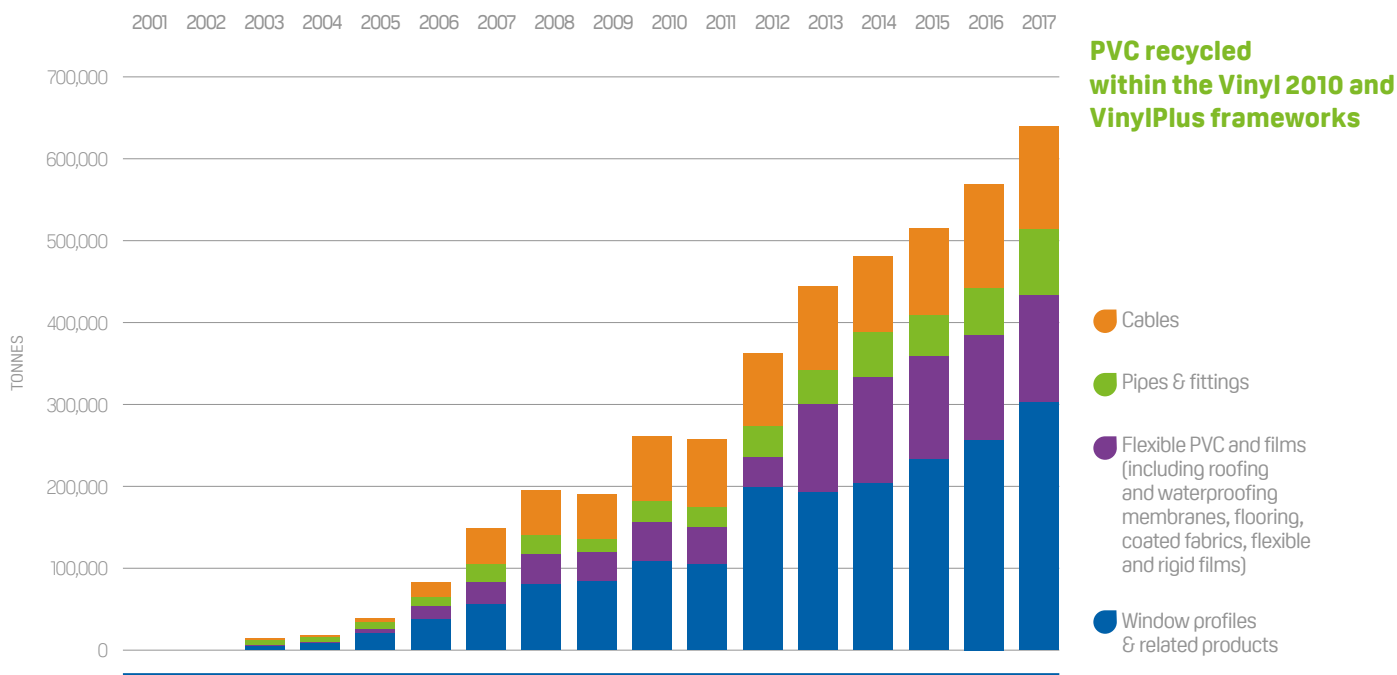
VINYLPUS' CHALLENGE 1 CONTRIBUTES TO THE FOLLOWING SUSTAINABLE DEVELOPMENT GOALS¹⁰:

9 INDUSTRY INNOVATION AND INFRASTRUCTURE TARGET 9.5

12 RESPONSIBLE CONSUMPTION AND PRODUCTION TARGET 12.5

13 CLIMATE ACTION TARGET 13.1

⁹ Targets, deadlines and status of achievement are summarised in Appendix, p. 32
¹⁰ <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>



RECYCLING ACHIEVEMENT

Thanks to a moderate but continuous increase in volumes in nearly all European countries, PVC waste recycling within the VinylPlus framework reached 639,648 tonnes in 2017.

According to a study carried out by the German consulting company Conversio (www.conversio-gmbh.com) on behalf of VinylPlus, 2.5 million tonnes of PVC waste were available in Europe in 2016. The above mentioned recycled amount does represent about 25% of this available waste.

Recovinyl¹¹ remained the main contributor, with a registered volume of 633,127 tonnes of recycled PVC waste. In 2017, Recovinyl underwent a significant reorganisation, both in its management structure and its data collection and reporting systems. The systematisation, particularly of audit protocols, will continue in 2018.

During 2017, the biggest recycling markets registered different trends: volumes increased in France and Italy; the market remained almost stable in Germany; and recyclers reported a shortage of post-consumer window profiles for recycling in the UK.

PVC window frames ensure optimal thermal and acoustic insulation.

Industry-Sector Projects for PVC Waste Management

With regard to EPPA¹², around 300,000 tonnes of window profiles and related building products were recycled in 2017. Of that total, about 40% of post-consumer and post-industrial windows, shutters and profiles were recycled in Germany, 30% in the UK and 30% in the rest of the EU-28. The *Hybrid Project*, launched by EPPA in 2016, was aimed at classifying the recyclability of PVC hybrid profiles currently found on the market. It assessed that while post-industrial hybrid waste is easily recognised, it is often quite complex to identify hybrid materials in post-consumer waste. The project will continue in 2018 with a focus on post-consumer waste, to determine how to facilitate



PHOTO: COURTESY OF REHAU

¹¹ Set up in 2003, Recovinyl is the organisation aimed at facilitating PVC waste collection and recycling in the framework of the European PVC industry's Voluntary Commitments (www.recovinyl.com)

¹² EPPA: European PVC Window Profile and Related Building Products Association (www.eppa-profiles.eu)

ESWA¹⁶ recycled 4,281 tonnes of roofing and waterproofing membranes in 2017 through its project Roofcollect® (www.roofcollect.com), in line with its targets.



the identification and design of hybrid PVC profiles. EPPA's main activities in 2017 also included support to member companies applying for the VinylPlus® Product Label (see also p. 23).

In 2017, TEPPFA¹³ continued its advocacy and communication activities. These promoted the use of U-PVC recyclates, as well as cooperation with recycling companies and quality certification institutes, focusing on the quality and longevity of pipe systems. The first indications from the 2017 annual report by VITO¹⁴ showed an increase in consumption of recycled rigid PVC by TEPPFA's members over the previous year. Nevertheless, reaching the sector targets will depend on the regulatory environment for legacy additives. It might also be affected by the adoption of quality standards restricting the use of recycled PVC in some countries and some applications. TEPPFA continued its active participation in the NSRR (North Sea Resources Roundabout) project¹⁵. The NSRR is an international voluntary agreement on secondary resources between France, Flanders, the UK and the Netherlands, which aims to remove barriers to cross-border activities. In 2017, TEPPFA mainly focused on finding a pragmatic solution to the end-of-waste (EoW) status of recycled rigid PVC in cross-border activities. In February 2018, the Dutch Ministry of Infrastructure and Water Management issued a legal opinion approving EoW status for rigid PVC recyclates, complying with REACH¹⁶, when leaving a recycler's

plant. TEPPFA is aiming for approval of the scheme by the European Commission, so as to achieve a harmonised approach throughout the EU, which would support the EU's circular economy ambitions.

ReVinylFloor is the new organisation set up to stimulate sustainable controlled-loop solutions for the recycling and recovery of post-consumer PVC flooring in Europe. It was established following the dissolution of EPFLOOR¹⁸. ReVinylFloor collaborates with a network of partners active in fields including the production, collection, sorting, recycling, reprocessing and reuse of recycled materials in various applications. In 2017, 3,051 tonnes of post-consumer flooring were recycled.

The energy and material recovery trials for PVC flooring waste undertaken by Oreade-Suez¹⁹ in France continued in 2017. Oreade uses the SOLVAir® (www.solvairsolutions.com) treatment system for the control of air emissions. The NaCl (salt) recovered through Flue Gas Treatment (FGT) is purified by Resolest (www.resolest.fr) and used in a Solvay plant to produce soda ash, thus replacing virgin NaCl. The process of *Purification and Recycling of FGT wastes* is being recognised as a Best Available Technique (BAT) in the BAT Reference Document for Waste Treatment.

9,034 tonnes of coated fabrics were recycled in 2017 within the operation of the EPCOAT²⁰ project and Recovynl. Film recycling (rigid and flexible) is reported this year in a category flexible PVC and films (see p. 27).

¹³ TEPPFA: The European Plastic Pipes and Fittings Association (www.teppfa.eu)

¹⁴ VITO: Vlaamse Instelling voor Technologisch Onderzoek (Flemish Institute for Technological Research – www.vito.be)

¹⁵ www.circularity.eu/project/north-sea-resources-roundabout/

¹⁶ Registration, Evaluation, Authorisation and restriction of Chemicals (Regulation (EC) No 1907/2006)

¹⁷ ESWA: European Single Ply Waterproofing Association, an EuPC sectoral association (www.eswa.be)

¹⁸ EPFLOOR: European PVC Floor Manufacturers, an EuPC sector group (www.epfloor.eu)

¹⁹ <http://www.industriesduhavre.com/industries/oreade.html>

For their characteristics of hygiene and safety, PVC flooring are widely used in public buildings and healthcare structures.

Other Recycling Projects

In 2017, the recycling consortium Resysta® (www.resysta.com/en/) increased its number of members as well as its production volumes. The consortium produces a wood-like material based on rice husks and PVC, which is recyclable after use. Trials are now ongoing to test modified and new formulations (foamed materials). Activities continued to promote and communicate Resysta recycled applications.

RecoMed is the partnership project between the British Plastics Federation (BPF²¹) and Axion Consulting²² aimed at collecting and recycling non-contaminated PVC medical products from UK hospitals. Since its launch in 2014, RecoMed has constantly increased the number of hospitals involved in the scheme. So far, it has collected and recycled 5,556 kg of PVC waste (including 3,000 kg just in 2017), equal to 177,910 sets of oxygen masks and tubing. In June 2017, RecoMed was one of the winners at the National Recycling Awards, and in November it was named *Best Recycling Project* at the Chartered Institute for Waste Management’s Sustainability and Resource Awards. Feasibility analysis is ongoing to expand the project to Germany and, potentially, Italy and Spain.

WREP (Waste Recycling Project), a joint technical project led by PVC Forum Italia²³, was launched in 2016 to assess the improvement potential for PVC recycling in Italy and to promote the development of new pilot

In the framework of the Turquoise project, Novafloor (www.novaplak.com) and its exclusive distributor I.déel (<http://i-deel-in.com>) developed 100%-recycled PVC products for indoor, outdoor and agricultural applications. These included the wall protection for stud farms shown in the picture.



PHOTO: COURTESY OF SFECC



PHOTO: COURTESY OF POLYFLOR

PVC waste collection and recycling schemes. After the completion of the analytical phase, in 2017 the project focused on identifying companies interested in taking part in pilot projects. Veritas, the major municipal multi-utility operating in the Venice area (www.gruppoveritas.it), and its subsidiary Eco-Ricicli (www.eco-ricicli.it) confirmed their availability to start a pilot project with PVC Forum Italia in the Venice area in 2018. A pilot project for the recycling of PVC flooring was also initiated, involving a member of PVC Forum Italia that is active in recycling. In addition, in May 2017 PVC Forum Italia became a partner in a project coordinated by CMR (Renewable Matter Centre – www.centromateriarinnovabile.it) aimed at developing solutions for the eco-efficient use of materials from building demolition. A preliminary proposal was presented to the Italian institutions by CMR in July.

In the framework of the VinylPlus joint technical projects, AGPU²⁴ contributed to the project *Plastic Recycling under REACH and End of Waste Regulations* developed with the German consulting company Ökopool (Institute for Environmental Strategies –

²⁰ EPCOAT is the coated fabrics recycling project of IVK Europe (Industrieverband Kunststoffbahnen e.V., Association of Coated Fabrics and Films – www.ivk-europe.com)

²¹ BPF: British Plastics Federation, the leading trade association for the UK Plastic Industry (www.bpf.co.uk)

²² Axion Consulting: resource recovery expert, a division of Axion Recycling Limited (www.axionconsulting.co.uk)

²³ PVC Forum Italia: the Italian association of the PVC value chain (www.pvcforum.it)

²⁴ AGPU: Arbeitsgemeinschaft PVC und Umwelt e.V., the German association of the PVC value chain (www.agpu.com)



PHOTO: COURTESY OF RESYSTA®

VinylPlus supports the development of PVC recycling schemes and promotes innovative recycling solutions such as the wood-like Resysta decking based on rice husks and PVC.



PHOTO: COURTESY OF DECEUNINCK

www.oekopol.de/en) in collaboration with several industry partners²⁵ and the German Environment Agency (UBA²⁶). The project focused on four selected plastics waste streams containing classified substances – PVC windows, PVC floorings, EPS insulation sheets and PE crates. The objective was to produce in 2018 guidelines and a position paper on the correct recycling of waste that contains legacy additives.

LEGACY ADDITIVES

Legacy additives are substances that are no longer used in new PVC products but that can be present in recycled PVC. Since the use of legacy additives may be restricted by legislation, VinylPlus is committed to addressing the issue in cooperation with regulatory authorities.

Over the years, VinylPlus has contributed to discussions on legacy additives by supporting research and a considerable number of studies. In 2017, studies commissioned by VinylPlus focused particularly on lead, in relation to ECHA's proposal²⁷ to restrict the use of recyclates containing it. They covered modelling (by FABES²⁸) and risk assessments (by ARCHE Consulting²⁹) of lead migration, as well as a cost-benefit analysis of recycling PVC applications containing lead (by RDC Environment³⁰).

The FABES study *Modelling Migration of Lead Compounds from Monolayer Unplasticised Polyvinylchloride Sewer*

Pipes connecting Houses with the Public Sewer System showed that the lead concentration in water decreases very rapidly after a few hours and that the total depletion of lead in a pipe takes “much more than 100 years”. *Modelling on Lead Migration from Plasticised PVC into Water*, another study by FABES, showed no difference in leaching amounts between thick and thin P-PVC samples. This is because, even in the thin P-PVC sample, the lead compound depletion did not reach the median area of the sample. A further FABES study, *Modelling on Lead Migration from Various Rigid PVC Applications*, provided data for the risk assessments of lead migration commissioned to ARCHE Consulting.

The study *Risk Assessment of Lead Migration during Service Life of Articles containing Recycled PVC in a typical City of 10,000 Inhabitants* by ARCHE Consulting concluded that “the local contributions due to combined leaching of lead from all uses of recycled PVC are negligible compared to the regional lead background concentrations for water, sediment and soil stemming from other sources”. It showed “the absence of risks for the environment and for indirect exposure of humans via the environment”. A second risk assessment by ARCHE aimed to determine the indirect exposure of children to lead through the environment. Results showed that this exposure is very low.

RDC Environment's cost-benefit analysis of recycling PVC applications containing lead concluded that from the economic viewpoint, recycling PVC waste is environmentally preferable and more economically efficient than incinerating or landfilling it; that recycling PVC waste creates more jobs than incineration or landfill; and that the human health impact due to lead leaching from recycled PVC applications is small compared to the environmental, economic and job-creation benefits. To complete the socio-economic assessment, further analysis by RDC is in progress – of the cost-efficiency of avoided lead emissions without derogation and of the socio-economic impact of hazardous waste regulations applying to PVC waste.

Robust, durable and cost-efficient, PVC pipes contribute to meeting modern infrastructure needs.



PHOTO: COURTESY OF WAWI

²⁵ Besides AGPU and VinylPlus, partners in the project are: BKV (Plastic Concept Recovery – www.bkv-gmbh.de/en); PlasticsEurope Germany (www.plasticseurope.org); QKE (<https://www.qke-bonn.de/EPPA>); and GKV (the German Association of the Plastics Converters – www.gkv.de)

²⁶ UBA: Umweltbundesamt, Federal Environment Agency (www.umweltbundesamt.de)

²⁷ <https://echa.europa.eu/restrictions-under-consideration/-/substance-rev/16119/term>

²⁸ FABES: German research institute (www.fabes-online.de)

²⁹ ARCHE Consulting: Belgian consulting company (www.arche-consulting.be)

³⁰ RDC Environment: Belgian consulting company (www.rdcenvironment.be)

Recycled PVC can be used to produce efficient greenhouses flooring.

Flexible PVC membranes help designers to create unconventional landmarks.

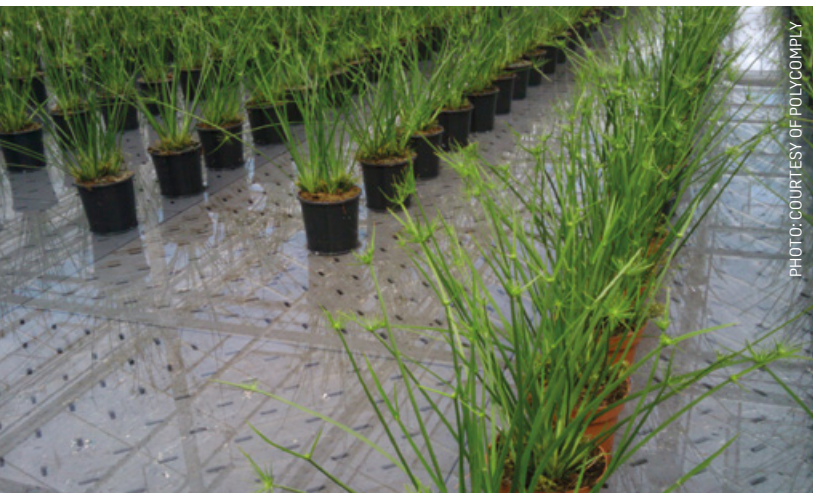


PHOTO: COURTESY OF POLYCOMPLY



PHOTO: COURTESY OF IWAN BAAH

Lead Restriction

ECHA is currently working on the restrictions under consideration for PVC containing lead compounds. ECHA’s initial proposal considered a threshold of 0.1% lead content for articles not containing recycled PVC. For some rigid building and construction articles produced from recycled PVC, there would be a 15-year derogation with a higher limit of lead content for articles using PVC recyclates containing it.

A public consultation was open from March to September 2017, and VinylPlus submitted extensive comments and information. These included the ARCHE Consulting risk analysis, the socio-economic study by RDC Environment and additional data based on measurements of lead in waste.

ECHA’s Committees for Risk Assessment (RAC) and Socio-economic Analysis (SEAC) met in November 2017 to discuss proposals and comments. A public consultation on the SEAC draft opinion was open from 20 December 2017 to 20 February 2018.

Cadmium Restriction

EU Commission Regulation 494/2011 set a limit for polymers of 100 ppm of cadmium, with a derogation of up to 1,000 ppm allowed in specified rigid PVC construction products for cadmium originating from recyclates. These limits were scheduled to be reviewed by 31 December 2017.

In 2016, the European Commission asked ECHA to carry out a review of the cadmium restrictions by September 2017. As part of this review, ECHA contracted VITO, which had already in 2009³¹ developed an impact assessment of various possible options to reconcile the recycling of PVC waste containing legacy cadmium with the restrictions of Annex XVII³² of REACH. The VITO study was completed in May 2017.

CONTROLLED-LOOP COMMITTEE

Recycling is a critically important aspect for the VinylPlus Programme especially given the increasing political importance of the Circular Economy Package adopted by the European Commission and its EU Plastics Strategy.

Regulatory constraints on the presence of legacy additives still represent the major threat to the recycling of post-consumer waste. There is evidence that both Pb (lead) and DEHP, present as legacy additives in recyclates, continue to impact recycling markets.

Therefore, the VinylPlus Controlled-Loop Committee (CLC) continued in 2017 to monitor the development and implementation of the EU regulatory framework and to give its technical support to ongoing discussions on recyclates containing legacy additives. It will continue to do so in 2018.

In 2017 the CLC also continued to follow the development of projects by industry associations, international research institutes and academia supported by VinylPlus to find technically and economically viable chemical and feedstock recycling solutions for difficult-to-recycle PVC.

In 2018 the CLC will focus on energy and materials recovery from PVC, scaling up trials of difficult-to-treat PVC waste at the Oreade-Suez plant in France. The CLC also plans to finalise a brochure showcasing high-quality applications of PVC recyclates.

³¹ For further information also see Vinyl 2010 Progress Report 2011, REACH and Recycling, p. 35-36 (http://www.vinylplus.eu/uploads/Modules/Documents/Executive_Summary/Progress%20Report%202011/vinyl2010_progress_report_2011_English.pdf)

³² Annex XVII: Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles of the REACH Regulation (<http://www.reach-compliance.eu/english/REACH-ME/engine/sources/reach-annexes/launch-annex17.html>)

CHALLENGE 2

ORGANOCHLORINE EMISSIONS:

“We will help to ensure that persistent organic compounds do not accumulate in nature and that other emissions are reduced.”³³

VINYLPLUS' CHALLENGE 2 CONTRIBUTES TO THE FOLLOWING SUSTAINABLE DEVELOPMENT GOALS³⁴:



PVC applications allow the development of effective and innovative solutions for modern infrastructures, offering architects and engineers the possibility of conjugating functionality and creativity.

³³ Targets, deadlines and status of achievement are summarised in Appendix, p. 32

³⁴ <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

PVC roofing for architectural solutions which optimise light, while controlling ventilation.



PHOTO: COURTESY OF RENOVIT



PHOTO: COURTESY OF RENOVIT

3D printed PVC tubing was used by the designer Paolo De Giusti for the frame of its futuristic concept bike.

SAFE TRANSPORT

There were no transport accidents in Europe with VCM release in 2017.

PVC RESIN INDUSTRY PRODUCTION CHARTERS

The Industry Charters³⁵ for suspension (VCM & S-PVC Charter) and emulsion (E-PVC Charter) PVC are aimed at reducing the environmental impact in the production phase. The last audit carried out by DNV³⁶ in 2012 showed 96% compliance. The resin industry is committed to maintaining a high level and achieving 100% compliance by the end of 2020.



PHOTO: COURTESY OF PAOLO DE GIUSTI

³⁵ The ECVI Industry Charters are available at www.pvc.org/upload/documents/ECVM_Charter_VCM_PVC.pdf and www.pvc.org/upload/documents/Emulsion.pdf
³⁶ DNV: Det Norske Veritas, a Norwegian testing and verification organisation (www.dnv.com)



PVC membranes are a perfect example of a polyfunctional material, combining aesthetic characteristics with insulating properties.

CHALLENGE 3

SUSTAINABLE USE OF ADDITIVES:

“We will review the use of PVC additives and move towards more sustainable additive systems.”³⁷

VINYLPUS’ CHALLENGE 3 CONTRIBUTES TO THE FOLLOWING SUSTAINABLE DEVELOPMENT GOALS³⁸:



TARGET 6.3



TARGET 12.4

³⁷ Targets, deadlines and status of achievement are summarised in Appendix, p. 32

³⁸ <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

PVC flooring is extremely resistant, keeping its performance unchanged over time, even after intense clomping.



Pb (LEAD) REPLACEMENT

Sales by ESPA members of lead-based stabilisers in the EU-28 market ceased in December 2015. The recycling of rigid PVC articles produced after this date is thus no longer affected by lead legacy issues, and the average lead concentration in mixed streams of pre- and post-2015 recyclates is constantly decreasing.

PLASTICISERS

European Plasticisers' (former ECPI) estimates confirm a positive trend in Europe for High Molecular Weight (HMW) orthophthalates, cyclohexanoates, terephthalates and other plasticisers, accompanied by a progressive decline in the use of Low Molecular Weight (LMW) orthophthalates.

Studies and Research

In 2017, European Plasticisers started a scientific project, co-funded by VinylPlus, to develop a PBPK (physiologically based pharmacokinetic) model for DINP. PBPK models are used for risk assessments to determine the concentrations of chemicals and drugs

in tissues following uptake from relevant sources of exposure (e.g. oral). Work on the PBPK model for DINP will continue in 2018, as well as model development for further plasticisers such as DPHP/DIDP, DINCH, DEHT, DEHA and DINA. PBPK models will put into perspective epidemiological studies dealing with the association between exposure and symptoms, and support the demonstration of safe use of plasticised PVC.

Studies show that PVC pipes offer a projected life span of more than 100 years without any loss in properties.



PHOTO: COURTESY OF MOLECOR

Durability, insulating properties, energy-efficiency, low maintenance and recyclability make of PVC window profiles a sustainable choice for B&C.

PVC coated fabrics offer infinite creative solutions for furniture and interior design.



PHOTO: COURTESY OF SCHÜCO



PHOTO: COURTESY OF COTTING-CRIFINE

Regulatory Updates

In 2017, the European Pharmacopoeia proposed four additional plasticisers (DINCH, BTHC, TOTM/TEHTM and DOTP/DEHT) for inclusion in its texts, so as to provide medical device manufacturers and users with alternatives to DEHP whenever possible – for example for blood bags, tubing for transfusions and containers for aqueous solutions.

Following the proposal to restrict DEHP, BBP, DBP and DiBP submitted to ECHA³⁹ by the Danish competent authorities in April 2016, RAC and SEAC opinions were issued in June 2017. European Plasticisers supports restrictions for non-authorized uses of DEHP, DBP, BBP and DiBP consistent with a level-playing field for EU manufacturers and importers.

The Danish EPA submitted a dossier to ECHA in 2016, proposing that DINP be classified as toxic for reproduction under the CLP Regulation. A public consultation ended on 19 May 2017, and European Plasticisers, together with a number of other industry associations, companies and independent scientists,

submitted extensive comments in support of non-classification. Based on the weight of evidence of all data and on the most recent publications, European Plasticisers concludes that DINP does not warrant a classification. In its opinion, issued in March 2018, “RAC agreed not to classify DINP for reproductive toxicity.”⁴⁰

REACH Authorisation

Authorisation for the manufacture of virgin DEHP is still pending.

CRITERIA FOR THE SUSTAINABLE USE OF ADDITIVES

A methodology named ASF (Additives Sustainability Footprint) has been worked out by the VinylPlus Additives Committee together with The Natural Step⁴¹, to develop a systematic framework to evaluate the use of additives in PVC products from the perspective of sustainable development.

The ASF builds on available life cycle information and informed analysis by industry experts to provide a qualitative screening assessment of the relative performance of additives in relation to a science-based definition of sustainability (both social and environmental). The methodology is compatible with schemes such as Environmental Product Declarations (EPD) and Product Environmental Footprints (PEF). But it takes a wider perspective, giving a clear picture of where to aim and how to improve the sustainability performance of additives.

In 2017, the first ASF was completed for window profiles in joint work with EPPA, and it was included in the VinylPlus® Product Label scheme. ESPA continued working on a Life Cycle Assessment (LCA) for liquid mixed-metals stabilisers (used in flexible PVC applications), to be completed by mid-2018. Contacts are ongoing with ReVinylFloor to start work on an ASF for the flooring sector in 2018.

³⁹ <https://echa.europa.eu/registry-of-submitted-restriction-proposal-intentions/-/substance-rev/13107/term>

⁴⁰ https://echa.europa.eu/documents/10162/23821863/nr_annex_rac_seac_march.pdf/fcc9fe3c-1221-93ad-0fe0-e5772436e97c

⁴¹ Sustainability NGO acting as critical friend and sustainability advisor to VinylPlus (www.thenaturalstep.org)

PVC window profiles provide an excellent indoor comfort in public and private buildings.



PHOTO: COURTESY OF SALAMANDER

CHALLENGE 4

SUSTAINABLE USE OF ENERGY AND RAW MATERIALS:

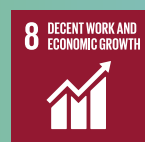
“We will help to minimise climate impacts through reducing energy and raw material use, potentially endeavouring to switch to renewable sources and promoting sustainable innovation.”⁴²

VINYLPLUS' CHALLENGE 4 CONTRIBUTES TO THE FOLLOWING SUSTAINABLE DEVELOPMENT GOALS⁴³:



7 AFFORDABLE AND CLEAN ENERGY

TARGET 7.3



8 DECENT WORK AND ECONOMIC GROWTH

TARGET 8.4



12 RESPONSIBLE CONSUMPTION AND PRODUCTION

TARGET 12.2



13 CLIMATE ACTION

TARGET 13.1

⁴² Targets, deadlines and status of achievement are summarised in Appendix, p. 32

⁴³ <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>

PVC roofing and waterproofing membranes offer excellent insulating performance with all conditions and climates.

PVC insulated roof gardens play an important role in the contemporary sustainable architecture.



PHOTO: COURTESY OF PROTAN



PHOTO: COURTESY OF RENOLIT

ENERGY EFFICIENCY

PVC resin producers are committed to diminishing their energy consumption for the production of EDC, VCM and PVC, targeting a 20% reduction by 2020.

As reported in previous years, the results of the first verification showed an average 10.2% decrease in the energy used to produce one tonne of PVC in 2012-2013 compared to the 2007-2008 baseline. A new verification is currently ongoing with IFEU⁴⁴ on ECVM members' energy consumption data for 2016-2017, and a verification report is expected by mid-2018.

The evaluation of the data available for each EuPC sector group to assess PVC converters' energy consumption continued in 2017.

Following the assessment of energy consumption by EPPA and TEPPFA members (reported in last year's Progress Report), work continued in 2017 for IVK and ERPA members. Data collection proved very

difficult due to significant differences in product and production processes, and to the lack of available data before 2010. Nevertheless, about one third of IVK and ERPA member companies provided useful and comparable data, covering about 20 production plants for flexible and rigid PVC films.

The analysis of energy consumption, measured over the period 2010-2016, showed an average saving of 20.3% per tonne of PVC product.

RENEWABLE RAW MATERIALS

VinylPlus will continue to monitor developments in the production of PVC resin and additives from renewable raw materials. It will produce an updated Status Report by the end of 2020.

PHOTO: COURTESY OF SALAMANDER



PVC window profiles contribute to the energy efficiency of buildings.

⁴⁴ IFEU: Institut für Energie- und Umweltforschung Heidelberg GmbH (German Institute for Energy and Environmental Research – www.ifeu.de)

Inflatable PVC trampolines are the core element of Water Invaders, the artistic project by AZC, a Paris-based architecture and design firm.



CHALLENGE 5

SUSTAINABILITY AWARENESS:

“We will continue to build sustainability awareness across the value chain – including stakeholders inside and outside the industry – to accelerate resolving our sustainability challenges.”⁴⁵

VINYLPLUS' CHALLENGE 5 CONTRIBUTES TO THE FOLLOWING SUSTAINABLE DEVELOPMENT GOALS⁴⁶:

3 GOOD HEALTH AND WELL-BEING TARGET 3.9

4 QUALITY EDUCATION TARGET 4.4 TARGET 4.7

5 GENDER EQUALITY TARGET 5.1

8 DECENT WORK AND ECONOMIC GROWTH TARGET 8.8

12 RESPONSIBLE CONSUMPTION AND PRODUCTION TARGET 12.6 TARGET 12.7 TARGET 12.8 TARGET 12.a

17 PARTNERSHIPS FOR THE GOALS TARGET 17.7 TARGET 17.16 TARGET 17.17

⁴⁵ Targets, deadlines and status of achievement are summarised in Appendix, p. 32

⁴⁶ <http://www.un.org/sustainabledevelopment/sustainable-development-goals/>



STAKEHOLDER DIALOGUE AND COMMUNICATIONS

VinylPlus is committed to raising awareness of sustainability at all points on the value chain, as well as among other stakeholders – whether they be inside or outside the PVC industry. VinylPlus also promotes frank and open dialogue with all stakeholders, third parties, institutions and organisations in different communities – technical, political and social.

In 2017, VinylPlus undertook a process of rebranding to reinforce awareness and the recognisability of the organisation.

VinylPlus attended IdentiPlast 2017, the 13th International Conference on the Recycling and Recovery of Plastics. VinylPlus information materials, including brochures and an advertorial, were made available to participants. The conference was held in Vienna, Austria, in February.

In March, VinylPlus participated in the Circular Economy Stakeholder Conference 2017, co-organised by the European Commission and the European Economic and Social Committee, in Brussels, Belgium. At the conference, the European Commission introduced the EU Plastics Strategy and discussed key deliverables in the implementation of the EU Circular Economy Action Plan with stakeholders.

VinylPlus also took part in the Plastics Recycling Show (PRS) Europe 2017, in Amsterdam, The Netherlands.

PRS is the annual exhibition and conference for plastics recycling professionals organised by PRE⁴⁷.

In April, more than 530 delegates from 43 countries gathered in Brighton, UK, at PVC 2017, the triennial conference of the global vinyl industry. Brigitte Dero, General Manager of VinylPlus, gave the opening keynote speech focused on how a united PVC industry, involving the entire value chain, is showing the way for the wider plastics industry. VinylPlus also contributed to the technical sessions, with two presentations, one on difficult-to-recycle PVC waste and the other on PVC resins Eco-Profiles and EPDs.

With the theme *Towards Circular Economy*, the 5th VinylPlus Sustainability Forum in Berlin, Germany, in May, brought together over 150 stakeholders from academia, government bodies, the UN, the European Commission, NGOs, retailers, architects, designers and all sectors of the PVC industry. Discussion focused on policies for the Circular Economy, both regional and Europe-wide, and their potential impact on the plastics industry. The many growing opportunities for the PVC sector to contribute to this key objective of EU policy were also explored.

The fourth Partnering for VinylPlus Communication Event was held in Brussels, Belgium, in June, to share best practices and a common vision for VinylPlus communications. Around 30 representatives from the VinylPlus Communications Committee, the PVC Network and sector groups linked to VinylPlus attended the event.

⁴⁷ PRE: Plastics Recyclers Europe (www.plasticsrecyclers.eu)


In September, VinylPlus contributed to the *PlasticsEurope Innovation Conference – Innovation for a Circular and Resource Efficient Europe with Plastics*, organised in Brussels, Belgium, with a presentation on PVC recycling.

In November, VinylPlus participated in the International Conference on Circular Economy in Automotive Industries (<http://www.t2ge.eu>) held in Bratislava, Slovakia, and contributed a presentation on *Cooperation through the Value Chain to enable the Circular Economy: The Case of PVC*. The conference was co-organised by the United Nations Industrial Development Organization (UNIDO) and the Ministries of Environment and Economy of the Slovak Republic, to promote the transition to a circular economy in the automotive industry.

VinylPlus also participated in EURO CITIES 2017, the annual conference of the network of major European cities (www.eurocities.eu), which took place in Ljubljana, Slovenia, in November. It focused on *Circular Cities* and provided an opportunity for VinylPlus to network and explore possibilities for cooperation.

Cooperation Agreement of the Social Partners of the European Chemical SSDC⁴⁸ and VinylPlus on the European PVC Industry

Following the formal signature of the agreement on 24 February 2017 between VinylPlus and the European Chemical Sectoral Social Partners (SPs, made of ECEG⁴⁹ and industriAll Europe⁵⁰) under the umbrella of the EU Commission Decision 98/500/EC promoting the dialogue between the SPs in the sectors at European

 VinylPlus @VinylPlus_EU • 7 Nov 2017
Learn about our Voluntary Commitment to #sustainable development in new animation #video [ow.ly/B3AD30gn5N](https://www.youtube.com/watch?v=B3AD30gn5N)



Twitter was confirmed to be an effective tool to position VinylPlus on social media and to promote VinylPlus events, publications, press releases and achievements. It is also effective at driving traffic to the website. By the end of 2017, the VinylPlus twitter account @VinylPlus_EU reached 1,000 followers and the number continues to increase.



The European Chemical Sectoral Social Partners at their plenary meeting in December 2017.



⁴⁸ SSDC: Sectoral Social Dialogue Committee

⁴⁹ ECEG: European Chemical Employers Group. ECEG is the European employers' organisation representing the interests of the chemical, pharmaceutical, rubber and plastics industries at the European level (www.eceg.org)

⁵⁰ industriAll European Trade Union represents workers across supply chains in manufacturing, mining and energy sectors across Europe (www.industriAll-europe.eu)

level, the signatories developed a concept note identifying priority actions in the areas of health and safety, education and training, knowledge transfer and sector evolution.

The agreed concept was presented by Brigitte Dero, General Manager of VinylPlus, at the Social Partners' plenary meeting on 8 December 2017 which brought together representatives from ECEG, industriAll Europe, national associations in the chemical sector, DG EMPL, DG GROW and DG ENV.

Two priority works, directly linked to the Social Partners' Roadmap 2015-2020, emerged from the follow-up discussion at the Sectoral Social Dialogue

Committee's expert group meeting for chemical industry on 22 February 2018 in Brussels:

- Health and safety: analysis of available information, focus on converters and recyclers, identification of knowledge gaps and subsequent studies.
- Sector evolution: PVC value chain contribution to the research study on digitalization and innovation launched by ECEG and industriAll Europe within the European project VS/2017/0358, entitled *The impact of digital transformation and innovation in the workplace: a sector-specific study of the European chemical, pharmaceutical, rubber and plastics industry in Europe*.



"I'm happy to see that in its Progress Report 2017 VinylPlus is already reporting and classifying its contribution to the SDGs, having identified for each of its five Challenges to which Goal they relate. I'd like to congratulate VinylPlus, we know how difficult it is to bring a whole value chain together to achieve more sustainability with clear objectives and targets, and you should continue the ambition, the effort. On our side we are ready to work more closely, maybe also to promote this model to other countries around the world. VinylPlus shows that there's a way industry can change, there's a way industry can contribute, and it is a good role model."

CHRISTOPHE YVETOT

UNIDO Representative to the European Union

PHOTO: COURTESY OF AVERY DENNISON



Engaging Globally

VinylPlus actively shares experience, knowledge and best practices with the other regional PVC associations at a global level. VinylPlus participated in Vinyl India 2017 in April, the 7th International PVC & Chlor-Alkali Conference in Mumbai. It also participated in the bi-annual meetings of the GVC (Global Vinyl Council), in Berlin, Germany, in May and in Florida, USA, in November.

Car wrapping and surface decoration are among the emergent applications for PVC products, giving new impulse to marketing and communications.



PHOTO: COURTESY OF MARCEL VAN DER BURG

United Nations

The European PVC industry's Voluntary Commitment was included in the Rio+20 Registry of Commitments in 2012 and VinylPlus is now registered as a 'SMART' partnership on the UN Partnerships for Sustainable Development Goals Platform⁵¹. Following the adoption of the SDGs in September 2015, VinylPlus assessed its contribution on the basis of the SDG Compass⁵² approach and started to report it in its Progress Report last year. In 2017, VinylPlus continued to engage in a proactive dialogue with UN bodies and organisations.

VINYLPUS PRODUCT LABEL

In 2017, EPPA supported and promoted the implementation of the VinylPlus® Product Label (productlabel.vinylplus.eu) for the window profile sector, considering it an effective tool to assess the sustainability performance of PVC window profiles and to highlight their contribution to a circular economy. Six EPPA member companies have already applied for it, and certification audits started in November.

The VinylPlus® Product Label is a sustainability labelling scheme for PVC products. It has been developed by VinylPlus in cooperation with two external stakeholders, BRE Global⁵³ and The Natural Step. The Product Label focuses on PVC applications for the building and construction sector. Its criteria combine elements from BRE's *Responsible Sourcing (BES 6001)* with the five sustainability challenges of VinylPlus. Product assessment for the labelling scheme includes aspects related to the overall policies



PHOTO: VINYLPUS®

Schüco, REHAU, Veka and Epwin, the first four companies to complete audits, being awarded the VinylPlus® Product Label certification at the FENSTERBAU FRONTALE 2018.

and performance of the applicant's organisation or plant, as well as aspects related to the components of the specific product under assessment.

Developed as part of the VinylPlus Voluntary Commitment, the Product Label aims to help specifiers, consumers and procurement decision makers to identify PVC products and solutions that better contribute to sustainable development.

The VinylPlus® Product Label for the window profile sector was officially launched by VinylPlus, EPPA and GKFP⁵⁴ at the FENSTERBAU FRONTALE exhibition (www.frontale.de) in Nuremberg, Germany, in March 2018.

⁵¹ <https://sustainabledevelopment.un.org/partnership/?p=91>

⁵² <http://sdgcompass.org/>

⁵³ BRE: Building Research Establishment, UK-based certification experts on responsible sourcing for building and construction products (www.bre.co.uk)

⁵⁴ GKFP: RAL-Gütegemeinschaft Kunststoff-FensterProfilsysteme e.V., a German association that performs and provides neutral and external quality monitoring and product certification (www.gkfp.de/nc/en/guetegemeinschaft-kunststoff-fensterprofilsysteme-ev/)

VinylPlus Joint Communications Projects

Every year VinylPlus co-funds a range of projects with the aim of expanding the scope of its communications activities. Ten projects⁵⁵ were implemented in 2017, by three European industry sector organisations and five national PVC associations.



Media Field Trip: exploring the PVC value chain

The commitment of VinylPlus and European Plasticisers to sustainability was promoted through a media trip in Barcelona, Spain. Thirteen journalists from six European countries were shown production and recycling plants, and they had the opportunity to see the plants in operation and get to know people that work in the industry.

PROJECT LED BY
EUROPEAN PLASTICISERS

Geographic scope: EU

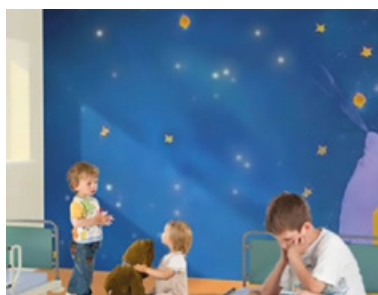


Roadshow Plus: European Plasticisers meets the Polish chemical industry

With Roadshow Plus, dedicated to Polish regulators, industry associations and brand holders, European Plasticisers concluded its biennial programme aiming to promote a dialogue on PVC plasticisers' sustainability among industry and government stakeholders of European countries. More than 25 representatives of the Polish chemical industry, PVC converters and competent authorities, as well as government representatives and academics, gathered in Warsaw for a workshop organised by European Plasticisers in collaboration with VinylPlus and PIPC, the Polish Chamber of Chemical Industry.

PROJECT LED BY
EUROPEAN PLASTICISERS

Geographic scope: EU



SMART Hospital

The SMART project – from the acronym of the Italian words for sanitation, maintenance, environment, recycling and TCO (total cost of ownership) – aims to promote a new design approach for hospital buildings using PVC applications. Rooms are designed with sustainable elements, including PVC flooring and wall coverings, window frames, pipes, cables and furniture. These facilitate cleaning and disinfection and increase patients' comfort and safety.

PROJECT LED BY
PVC FORUM ITALIA

Geographic scope: Italy



Roadshows, e-magazine, outreach to national associations

VinylPlus and its achievements were actively promoted through social media, participation in conferences and exhibitions, and TEPPFA's e-magazine and roadshows. Regular presentations on the progress and achievements of VinylPlus were made to national associations. The targets were: pipe producers, the pipes sector, associated stakeholders and European policy makers; stakeholders from the plastic pipes industry; and members of national associations that are not in TEPPFA.

PROJECT LED BY TEPPFA

Geographic scope: EU



TURQUOISE

The TURQUOISE project is aimed at increasing the use of recycled soft PVC in France, both through the development of new markets and applications (see also p. 9), and through communications and promotion. In November 2017, the I.deel's 100%-recycled PVC indoor product Carrelag.i® won the Innovation Awards of the *Maison&Travaux* magazine in the *Coup de Coeur* category.

PROJECT LED BY SFEC⁵⁶

Geographic scope: France

⁵⁵ www.vinylplus.eu/community/communications-projects/2017

⁵⁶ SFEC: Syndicat Français des Enducteurs Calandriers, the French Association of Calenderers (www.sfec-services.org)



Building a new European vinyl films & sheets organisation

VFSE⁵⁷ is a new organisation representing European suppliers of plastics sheets, films and foils. It is concerned with European business and recycling activities in the packaging, automotive and decoration markets. The organisation was launched in 2017 with a media relations campaign, and a website was developed to promote its activities and its partnership with VinylPlus.

PROJECT LED BY VFSE

Geographic scope: EU



RecoCard – Recycling PVC gift cards

In the UK, one million old PVC store gift cards were reprocessed and recycled in a pioneering trial. They provided material for use in new products such as irrigation pipes, thus saving 10 tonnes of plastics from being landfilled. Managed by Axion Consulting and BPF, the RecoCard trial involved Jellyfish Livewire⁵⁸, Recovinyl partner RPCS (Rubber Plastic Collection Service) and the retailer B&Q (www.diy.com) which provided the old cards. In 2017, the RecoCard take-back and recycling scheme was promoted in the UK with a media relations campaign. The scheme could be extended to other types of cards, such as loyalty cards and hotel key cards. In the UK around two billion PVC gift and store cards, equivalent to 2,500 tonnes, are produced every year.

PROJECT LED BY BPF

Geographic scope: UK



Operation PVC Recycling: PVC recyclers meet PVC converters

This project aimed to raise awareness of existing PVC recycling activities and to stimulate demand for recycling. The recycling activities and achievements of VinylPlus and its national project partners – such as AgPR⁵⁹, Rewindo and Roofcollect[®] – were presented at the 22nd Demolition Conference (Fachtagung Abbruch) in Berlin. Events were organised at the sites of two converters and one recycler to connect recycling companies with converters, so that they could learn about existing and new recycling processes and products.

PROJECT LED BY AGPU

Geographic scope: Germany



Acknowledgment for the environmental performance of recycled PVC

The project aimed to reduce resistance to the use of rigid PVC in building products for public procurement, raising awareness of PVC's environmental performance and of VinylPlus. An intense communications campaign focused on the WUPPI⁶⁰ scheme, using an integrated mix of public relations, social media, sign-up campaigns and newsletters. WUPPI handles 60-65% of the post-consumer rigid PVC waste available in Denmark.

PROJECT LED BY WUPPI

Geographic scope: Denmark



Energy- and resource-efficient building products for public procurement

This project focused on PVC products providing sustainable solutions in public procurement, thanks to their energy- and resource-efficiency, and their low whole-life cost. The magazine KBD was selected again in 2017 as the media for advertorials and technical articles, due to its special relevance for decision makers, local authorities and public procurement operators.

PROJECT LED BY AGPU

Geographic scope: Germany

⁵⁷ VFSE: Vinyl Films and Sheets Europe (www.vfse.org)

⁵⁸ Jellyfish Livewire: a Hampshire-based digital marketing agency and gift card producer (www.jellyfishlivewire.co.uk)

⁵⁹ AgPR: Arbeitsgemeinschaft PVC-Bodenbelag Recycling (Association for the Recycling of PVC Floor-Coverings – www.agpr.de)

⁶⁰ WUPPI: Danish company set up to collect and recycle rigid PVC (www.wuppi.dk)

Financial Report

Industry expenditure remained stable or only slightly increased in 2017. While the majority of technical projects slightly decreased their level of expenses or remained stable, cost for the flooring projects and for studies fostering scientific knowledge on safety of recycled PVC applications and regulatory compliance increased.

Expenditure by VinylPlus, including EuPC and its members, and national and sectoral co-funding, amounted to €5.64 million in 2017.

66.9% Waste management and technical projects, including national and sectoral co-funding amounting to **26.4%** of total industry funding

17.5% Communications, including national and sectoral co-funding amounting to **4%** of total industry funding

15.7% Overheads and Voluntary Commitment development

VinylPlus total expenditure in 2017: €5.64 million

WASTE MANAGEMENT AND TECHNICAL PROJECTS

FIGURES IN €1,000s

Films and coated fabrics related projects	206
Flooring related projects	570
EPPA	377
ESWA/Roofcollect*	107
Recovinyl	1,700
Studies, start-up & pull concept	175
TEPPFA	547
Ebene (furniture recycling)	26
Medical applications recycling	44
Resysta* consortium	10

TOTAL PROJECTS

TOTAL EXPENDITURE INCLUDING EUPC AND ITS MEMBERS

2016

2017

206	124
570	847
377	346
107	100
1,700	1,500
175	338
547	448
26	0
44	60
10	10
3,762	3,772

Recycled PVC Tonnages

The table below summarises the tonnages of PVC recycled within the VinylPlus framework in the period 1 January 2017 to 31 December 2017, by initiatives of EuPC sector groups and sectoral associations, and by Recovinyl.

In 2017, the categories rigid films and flexible PVC applications have been merged in a category flexible PVC and films. This category covers rigid and flexible films as well as other flexible applications not elsewhere reported.

The complete Report of Factual Findings regarding the Agreed-Upou Procedures (“AUP”) Engagement can be found at page 29.

PROJECT	TYPE OF PVC	TONNAGE RECYCLED IN 2016	TONNAGE RECYCLED IN 2017
EPCOAT (incl. Recovinyl)	Coated fabrics	8,187*	9,034*
Post-consumer Flooring Recycling initiative (formerly EPFLOOR)	Flooring	3,811*	3,051*
EPPA (incl. Recovinyl)	Window profiles & related profiles	256,607**	302,824**
TEPPFA (incl. Recovinyl)	Pipes & fittings	57,005**	80,925**
ESWA – ROOFCOLLECT® and Recovinyl	Flexible PVC and films (for 2017)	91,811 which consists of:	117,905 which consists of:
ESWA – ROOFCOLLECT® Recovinyl	Flexible PVC	5,082*	4,281*
	Flexible PVC applications	86,729**	
	FLEXIBLE PVC AND FILMS (2017)		113,625**
ERPA via Recovinyl (incl. CIFRA and Pack-Upgrade Project)	Rigid PVC films	24,061**	
Recovinyl (incl. VinyLoop Ferrara)	Cables	127,214	125,909
TOTAL		568,696	639,648

* Tonnage including Norway and Switzerland

** Tonnage including Switzerland

Verification Statements

KPMG CERTIFICATION OF EXPENDITURE

Independent Accountants' Report on Applying Agreed-Upon Procedures

To the Management of VinylPlus

We have performed the procedures agreed with you and enumerated below with respect to the costs of the supported charges for the different projects of VinylPlus, as included in the VinylPlus Progress Report for the period from January 1, 2017 to December 31, 2017 prepared by the management of VinylPlus.

Scope of Work

Our engagement was carried out in accordance with:

- International Standard on Related Services ('ISRS') 4400 *Engagements to perform Agreed-Upon Procedures regarding Financial Information* as promulgated by the International Federation of Accountants ('IFAC');
- the *Code of Ethics for Professional Accountants* issued by the IFAC. Although ISRS 4400 provides that independence is not a requirement for agreed-upon procedures engagements, you have asked that we also comply with the independence requirements of the *Code of Ethics for Professional Accountants*.

We confirm that we belong to an internationally-recognized supervisory body for statutory auditing.

VinylPlus' management is responsible for the overview, analytical accounting and supporting documents. The scope of these agreed upon procedures has been determined solely by the management of VinylPlus. We are not responsible for the suitability and appropriateness of these procedures.

Because the procedures performed do not constitute either an audit or a review made in accordance with International Standards on Auditing or International Standards on Review Engagements, we do not express any assurance on the cost statement.

Had we performed additional procedures or had we performed an audit or review of the financial statements in accordance with International Standards on Auditing or International Standards on Review Engagements other matters might have come to our attention that would have been reported to you.

Sources of Information

This report sets out information provided to us by the management of VinylPlus in response to specific questions or as obtained and extracted from VinylPlus information and accounting systems.

Procedures and Factual Findings

- a. Obtain the breakdown of costs declared in the table presenting the supported charges for the different projects of VinylPlus, as included in the VinylPlus Progress Report related to the activities of the year 2017 and verify the mathematical accuracy of this.

The total expenses amount to KEUR 5,640.

We found no exceptions as a result of applying this procedure.

- b. Verify that these costs are recorded in the financial statements 2017 of VinylPlus AISBL.

We found no exceptions as a result of applying this procedure.

- c. For project ESWA, for all individual expenses greater than EUR 100, agree these expenses to the supporting document and verify that they were incurred between January 1, 2017 and December 31, 2017.

We found no exceptions as a result of applying this procedure.

- d. For project ESWA, for all individual expenses greater than EUR 100, verify that these expenses are recorded in the accounts of the contractor no later than December 31, 2017.

We found no exceptions as a result of applying this procedure.

- e. For project Recovinyl, reconcile costs declared in the table presenting the supported charges for the different projects of VinylPlus with the income recognized in financial statements of Recovinyl AISBL.

We found no exceptions as a result of applying this procedure.

- f. For project not covered by the above procedures, obtain confirmation of costs from legal entity managing or contributing to the project.

We found no exceptions as a result of applying this procedure, which represents 29.67% of total expenses.

Note that financial statements of VinylPlus AISBL, TEPPFA AISBL and Recovinyl AISBL are certified by KPMG.

Use of this Report

This report is intended solely for the information and use of the management of VinylPlus board, and is not intended to be and should not be used by anyone other than these specified parties.

KPMG Réviseurs d'Entreprises/Bedrijfsrevisoren
Statutory Auditor represented by



DOMINIC ROUSSELLE,
Partner

Mont-Saint-Guibert, April 11, 2018

KPMG REPORT OF FACTUAL FINDINGS

REGARDING THE AGREED-UPON PROCEDURES (“AUP”) ENGAGEMENT: TONNAGES OF PVC RECYCLED IN THE EU-28 (PLUS NORWAY AND/OR SWITZERLAND) IN 2017, WITHIN THE DIFFERENT PROJECTS OF VINYLPLUS

To the General Manager of VinylPlus AISBL (hereafter “VinylPlus”)

We have performed the procedures agreed with you and enumerated below with respect to the tonnages of recycled PVC (within the following projects of VinylPlus) in 2017:

- in the EU-28 by the sector association The European Plastic Pipes and Fittings Association (hereafter “TEPPFA”);
- in the EU-28 (plus Norway and Switzerland) within the ROOFCOLLECT system by the members of the sector association European Single ply Waterproofing Association (hereafter “ESWA”) and by the sector association European PVC window Profile and related building Products Association (hereafter “EPPA”);
- in the EU-28 (plus Norway and Switzerland) by the (members of the) Arbeitsgemeinschaft PVC-Bodenbelag Recycling (hereafter “AgPR”) and ReVinylFloor;
- in the EU-28 (plus Norway and Switzerland) within the EPCoat project; and
- in the EU-28 (plus Switzerland) within the operations of Recovinyl,

as at March 21, 2018, set forth in the accompanying engagement letter dated January 31, 2018. Our engagement was undertaken in accordance with the International Standard on Related Services (ISRS 4400) applicable to Agreed-Upon Procedures Engagements. The procedures were performed solely to assist you in evaluating the tonnages of recycled PVC within the above-mentioned projects of VinylPlus in 2017 and are summarised as follows:

With regard to the MS Excel spreadsheet “KPMG calculation_consoTrecycled_VinylPlus (2017)” for the accounting period January 1, 2017 to December 31, 2017, prepared by management of VinylPlus, regarding the tonnages of recycled PVC (within the above-mentioned projects of VinylPlus) in 2017, we performed the following procedures:

1. Verify, in sheet “VinylPlus 2017” (which contains detailed calculations for the management of VinylPlus), whether the quantities mentioned in the columns H, L, M and N, regarding the quantities of PVC that have been recycled in 2017 by the different projects of VinylPlus, agree with quantities that are mentioned in the:
 - Reports of Factual Findings regarding the Agreed-Upon Procedures (“AUP”) Engagements performed by KPMG Réviseurs d’Entreprises SCRL civile / KPMG Bedrijfsrevisoren burg. CVBA on request of the legal entities listed below, concerning:
 - tonnages of post-consumer PVC flooring recycled in the EU-28 plus Norway and Switzerland in 2017, by the (members of the) AgPR and ReVinylFloor;
 - tonnages of PVC recycled in the EU-28 plus Switzerland in 2017, within the operations of Recovinyl;
 - Recycling confirmations regarding PVC flooring;
 - Extracts of Recovinyl internal audit tracking system on audit status for relevant companies;
 - The report on the limited review of tonnages flexible recycled PVC in 2017 within the ROOFCOLLECT system by the members of ESWA drafted by the General Manager of the Roofcollect System; and

- Communication from the concerned projects of VinylPlus, obtained by management of VinylPlus and/or the Senior Project Controller, Mr Geoffroy Tillieux;

2. Verify, in sheet “VinylPlus 2017” the mathematical accuracy of the calculations (to avoid double counting), regarding the quantities recycled PVC in 2017;
3. Verify, in sheet “Table for progress report” (which contains the table for publication in the VinylPlus Progress Report 2018), the mathematical accuracy of the calculations in column F regarding the tonnages recycled in 2017, based on the concerned tonnages mentioned in sheet “VinylPlus 2017”.

The table mentioned above is reproduced in the VinylPlus Progress Report 2018, at page 27 with a total recycled tonnage for 2017 of 639,648 tonnes.

We report our findings below:

- with respect to the procedures 1, 2 and 3, we found no exceptions.

Because the above procedures do not constitute either an audit or a review made in accordance with International Standards on Auditing or International Standards on Review Engagements, we do not express any assurance on the tonnages of recycled PVC within the above-mentioned projects of VinylPlus in 2017, as of April 10, 2018.

Had we performed additional procedures or had we performed an audit or review of the financial statements in accordance with International Standards on Auditing or International Standards on Review Engagements, other matters might have come to our attention that would have been reported to you.

Our report is solely for the purpose set forth in the first paragraph of this report and for your information and it not be used for any other purpose or to be distributed to any other parties, except for publication for informational purposes in the VinylPlus Progress Report 2018. Should any third party wish to rely on the report for any purpose they will do so entirely at their own risk. This report relates only to the tonnages of recycled PVC within the above-mentioned projects of VinylPlus in 2017 and items specified above and does not extend to any financial statements of VinylPlus, taken as a whole.

KPMG Réviseurs d’Entreprises/Bedrijfsrevisoren
Statutory Auditor represented by



DOMINIC ROUSSELLE,
Partner

Mont-Saint-Guibert, April 11, 2018

SGS INDEPENDENT VERIFICATION STATEMENT ABOUT THIS VINYLPLUS PROGRESS REPORT 2018

SGS is the world's leading inspection, verification, testing and certification company. We are recognized as the global benchmark for quality and integrity. With more than 95,000 employees, we operate a network of more than 2,400 offices and laboratories around the world.

SGS was commissioned by VinylPlus to provide an independent verification of the "Progress Report 2018". This report presents the commitments and achievements made by the VinylPlus project in 2017.

The purpose of the verification was to check the statements made in the report. SGS was not involved in the preparation of any part of this report or the collection of information on which it is based. This verification statement represents our independent opinion.

Verification Process

The verification consisted of checking whether the statements in this report give a true and fair representation of VinylPlus' performance and achievements. This included a critical review of the scope of the Progress Report and the balance and the unambiguity of the statements presented.

The verification process included the following activities:

- Desktop review of project-related material and documentation made available by VinylPlus such as plans, agreements, minutes of meetings, presentations, technical reports and more;
- Communication with VinylPlus personnel responsible for collecting data and writing various parts of the report, in order to discuss and substantiate selected statements;
- Communication with some members of the Monitoring Committee.

The verification did not cover the following:

- The underlying data and information on which the desk-top review documentation is based;
- The tonnage of PVC waste recycled (verified by KPMG);
- The chapter Financial Report (verified by KPMG);
- The chapter KPMG Certification of Expenditure;
- The chapter KPMG Certification of Tonnages.

Verification Results

Within the scope of our verification, VinylPlus has provided objective evidence of its performance in relation with its commitments in the VinylPlus programme.

It is our opinion that this "Progress Report 2018" represents VinylPlus' performance in 2017 in a reliable way; this report reflects the effort of VinylPlus to comply with its new Voluntary Commitments of June 2011.

IR PIETER WETERINGS

*SGS Belgium NV,
division Certification and Business Enhancement
Certification Manager*

26 March 2018



The Natural Step's Commentary on VinylPlus Progress Report for 2017

The Natural Step acts as an external advisor, stakeholder intermediary and capacity builder to VinylPlus. Here we comment on some key themes that have emerged from our understanding of VinylPlus activities during 2017, our direct engagement supporting its roadmap, and our reflection on the increasingly *sustainability-driven* market context in which industry must operate.

Plastics in the Spotlight

Society's (unsustainable) use of plastics was in the spotlight in 2017 – for example, plastics in the ocean, single-use plastic bags, calls for streamlining plastics in packaging and dialogue surrounding the forthcoming EU Strategy for Plastics in the Circular Economy. Even if PVC is mainly used in durable applications, this debate about getting plastics 'under control' is also relevant for VinylPlus as a successful programme of action from the plastics industry. For example, the VinylPlus recycling volumes in 2017 have now reached almost 80% of the 2020 target. This should be seen as serious steps toward the larger aspiration of a fully controlled-loop management regime for PVC. Overall, we think VinylPlus is engaging stakeholders constructively on the issues around PVC and taking up its responsibility via the voluntary commitment.

Sharing Lessons on Roadmaps for Sustainably Managed Materials

VinylPlus gained further positive recognition for its achievements in 2017 and is increasingly seen as a model for other plastics and material value chains to learn from. If there is one area where we'd like to encourage VinylPlus to speak louder, it is on promoting its vision for sustainable chemical and material management. Year on year improvement and activity is positive but it is a clear understanding of what ultimately needs to be achieved for PVC to secure its place in a sustainable society that defines the focus of the roadmap. This point should not be lost when sharing lessons as this is one of the key strengths of VinylPlus' approach. All material value chains need to follow a similar journey to understand the scientific requirements for a sustainable society and then work together to overcome their own set of challenges.

Tackling Trade-offs in the Circular Economy – Legacy Additives

VinylPlus has been affected by the policy debate about legacy additives where different goals are pitted against each other – circular economy and resource efficiency on one hand and management of chemical substances on the other. This uncertainty is a potential barrier to investment in recycling infrastructure and the uptake of recycled materials. Treating issues in isolation from each other misses the need to work toward a common vision of sustainability, taking all issues into account and working on multiple fronts simultaneously to make genuine improvements over time. Pragmatic solutions are needed, and we believe it is important for VinylPlus to continually advocate for the best outcomes to move toward its vision for a sustainably managed material flow for PVC. This 'back-casting' mindset is essential when dealing holistically with the trade-offs in the circular economy.

Proposals for Recycling Rigid PVC Containing Legacy Additives

In light of the questions around this particular trade-off we were asked by the VinylPlus Controlled-Loop Committee to provide direct input on 'developing science-based proposals for managing legacy additives in rigid PVC' using The Natural Step Framework. We conducted an analysis using sustainability principles to evaluate the issue and to consider the best current waste management option for rigid PVC articles when 'back casting' from full alignment with sustainability principles in the longer term. We have since published our statement and recommendations to VinylPlus.

These are shared publicly as part of the wider discussion about PVC and sustainability (available at www.thenaturalstep.org/PVC).

Walking and Talking the Talk

VinylPlus has become an important speaker for industry sustainability, even beyond Europe. The 2017 VinylPlus Sustainability Forum was a great success and a good example of how VinylPlus is bringing industry together, mainstreaming sustainability thinking and showing the impact of a joint commitment. With increased 'industry-level communication' there is greater onus on every actor to play their part in 'walking the talk' so there is always a consistent message regardless of who you talk to. We encourage all individual companies to continue integrating VinylPlus into company practices and communications.

VinylPlus Product Label

Greater evidence of individual company commitments is in fact beginning to show. The Natural Step wishes to acknowledge the PVC Window Profile sector for being the first to take up the VinylPlus® Product Label, and especially the front-runners undergoing certification. It is designed specifically to cover the key challenges for PVC in Europe and to stimulate progress in line with the VinylPlus roadmap. Furthermore, labelling brings with it greater transparency via third party auditing and is a signal that sustainability due diligence is cascading into the individual decisions of companies. The Natural Step hopes this stimulates other segments to take up the challenge.

Additive Sustainability Footprint

Coupled with the verification of product sustainability at company level is the assessment of additives via the work on the Additive Sustainability Footprint. The Natural Step provided guidance on methodology to ensure it is aligned with our experience with sustainability and life cycle assessment. Now the task is to proceed with assessments and clear action plans based on the results. Overall, we are pleased to see this common alignment of tools for innovation (product label + additives assessments) working toward the same reference criteria – the management of PVC products and their inputs in line with science-based principles of sustainability.

Final Thoughts

VinylPlus has, over a number of years, initiated pilot projects and invested in new ways of collaborating and systems for organising activities such as recycling. These are bearing fruit and the VinylPlus 2018 Progress Report is a good reflection of that progress. We believe VinylPlus is on track to achieve what it set out to do. Looking ahead VinylPlus should begin to consider what will be needed to take the industry commitment to the next level and go further, faster, together.



RICHARD BLUME

TNS Project Leader & Senior Advisor



OUTI UGAS

Chair of The Natural Step International

Stockholm, March 2018

Appendix

VINYLPUS VOLUNTARY COMMITMENT TARGETS



1

CONTROLLED-LOOP MANAGEMENT:

"We will work towards the more efficient use and control of PVC throughout its life cycle."

TARGETS

1. Recycle 800,000 tonnes/year of PVC by 2020. **> ongoing**



2

ORGANOCHLORINE EMISSIONS:

"We will help to ensure that persistent organic compounds do not accumulate in nature and that other emissions are reduced."

TARGETS

1. Engage with external stakeholders in the discussion on organochlorine emissions during 2012. **> achieved**



3

SUSTAINABLE USE OF ADDITIVES:

"We will review the use of PVC additives and move towards more sustainable additive systems."

TARGETS

1. Lead (Pb) replacement in the EU-27 by end 2015 (extended to the EU-28 in 2014). **> achieved**



4

SUSTAINABLE USE OF ENERGY AND RAW MATERIALS:

"We will help to minimise climate impacts through reducing energy and raw material use, potentially endeavouring to switch to renewable sources and promoting sustainable innovation."

TARGETS

1. Establish Energy Efficiency Task Force by end 2011. **> achieved**
2. PVC resin producers to reduce their specific energy consumption, targeting 20% by 2020. **> ongoing**



5

SUSTAINABILITY AWARENESS:

"We will continue to build sustainability awareness across the value chain – including stakeholders inside and outside the industry – to accelerate resolving our sustainability challenges."

TARGETS

1. VinylPlus web portal to go online in summer 2011. **> achieved**
2. VinylPlus Monitoring Committee, which will meet a minimum of twice a year, will be established by end 2011. **> achieved + ongoing**
3. A VinylPlus Membership Certificate will be launched end 2011. **> achieved**

⁶¹ Even if the target had to be withdrawn (see p. 12 of VinylPlus Progress Report 2017), VinylPlus will continue to pursue efforts to find technically and economically viable solutions for difficult-to-recycle PVC waste

⁶² Converters are striving to increase their energy efficiency. However, due to the complexity and variety of operations in the converting sectors, an overall target would be meaningless, as would targets for many of the subsectors

⁶³ Even if the target was not achieved in 2013, VinylPlus continued and will continue to work on increasing the number of programme participants

2. Exact definitions and reporting concept to be available by end 2011.
 > **achieved**

3. Develop and exploit innovative technology to recycle 100,000 tonnes/year of difficult-to-recycle PVC material (within the overall 800,000 tonnes/year recycling target) by 2020.
 > **withdrawn⁶¹**

4. Address the issue of 'legacy additives' and deliver a status report within each annual VinylPlus Progress Report.
 > **ongoing**

2. Develop a plan to deal with stakeholder concerns on organochlorine emissions by end 2012.
 > **achieved**

3. Compliance with the PVC resin Industry Charters by first Quarter 2012.
 > **partially achieved**
 3.a. Achieve full compliance by 2020.

4. Risk assessment for the transportation of major raw materials, in particular VCM, by end 2013.
 > **achieved in 2015**

5. Target zero-accident rate with VCM release during transportation in the next 10 years.
 > **ongoing**

2. Robust criteria for the 'sustainable use of additives' to be developed, with status report by end 2012.
 > **achieved in 2014**

3. Validation of the robust criteria for the 'sustainable use of additives' in conjunction with the downstream value chain, with status report by end 2014. > **partially achieved**
 3.a. Develop a methodology for the sustainable choice of additives for profiles. > **achieved**
 3.b. Develop a methodology for the sustainable choice of additives for flexible applications. > **ongoing**
 3.c. Develop a systematic framework methodology, taking into account the EU PEF concept. > **achieved**

4. Other PVC additive producers and the downstream value chain will be invited to participate in the 'sustainable additives' initiative.
 > **ongoing**

3. Define targets for specific energy reduction for converters by end 2012.
 > **partially achieved⁶²**
 3.a. PVC converters will report their gains in energy efficiency year on year.
 > **ongoing**

4. Energy Efficiency Task Force to recommend suitable environmental footprint measurement by end 2014.
 > **delayed (waiting for the EU PEF pilot phase results)**

5. Establish Renewable Materials Task Force by end first Quarter 2012.
 > **achieved**

6. Renewable Materials Task Force's status report by end 2012.
 > **achieved + extended**
 6.a. Updated status report by the end of 2020.

4. A public, and independently audited, VinylPlus Progress Report will be published annually and proactively promoted to key stakeholders. With the first edition being published in 2012.
 > **achieved + ongoing**

6. A VinylPlus product label will be launched by end 2012.
 > **launch achieved in 2014; implementation ongoing**
 7. ECVM will take an active role in promoting VinylPlus within international PVC industry organisations worldwide.
 > **ongoing**

8. ESPA stabiliser producers will actively promote VinylPlus outside the EU-28.
 > **ongoing**

11. A review of progress towards the globalisation of the approach will be undertaken by end 2015.
 > **achieved**

5. Annual external stakeholder meetings will be organised, commencing in 2012.
 > **achieved + ongoing**

9. VinylPlus will increase the number of programme participants by 20% compared to 2010 by end 2013. > **not achieved⁶³**

12. A Social dialogue commitment endorsed by the EU Sectoral Social Dialogue Committee for the Chemical Industry will be included in the VinylPlus programme by the end of 2016.
 > **achieved + ongoing**

10. VinylPlus will engage with five global brand holders by end 2013.
 > **partially achieved + ongoing**

GLOSSARY

AGPU	Arbeitsgemeinschaft PVC und Umwelt e.V. – the German association of the PVC value chain (www.agpu.com)	IVK EUROPE	Industrieverband Kunststoffbahnen e.V. (Association of Coated Fabrics and Films – www.ivk-europe.com)
ASF	Additives Sustainability Footprint	KPMG	KPMG is a global network of professional firms providing audit, tax and advisory services (www.kpmg.com)
BBP	Butyl benzyl phthalate	LCA	Life Cycle Assessment
B&C	Building and construction	LMW PHTHALATES	Low Molecular Weight phthalates
BPF VINYL GROUP	The PVC value chain's Members Group of the British Plastics Federation (www.bpf.co.uk)	NaCl	Sodium Chloride
BTHC	Butyryl tri-n-hexyl citrate	Pb	Lead
Ca	Calcium	PE	Polyethylene
CLP	European Regulation on Classification, Labelling and Packaging of chemical substances and mixtures. The legislation introduced throughout the EU a new system for classifying and labelling chemicals, based on the United Nations' Globally Harmonised System (UN GHS)	PEF	Product Environmental Footprint
DBP	Di-n-butyl phthalate	PLASTICISERSPLUS	European Plasticisers' legal entity, based in Brussels, Belgium
DCHP	Di-cyclohexyl phthalate	ppm	Part per million (also equivalent to 1 mg per kg)
DEHA	Di(2-ethylhexyl) adipate	PRE	Plastics Recyclers Europe (www.plasticsrecyclers.eu)
DEHP	Di(2-ethylhexyl) phthalate	PVC	Polyvinyl chloride
DEHTP	Di(2-ethylhexyl) terephthalate	PVC FORUM ITALIA	The Italian association of the PVC value chain (www.pvcforum.it)
DIBP	Di-isobutyl phthalate	PVDF	Polyvinylidene fluoride
DIDP	Di-isodecyl phthalate	P-PVC	Plasticised PVC
DINA	Diisononyl adipate	RAC	Committee for Risk Assessment
DINCH	Di-isononyl cyclohexane dicarboxylate	REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
DINP	Di-isononyl phthalate	RoHS	EU legislation restricting the use of hazardous substances in electrical and electronic equipment (RoHS Directive 2002/95/EC)
DOTP	Di-octyl terephthalate	RoHS 2	The recast RoHS Directive 2011/65/EU (RoHS 2) entered into force on 21 July 2011
DPHP	Di(2-propyl heptyl) phthalate	R-PVC	Recycled PVC
EC	European Commission	SDGs	Sustainable Development Goals
ECHA	European Chemicals Agency (http://echa.europa.eu)	SDS	Safety Data Sheet
ECVM	The European Council of Vinyl Manufacturers (www.pvc.org)	SDS-R	Safety Data Sheet for Recyclates
ECVM 2010	The ECVM's formal legal entity, registered in Belgium	SEAC	Committee for Socio-Economic Analysis
EDC	Ethylene dichloride or 1,2-dichloroethane	SGS	Société Générale de Surveillance, the world's leading testing and verification organisation (www.sgs.com)
EPA	Environmental Protection Agency	S-PVC	Suspension polyvinyl chloride
EPD	Environmental Product Declaration	SSDC	Sectoral Social Dialogue Committee
EPPA	European PVC Window Profile and Related Building Products Association (www.eppa-profiles.eu)	SVHC	Substances of Very High Concern
EPS	Expanded polystyrene	TEHTM	Tris(2-ethylhexyl) trimellitate
E-PVC	Emulsion polyvinyl chloride	TEPPFA	The European Plastic Pipes and Fittings Association (www.teppfa.eu)
ERPA	European Rigid PVC Film Association, an EuPC sectoral association (www.pvc-films.org)	THE NATURAL STEP	A sustainability NGO acting as critical friend and sustainability advisor to VinylPlus (www.thenaturalstep.org)
ESPA	The European Stabiliser Producers Association (www.stabilisers.eu)	TOTM	Tris(2-ethylhexyl) trimellitate
ESWA	European Single Ply Waterproofing Association, an EuPC sectoral association (www.eswa.be)	UN	United Nations
EuPC	European Plastics Converters (www.plasticsconverters.eu)	UNIDO	United Nations Industrial Development Organization
EUROPEAN PLASTICISERS	Former ECPI (www.europeanplasticisers.eu)	U-PVC	Unplasticised PVC
GHS	Globally Harmonised System of Classification and Labelling of Chemicals	VCM	Vinyl chloride monomer
HCl	Hydrogen Chloride	VINYL 2010	The first 10-year Voluntary Commitment of the European PVC industry, signed in 2000
HMW PHTHALATES	High Molecular Weight phthalates	VFSE	Vinyl Films & Sheets Europe (www.vfse.org)
INDUSTRY CHARTERS	ECVM Industry Charters for the Production of VCM and S-PVC (1995) and for the Production of E-PVC (1998)	WUPPI	Danish company set up to collect and recycle rigid PVC (www.wuppi.dk)

The European PVC Industry

Polyvinyl chloride, or PVC, is one of the most widely used polymers in the world. Because it is so versatile, PVC is used extensively in a broad range of industrial, technical and everyday applications.

PVC is an intrinsically low-carbon plastic: 57% of its molecular weight is accounted for by chlorine derived from common salt, 5% by hydrogen and 38% by carbon. It is recyclable and is increasingly being recycled. The European PVC industry has been working hard to boost collection and improve recycling technologies.

Several recent eco-efficiency and LCA studies of major PVC applications have shown that in terms of energy use and GWP (global warming potential), the performance of PVC is comparable to that of alternative products. In many cases, PVC applications resulted in both lower total energy consumption and lower CO₂ emissions.

Due to its light weight, durability and stability, PVC can offer energy, cost and material efficiency gains for sectors such as building and construction, water distribution, health and transportation.

At the European level, the PVC value chain is represented by four associations:



THE EUROPEAN COUNCIL OF VINYL MANUFACTURERS,

representing six leading European producers of PVC resin, which account for around 75% of EU-28 PVC resin production. These businesses operate around 40 different plants spread over 23 sites and employ approximately 7,000 people.

www.pvc.org



EUROPEAN PLASTICS CONVERTERS,

an association representing more than 50,000 companies in Europe, which produce over 50 million tonnes of plastic products every year. They employ more than 1.6 million people, generating turnover in excess of €260 billion per year.

www.plasticsconverters.eu



THE EUROPEAN STABILISER PRODUCERS ASSOCIATION,

representing 10 companies that produce more than 95% of the stabilisers sold in Europe. They provide direct employment to more than 2,000 people in the EU.

www.stabilisers.eu



EUROPEAN PLASTICISERS,

formerly ECPI, representing the eight major European producers of plasticisers, which produce around 90% of the plasticisers manufactured in Europe. They employ approximately 1,200 people in plasticiser production.

www.europeanplasticisers.eu

PVC & SPORT

Resilient PVC flooring is ideal for sports facilities thanks to its elasticity, safety and comfort. The photo shows a typical application produced by VinylPlus partner Gerflor for the volleyball court of the Palazzetto dello Sport in Chieri, near Turin, Italy.

The uses of PVC in sport do not stop at flooring. Its versatility makes it suitable for a large number of applications, ranging from B&C elements for sport structures, to textile architecture, clothing and footwear. It is also used to make equipment such as basketballs, coatings for gym benches and tools, boxing gloves and dumbbells.

Sport benefits people's wellbeing and social lives. It embodies fundamental values such as loyalty, commitment, teamwork and determination to achieve objectives. We at VinylPlus share these values.




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