

# Vinyl 2010

## 10 years

**REPORTING ON THE ACTIVITIES OF THE YEAR 2010**

and summarising  
the key milestones of the past 10 years



The European PVC Industry's Sustainable Development Programme

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“It is very important for a voluntary commitment to be credible and the only way to do so is by including measurable objectives and deadlines. Vinyl 2010's voluntary approach has demonstrated that it can help to achieve important targets much quicker than through traditional legislation”.

**Jean Pierre De Grève**  
Vinyl 2010 General Manager

# Executive Summary

## The Vinyl 2010 Progress Report

Vinyl 2010 is the organisation set up to implement the Voluntary Commitment of the European PVC industry. This is a 10-year plan to progress the PVC industry towards sustainability by minimising the environmental impact of PVC production, promoting responsible use of additives, supporting collection and recycling schemes, and encouraging social dialogue between all of the industry's stakeholders and beyond. Originally signed in March 2000 and covering the EU-15, the Voluntary Commitment has since been expanded as the EU has enlarged and now covers all EU-27 countries. In 2010, approaching the conclusion of the 10-year programme, and building on the achievements and the awareness of the importance of sustainable development and social responsibility, the Vinyl 2010 Board, together with the four associations represented in Vinyl 2010, decided to move forward with a new Voluntary Programme currently under development.

This report summarises the Vinyl 2010 progresses and achievements for 2010 and reports on the final results of the Voluntary Commitment. All the information reported are independently audited and verified by external third parties. A full glossary of abbreviations appears at the end of the Progress Report to aid the reader.

## VINYL 2010 PROGRESS IN 2010



2010 was a special year for Vinyl 2010, not only for the progress made during the year, but also for the final achievement of the 10-year plan targets.

The recycling of post-consumer PVC waste achieved 260,842 tonnes in 2010 – an increase of 220,000 tonnes over the 1999 volumes – exceeding the 10-year target of 200,000 tonnes and this despite the difficulties we faced in the years of the crisis.

All of the ECVI member companies, including the ones operating in the new EU Member States, were subject to a final verification of the ECVI Charters, achieving 94% of total and partial compliance with the Industry Charters for VCM/S-PVC and E-PVC in the EU-27.

The plasticiser industry continued in its commitment to support research and the safe and environmentally responsible use of plasticisers. The use of plasticisers in Europe, in particular, showed a regular shift from Lower to non-classified Higher Molecular Weight phthalates.

The lead based stabilisers substitution is well ahead of schedule, with a total reduction of around 72% in the EU-27, well exceeding the 10-year target of 50% in the EU-15.

Concerning the dialogue with stakeholders, in 2010, in addition to its usual initiatives, Vinyl 2010 involved the NGO The Natural Step in the development of a new sustainability initiative, including engaging external stakeholders in a consultation process to gain feedback on the industry plan.

TNS is currently working with Vinyl 2010 to define the principles and the key elements of a new 10-year sustainability programme for the European PVC Industry.

### Resin Manufacturing

As required by the REACH Regulation, the registration procedures were successfully completed in 2010, for both VCM and EDC.

All ECVM members were audited in order to ensure a final verification of the ECVM Industry Charter compliance. The preliminary results show 90% compliance achieved across all applications of the verification standards, 4% partial compliance and 3% non-compliance; 3% of all applications of the standards could not be verified. Following the preliminary results, the Vinyls Committee (Board of ECVM) has decided to again verify all the criteria which were partly or not compliant, so as to include the improved results in the 2012 Progress Report. This verification will also include the plants which could not be verified because production was too low during the verification period due to the economic crisis.

### Plasticisers

Over 10 years of commitment in the framework of Vinyl 2010, the European plasticisers industry represented by ECPI has consistently invested in high quality research, testing and expert evaluations. In line with its mission, ECPI has provided valuable input to legislative and regulatory authorities, non-government organisations and consumer groups.

As a result of the EU Risk Assessments and REACH Regulation, and thanks to the constant efforts of the plasticiser industry to adapt to both regulatory and market demand, the use of plasticisers in Europe has evolved in a progressive shift from Low to High Molecular Weight phthalates and – to a smaller extent – to some non-phthalate plasticisers. HMW phthalates (DINP, DIDP, DPHP) today represent over 70% of the plasticiser market in Europe.

### Stabilisers

In 2010, ESPA members announced a further reduction in lead stabiliser use in the EU-15, having decreased it by

75,9% (-96,448 tonnes) since 2000, well above the 50% target set for 2010. The lead based stabilisers were mainly substituted by calcium-based stabilisers, which showed a significant growth (+60,171 tonnes) in the same period.

In line with Vinyl 2010's targets, the phase-out of cadmium stabilisers was completed in the EU-15 by 2001, and in the EU-27 by the end of 2007.

### Waste Management Projects

The recycling of post-consumer PVC waste achieved 260,842 tonnes in 2010 – an increase of 220,000 tonnes over the 1999 volumes – exceeding the 10-year target of 200,000 tonnes. Recovinyl was a major contributor to this effort. Indeed, despite the effects of the global crisis, in 2010, Recovinyl achieved and exceeded its recycling target of 240,000 tonnes, with a registered recycled volume of 254,814 tonnes of post-consumer PVC waste. In 2010, Vinyl 2010 also provided

- TEPPFA (the European Plastic Pipes and Fittings Association) recycling projects are integrated in Recovinyl. In 2010, a special effort was put into collecting data for the EU Commission DG Enterprise to prove that legacy cadmium in pipes containing recyclate from non-pipe products does not migrate into sewage fluids or soil.
- ESWA (the European Single Ply Waterproofing Association) recycled 1,586 tonnes of end-of-life roofing and waterproofing membranes through the well-established Roofcollect® scheme in 2010.
- EPFLOOR (the European PVC Floor Manufacturers Association) succeeded in collecting to be recycled 2,448 tonnes of post-consumer flooring waste in 2010. Well consolidated recycling schemes are operating throughout Europe.
- EPCoat (EuPC's PVC Coated Fabrics) recycled 3,243 tonnes of

“We may be able, if we work together, to improve the image of this material which should be used much more than it is today. PVC is an important material for a sustainable economy.”

Carlos Sánchez-Reyes de Palacio

President of the Spanish Organisation of Consumers and Users (OCU)

support to schemes focusing on single product streams, managed by specific application trade associations:

- EPPA (the European PVC Window and Related Building Products Association) supported the market and communications initiatives of the local recycling systems in Austria, Belgium, Denmark, France, Germany, Ireland, Italy, the Netherlands, Spain and the UK.

EPPA member companies continued, and some have already completed, the substitution of lead based stabilisers with the achievement of 95% Pb-free products in 2010.

post-consumer PVC coated fabrics within the operations of Recovinyl and through its MK collection and recycling scheme in 2010.

### Recycling Technologies and Trial Plants

The Vinyloop® recycling plant in Ferrara experienced significant technical improvements in 2010. The high quality of the R-PVC obtained in the Vinyloop® plant was confirmed by the technical data collected in 2010. The Taxyloop® process improved its results in the recycling of tarpaulins, and can now deliver also white fibres.





Creativity, passion and experience  
with recycled PVC

### Other Projects

ERPA-CIFRA – In 2010, CIFRA recycled post-consumer PVC waste products within the framework of Vinyl 2010's activities. This recycled material was used in the production of recycled PVC rigid films for use in ultra lightweight modular structures (GEOlight™) for the retention of storm water.

REACH and Recycling – Following the presentation of the two studies on cadmium in PVC recyclates conducted

SDS-R (Safety Data Sheets for Recyclates) project – In relation to the REACH implementation, EuPC collaborated with EuPR to the development of extended Safety Data Sheets for Recyclates. A Guidance Document was developed and published by EuPR and version 1.0 of the dedicated website was launched in November 2010. The Guidance Document explains in a direct and simple way how to register in the SDS-R Tool and how to create a specific SDS.

converting industry to support Vinyl 2010's post-consumer recycling.

The list of PVC converters contributing to the Vinyl Foundation, and therefore to the Vinyl 2010 recycling schemes, is published on the website [www.vinylfoundation.org](http://www.vinylfoundation.org) and regularly updated.

In 2010 the Vinyl Foundation managed to collect €780,000.

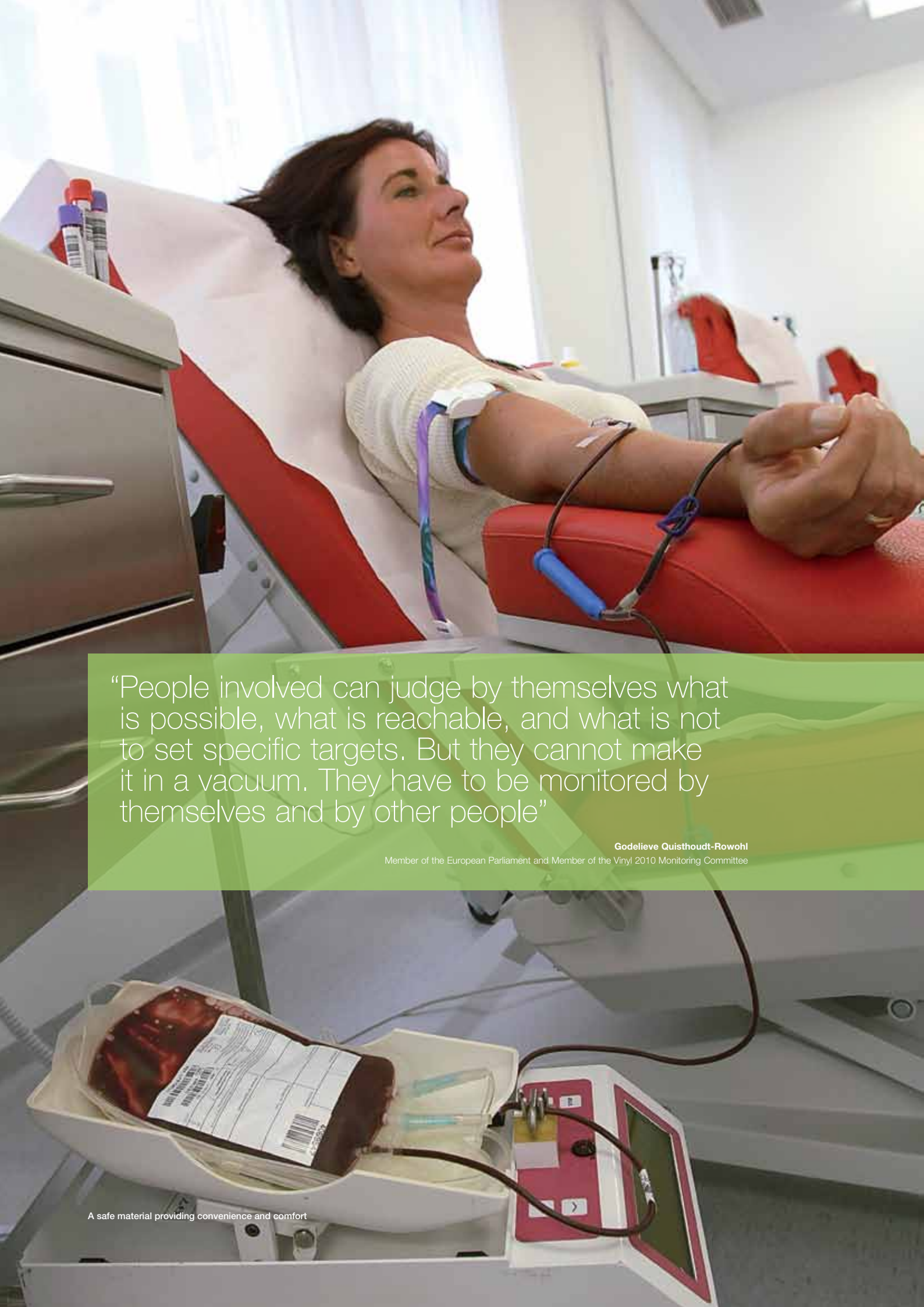
“Vinyl 2010 has been a necessary step forward for the whole industry. It has not been easy to bring everybody on board, there were lots of reluctant people saying it would be a failure, recycling would not work, additives would not be replaced, but we did it”

**Helmuth Leitner**  
ECVM General Manager

by VITO, on behalf of Vinyl 2010, and by RPA on behalf of DG Enterprise, discussions with DG Enterprise and DG Environment started concerning the limit of the cadmium content in recyclates.

Vinyl Foundation – The Vinyl Foundation is the not-for-profit, independently-managed trust created at the end of 2007 to improve the efficiency of the collection of funding from the European





“People involved can judge by themselves what is possible, what is reachable, and what is not to set specific targets. But they cannot make it in a vacuum. They have to be monitored by themselves and by other people”

**Godelieve Quisthoudt-Rowohl**

Member of the European Parliament and Member of the Vinyl 2010 Monitoring Committee

A safe material providing convenience and comfort

## MONITORING, ACCESS TO INFORMATION AND STAKEHOLDER RELATIONS

### Guidance from the Monitoring Committee

The Monitoring Committee is the independent body set up to check the progress of the Vinyl 2010 programme. It is composed by representatives of the European Commission and Parliament, trade unions, consumer groups and industry. The chairman is Professor Alfons Buekens of the Free University of Brussels (VUB).

### Finance

Expenditure by Vinyl 2010 for 2010, including EuPC and its members amounted to €6.64 million.

### Independent Auditors

Vinyl 2010 is committed to transparency.

- The financial accounts of Vinyl 2010 were audited and approved by KPMG.

- KPMG also audited the statement of tonnages of products recycled.
- The content of the Progress Report was reviewed and verified by SGS as giving a true and honest representation of Vinyl 2010's performance and achievements.

### Encouraging Dialogue with Stakeholders

Vinyl 2010 is committed to communication, dialogue and education, and participates to relevant conferences and seminars on sustainability. In April 2010, Vinyl 2010 reinforced its dialogue with the younger generations launching a specific portal, the 'Sustainable Thinking Platform', a true online community on sustainable development.

In 2010, Vinyl 2010's online communications were increased.



[www.sustainablethinking.eu](http://www.sustainablethinking.eu)

An animated video was realised for the first time, presenting the Progress Report figures and achievements. The Vinylgame was updated with an integrated scoring system in all five languages, ranking the best sustainable players.

## KEY ACHIEVEMENTS 2000-2010

- Post-consumer recycling reaches 260,842 tonnes (2010)
- External verification of ECVm S-PVC and E-PVC production Charters in the EU-27 (2010)
- Reduction in lead stabiliser use by 50% achieved two years ahead of schedule (2008)
- Lead stabiliser phase-out by 2015 extended to the EU-25 (2006) and EU-27 (2007)
- Publication of Environmental Declarations (EPD) for S-PVC and E-PVC (2007)
- Cadmium stabilisers phase-out completed in the EU-15 (2001), EU-25 (2006) and EU-27 (2007)
- Phthalate risk assessments completed (2005-2006) and published (2006-2008)
- Risk assessment on lead stabilisers published (2005)
- Registration of Vinyl 2010 as a Partnership with the Secretariat of the UN Commission on Sustainable Development (2004)
- Bisphenol A phased out of PVC resin production in all ECVm member companies (2001)





"Vinyl 2010's experience shows that sustainability is not just a fashionable word, but it also represents concrete issues, real challenges, learning by doing".

**Josef Ertl**  
former Vinyl 2010 Chairman

Tough durable and smooth

# The European PVC Industry

**Polyvinyl chloride, or 'PVC', is one of the most widely used polymers in the world. Due to its very versatile nature, PVC is used extensively in many industries and provides several popular and necessary products in construction, automobiles, electric and IT cabling, smart & credit cards, packaging, fashion & design, medical devices, amongst other things.**

Made from salt (57%) and oil (43%), PVC is a sustainable material, less oil-dependent than any other major thermoplastic.

Many PVC applications continue to be used for a long period of time, lasting from 30 to 100 years for cables, pipes and window profiles. It means that, together with excellent resource efficiency, PVC has the advantage of remaining in use for long before entering the waste chain. PVC products need minimum maintenance, and hence minor additional consumption of energy, raw materials and chemicals necessary to safeguard the efficiency of its applications.

PVC is recyclable and recycled. Several recent eco-efficiency and LCA studies on the main PVC applications show that in terms of energy requirement and GWP (Global Warming Potential) the performance of PVC is comparable to that of alternative products, and, in many cases, PVC applications show advantages both in terms of total energy consumption and in terms of low CO<sub>2</sub> emissions.

A unique advantage of PVC, compared to other materials, is the possibility of changing the formulations maintaining the same technical performance, but improving safety and sustainability of the final product.

The European PVC industry is strongly committed to sustainability. Within Vinyl 2010's initiatives, it is constantly striving to improve products and production processes, invest in technology, minimise emissions and waste, and boost collection and recycling.

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

- **ECVM** (the European Council of Vinyl Manufacturers), representing the 13 European PVC resin producing companies which account for almost 100% of the current total EU-27 PVC resin production. These businesses operate around 60 different plants spread over 35 sites and employ approximately 10,000 people.
- **ESPA** (the European Stabilisers Producers Association), representing 11 companies which produce more than 98% of the stabilisers sold in Europe. They employ some 5,000 people.
- **ECPI** (the European Council for Plasticisers and Intermediates), representing the seven major European plasticiser and intermediate producers that employ approximately 1,200 people in plasticiser production.
- **EuPC** (the European Plastics Converters), representing close to

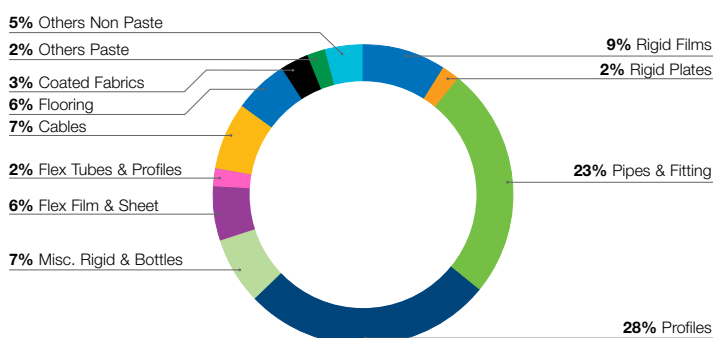
## A new recycling industry

"A plant recycling mixed rigid PVC waste has an average of 350 tonne/person.year (i.e. 20 full time employees for a recycling plant with an annual capacity of 7,000 tonne/y) while a monostream pipes recycler employs 7 people for a throughput of 4,100 tonnes (or 585 tonne/person.year)." VITO Study, 2009

50,000 companies in Europe that produce over 45 million tonnes of plastics products of various types every year. EuPC estimates that around 21,000 of these businesses (many of which are SMEs), employing over half a million people, are involved in the conversion of PVC into final home and industrial products.

In 2010, the PVC sector showed signs of recovery in the demand volumes after the drop caused by the global crisis in 2009, and European consumption of PVC resin was of around 5.4 million tonnes with the better performances in Eastern Europe.

PVC sales in Western Europe and the Czech Republic, Hungary, Poland and Slovakia in 2010



# Vinyl 2010 and its Voluntary Commitment

**Vinyl 2010 is the legal entity set up to provide the organisational and financial infrastructure to manage and monitor the implementation of the Voluntary Commitment of the European PVC industry. This is a 10-year plan to progress the PVC industry towards sustainability by minimising the environmental impact of PVC production, promoting responsible use of additives, supporting collection and recycling schemes, and encouraging social dialogue between all of the industry's stakeholders and beyond.**

The Voluntary Commitment was set up by the four associations representing the entire PVC value chain in Europe and originally signed in March 2000, covering the EU-15. As planned from the outset, the Voluntary Commitment was reviewed and revised in 2005 to take into account practical experience, technical progress and the enlargement of the European Union.

Vinyl 2010 closely involves stakeholders and policy makers, with an independent Monitoring Committee, in the implementation of the Voluntary Commitment. Furthermore, an independently audited Progress Report is published every year reviewing progress made towards the targets set out in the Voluntary Commitment.

Since October 2004, Vinyl 2010 has been a Partnership registered with the Secretariat of the UN Commission on Sustainable Development.

“Vinyl 2010 is unique in the sense that it first addressed the whole life-cycle of a material and also because it is a commitment to transparency”

**Brigitte Dero**

ESPA Secretary General and Vinyl 2010 Board Member

## VINYL 2010 BOARD IN 2010

**Mr. David Clark**  
EuPC (Flexible PVC sector)

**Mr. Alexandre Dangis**  
EuPC

**Mr. Jean-Pierre De Grève**  
General Manager (ECVM 2010)

**Dr. Brigitte Dero**  
ESPA

**Mr. Joachim Eckstein**  
Vice Chairman (EuPC)

**Dr. Josef Ertl**  
ECVM 2010

**Mr. Andreas Hartleif**  
EuPC (Rigid PVC sector)

**Dr. Arno Knebelkamp**  
ECVM 2010

**Mr. Michael Kundel**  
EuPC (Flexible PVC sector)

**Mr. Ashley Reed**  
Chairman (ECVM 2010)\*

**Dr. Michael Rosenthal**  
Treasurer ESPA

**Mr. Hans Telgen**  
EuPC (Rigid PVC sector)\*\*\*

**Mr. Henk ten Hove**  
EuPC (Rigid PVC sector)\*\*\*\*

**Mr. Pierre Tucoulat**  
Chairman ECVM 2010\*\*

\* until October 2010

\*\* from October 2010

\*\*\* from April 2010

\*\*\*\* until March 2010





Modern and practical life

## BEYOND VINYL 2010

Approaching the conclusion of the 10-year programme, and building on the achievements and the awareness of the importance of sustainable development and social responsibility, the Vinyl 2010 Board, together with the four associations represented in Vinyl 2010, decided in 2010 to move forward with a new Voluntary Programme currently under development.

During the course of 2010, Vinyl 2010 has been working with the globally respected sustainable development NGO, The Natural Step ([www.naturalstep.org](http://www.naturalstep.org)), in order to develop the principles and the key elements of a progressive new initiative for the European PVC Industry.

The new initiative will be based on the following basic principles:

- **Voluntary action**
- **Measurable targets and deadlines**
- **Continuous improvement** – to always accept that the journey to sustainability requires constant evaluation and learning along the way
- **Collaboration** – ways of working together within the industry to find solutions that no single player can implement, and reaching out to a much broader stakeholder group
- **Transparency** – opening-up, sharing and recognizing of the gap between where we are now and where we aim to be
- **Scientific rigour and research** – make sure that technologies, processes and materials are assessed according to strong credible and scientific sustainability principles
- **Dialogue** – create more debate/interaction with external contacts and those who have something to say about PVC, and be open to listening and learning from others in a positive and receptive manner
- **Responsibility** – no one is going to secure a place for PVC in the sustainable future other than the industry itself
- **Seeking business prosperity** – we need businesses involved in the production and sales of PVC to be successful – that means making an acceptable return on investment, and being competitive at the same time as seeking the route to sustainable development
- **Priority to sustainability innovation** – research, design and innovation should have no goal other than improving the sustainability potential of PVC including its market competitiveness, as well as replacing components, materials and practices that do not make sense in terms of sustainability.

# Foreword from the Vinyl 2010 Chairman

**Here we are! 10 years of Voluntary Commitment have passed. 10 years characterised by political and economic changes which probably complicated implementation. 10 years of successes and difficulties. 10 years that we can definitely see with satisfaction.**



Pierre Tucoulat  
Chairman Vinyl 2010

In this period the European PVC industry has deeply matured in its vision of sustainable development and social responsibility. We learned a lot, in terms of technical and scientific knowledge, but also in terms of relationships with our stakeholders. We learned how to better integrate our industry in our society. And hopefully we also gained respect and credibility.

It's time for drawing conclusions. The past 10 years demonstrate that challenging targets can be achieved if we are determined in our efforts and commitments. Only five-six years ago the target of increasing recycling by 200,000 tonnes of post-consumer PVC seemed to be unrealistic. But we did it. Just a few years ago the technical problems linked to the lead-based stabilisers substitution raised concerned about the possibility of respecting the deadlines. Today we are well ahead of schedule, even after having involved the new EU Member States in this venture. When we started, voluntary agreements were considered with suspicion and uncertainty. Now, having achieved our targets, we have demonstrated that the industry can be responsible and credible.

It's time to talk about the faces of Vinyl 2010 and to say thank you to all those people from the industry who started this journey with enthusiasm and dedication and to all those who have come on board over the years. But the faces of Vinyl 2010 are also all those people from the EU Commission and Parliament, from institutions, trade unions, academies, consumer associations, consultancies, scientific

and technical bodies and everyone who encouraged and contributed to the history of Vinyl 2010, stimulating and providing us with the right skills. Thank you to all of you!

It's time to look beyond Vinyl 2010. The 10-year Voluntary Commitment is now at its natural end. But this experience convinced us to continue on our way to sustainability. Building on the progress made and on Vinyl 2010's achievements, in 2010 we have been working with The Natural Step to define the principles and the key elements of a new sustainability commitment, and engaged external stakeholders to receive feedback on our plans.

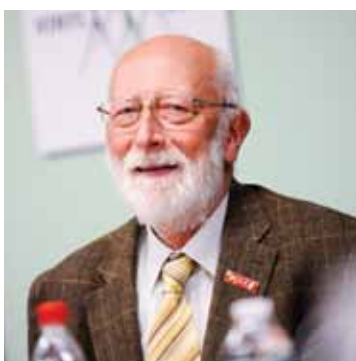
The European PVC industry is looking forward to a new decade of excitement and sustainability progress!

A stylized handwritten signature in black ink, reading 'Tucoulat'.

Pierre Tucoulat  
Chairman Vinyl 2010

# Statement from the Chairman of the Monitoring Committee

**In my capacity of Chairman of the Vinyl 2010 Monitoring Committee, I am very pleased to have had the privilege to accompany the European PVC industry on its journey towards sustainability. Vinyl 2010 has now reached the end of its foreseen lifetime, and a new voluntary initiative is being prepared and will soon be announced.**



**Prof. Alfons Buekens**  
Chairman of the Monitoring Committee

Ever since 2003, when the Monitoring Committee was formally installed, we watched the huge efforts expanded into a wide array of initiatives undertaken within the framework of Vinyl 2010. We saw the birth and development of a new culture within the PVC industry, including a full recognition of its social role and responsibility, as well as the need for a closer dialogue with its stakeholders. At times, we also saw some criticism and scepticism, now and then even when results seemed to be less encouraging.

Naturally, the implementation of the Voluntary Commitment entailed some slight setbacks. Exploring all avenues forcibly allowed identifying best, as well as second-best pathways. More and more emphasis is laid on materials recycling, whenever expense is still bearable and quality conform to market requirements. Recovinyl built on the experiences of the EuPC sectoral groups to create an integrated system for collection and recycling and has fully achieved our objectives in recycling post-consumer waste, despite a major economic crisis globally affecting industry as well as recycling enterprises. In the particular case of Vinyloop® technical problems imposed deep changes compared to the original design parameters. Today, Vinyloop® is an important resource, as it allows recycling PVC composites, such as coated textiles.

The phasing out and/or assessment of some additives conforms to the planning schedule, the expense associated has exceeded expectations. Compliance with the ECVI Charters

is still less than 100%, so that further efforts are needed from some companies.

Vinyl 2010 was also a 'learning by doing' process. Nevertheless, Vinyl 2010 largely achieved its key targets, in particular that of keeping its promises, including the recycling of an additional 200,000 tonnes of post-consumer PVC waste which was vital for the credibility of the Voluntary Commitment.

In the Monitoring Committee, our hope is that all stakeholders understand the extent of the efforts made and the significance of this work for the whole industrial sector. Voluntary agreements are now a credible option for our society. The Monitoring Committee looks forward towards the new sustainability initiatives of the European PVC industry.

A handwritten signature in black ink, appearing to read 'Alfons Buekens', with a long horizontal line extending to the right.

**Alfons Buekens**  
Chairman of the Monitoring Committee



The background of the entire page is a close-up, low-angle shot of white horizontal window blinds. The blinds are partially open, creating a series of parallel lines and allowing bright light to filter through, creating a high-contrast, slightly overexposed effect. A semi-transparent teal rectangular box is positioned in the upper-middle section of the page, containing white text. In the bottom left corner, there is a small, dark teal rectangular box containing the text "Energy saving" in white.

“The members of Vinyl 2010 have shown again and again that PVC is one of the leading sectors when it comes to creatively engaging and then addressing its environmental responsibilities. In the last decade, the whole value chain has proved that it can work together to meet extremely challenging objectives and as a consequence the reputation of the industry has changed beyond recognition”.

**Ashley Reed**  
former Vinyl 2010 Chairman

# Working Together

## The Vinyl 2010 Monitoring Committee

The Vinyl 2010 Monitoring Committee has been operating since 2003 as an independent control body. The Monitoring Committee guarantees openness, transparency and accountability in Vinyl 2010's initiatives and provides advice, comments and suggestions.

The Monitoring Committee, chaired by Professor Alfons Buekens of the Free University of Brussels, is currently composed of senior representatives from the European Commission, the European Parliament, trade unions and consumer associations, as well as representatives from the European PVC industry.

The minutes of the meetings, held formally twice a year, are public and published on the Vinyl 2010 website ([www.vinyl2010.org](http://www.vinyl2010.org)) after formal approval at the following Monitoring Committee meeting.

### MEMBERS IN 2010

#### Mrs. Soledad Blanco

Directorate General Environment, European Commission\*

#### Professor Alfons Buekens

VUB<sup>1</sup>, Chairman of the Monitoring Committee

#### Mr. Gwenole Cozigou

Directorate General Enterprise and Industry, European Commission

#### Mr. Alexandre Dangis

Managing Director of EuPC

#### Dr. Brigitte Dero

Secretary General of ESPA

#### Mr. Jean-Pierre De Grève

General Manager of Vinyl 2010

#### Mr. Joachim Eckstein

Vice Chairman of Vinyl 2010

#### Mr. Sajjad Karim

Member of the European Parliament

#### Mr. Timo Mäkelä

Director Sustainable Development and Integration, Directorate General Environment, European Commission\*\*

#### Dr. Godelieve Quisthoudt-Rowohl

Member of the European Parliament\*\*\*

#### Mr. Ashley Reed

Chairman of Vinyl 2010\*\*\*\*

#### Mr. Reinhard Reibsch

General Secretary of EMCEF<sup>2</sup>

#### Mr. Carlos Sánchez-Reyes de Palacio

President of OCU<sup>3</sup>, President of the Commission on Sectoral Policies and Environment, CES<sup>4</sup>

#### Mr. Pierre Tucoulat

Chairman of Vinyl 2010\*\*\*\*\*

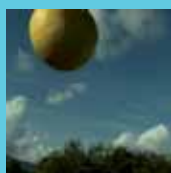
\* from May 2010  
\*\* until May 2010  
\*\*\* from August 2010  
\*\*\*\* until October 2010  
\*\*\*\*\* from October 2010

<sup>1</sup> VUB: Free University of Brussels ([www.vub.ac.be](http://www.vub.ac.be))

<sup>2</sup> EMCEF: European Mine Chemical and Energy Workers Federation ([www.emcef.org](http://www.emcef.org))

<sup>3</sup> OCU: Organización de Consumidores y Usuarios (Spanish Consumers and Users Organisation – [www.ocu.org](http://www.ocu.org))

<sup>4</sup> CES: Consejo Económico y Social de España (Spanish Economic and Social Council – [www.ces.es](http://www.ces.es))



Photographs from the multimedia competitions, [www.sustainablethinking.eu](http://www.sustainablethinking.eu), 2010

## STAKEHOLDER DIALOGUE

Following the principles of sustainable development and social responsibility, Vinyl 2010 considers the dialogue and transparency with stakeholders, third parties, institutions and organisations to be an integral part of its policy.

Furthermore, from a scientific point of view, a frank exchange of views on studies, experiences and good practice gives added value to improving the effectiveness of the initiatives taken through the Voluntary Commitment.

In line with this commitment, in 2010 Vinyl 2010 involved the NGO The Natural Step in the discussion to consider the best way forward for its commitment toward sustainability.

### Vinyl 2010 and the Global PVC Industry

Sustainable development and social responsibility have no borders or frontiers. The growing globalisation imposes free circulation of services and goods, the rules of commerce and competition are becoming increasingly international. Environmental, scientific and technical themes also require more of a global view and a global approach.

For this reason Vinyl 2010 actively cooperates with the other PVC regional associations, from North to South

America, from Australia to the Asia-Pacific region and South Africa. Representatives of the PVC regional associations are regularly involved and invited in their respective annual assemblies for updates and exchanges of view on progress in sustainability.

The Australian PVC industry was the first after the European one to commit to an ambitious Product Stewardship and sustainability programme. The progress made by the Australian PVC industry and its programme (in many aspects similar to the Vinyl 2010 approach) to improve the environmental performance of PVC products contributed to the decision taken by the Green Building Council of Australia in 2010 to revise its approach to PVC in the Materials Category of the Green Star building rating tool. The tool now accepts the use of PVC and encourages the use of best practice PVC products.

The Canadian Plastic Industry Association adopted a 'Vinyl Sustainability Management Programme'. The companies from several ASEAN<sup>5</sup> countries, representing together 2.5 Mt/year of production capacity, agreed to set up an organisation to deal with the sustainability challenges of PVC manufacturing. They agreed to the principle of an industry Charter very much inspired from the ones ECVM developed in the past.

The PVC industry in emerging economies, such as India and China, expressed interest in the possibility of adopting environmental programmes. The Japanese Vinyl Association VEC has worked with the Japan PVC Environmental Affair Council (JPEC) to promote PVC recycling activities and in December 2010 participated in the Eco-products Exhibition in Tokyo with an exhibit under the concept of '2010 New PVC in Tradition – Exploration of New Possibilities of PVC'.

During the 4th Andean Conference on 'PVC and sustainability' held on the premises of the Universidad de Los Andes in Bogota in September 2010, the European PVC industry made several presentations on topics such as 'Vinyl 2010, an industry Voluntary Commitment aiming at progress toward sustainability', 'Best available and emerging technologies for PVC production, processing and disposal' and 'Emerging regulations and implications for the vinyl industry'.

The Brazilian Instituto do PVC is committed to sustainable development and is particularly active in the promotion of eco-efficient buildings.

In South Africa, the plastics industry regards Vinyl 2010 as a successful model and a Vinyl Forum is active in the sector of building and construction. (see [http://main.constructionreviewonline.com/mar\\_supplement1\\_10.html](http://main.constructionreviewonline.com/mar_supplement1_10.html))

### Vinyl 2010 Sustainable Thinking Platform

Vinyl 2010 is committed to research, dialogue and education. To engage with the younger generation and encourage more thoughts on sustainable development issues, over the past few years Vinyl 2010 has organised two essay competitions in partnership with a number of European Universities, NGOs, student associations and the media.

Based on the success of the essays competition website ([www.vinyl2010essaycompetition.org](http://www.vinyl2010essaycompetition.org)) created in 2008, Vinyl 2010 decided to develop a specific portal, the 'Sustainable Thinking Platform' – [www.sustainablethinking.eu](http://www.sustainablethinking.eu) – which was launched in April 2010. The portal has become a true online community

<sup>5</sup> ASEAN: Association of Southeast Asian Nations ([www.aseansec.org](http://www.aseansec.org))



“Young people are very concerned about society’s common future and they are thinking critically about viable solutions questioning those provided by previous generations”.

Nadine Gouzée

Head of the Sustainable Development Taskforce for the Federal Planning Bureau for Belgium

hosting multimedia competitions open to essays, videos and photography. The platform has now around 3,000 members from 115 different countries.

Vinyl 2010 sees this challenging project as particularly important in order to help young people’s voices be heard but also to cultivate the sustainable development culture within the same PVC industry.

The first Sustainable Thinking Platform competition was launched in April 2010 and engaged young people on the theme *‘Faced with increasing resource scarcity, how can young people contribute to the promotion of sustainable production and consumption?’* 120 pictures, 28 essays and 13 videos were submitted.

The Platform’s own members selected the list of finalists by rating and voting for their favourite entries. The winners were chosen by the panel of experts made up of Nadia Weekes (Editor of ENDS Europe), Ole Grøndahl Hansen (Director of the PVC Information Council Denmark) and Willy de Backer (Head of the Greening Europe Forum at Friends of Europe).

The second competition started in September on the theme *‘With an ever-increasing population, how can we maximise resource efficiency to meet our growing needs?’* Close to 1,000 people joined the platform during the second edition and a total of 150 pictures, 6 videos and 35 essays were submitted. The judging panel was made up of David Cook (The Natural Step), Carlo Latorre (Editor of *PlasticaVerde*<sup>6</sup> and *Polimerica*<sup>7</sup>) and Ole Grøndahl Hansen.

The Sustainable Thinking Platform was presented at the UN CSD-18

Partnerships Fair in New York and at Polytalk’10 in Brussels and received very positive feedbacks.

#### Video and Online Communications

In 2010, an animated video was realised for the first time presenting the Progress Report figures and achievements. The video, launched at the Vinyl 2010 General Assembly in London, was presented at the UN CSD-18 Partnerships Fair in New York. Posted on the Vinyl 2010 website homepage and on YouTube, the video is available in English and Spanish. A special version of the video was also created with additional information for the PVC film sector.

The Vinylgame, the online game launched in 2008 which challenges players to manage a virtual PVC industry in a sustainable way, was updated with an integrated scoring system in all five languages (English, German, Italian, Portuguese and Spanish), ranking the best sustainable players. People from all over the world can now challenge each other online to be the best sustainable player.

Online games sites such as flashgames.it in Italy and minijuegos.es in Spain linked the Vinylgame which multiplied visits and players.

The Vinylgame was one of the case study presented at the 14th International Workshop on Experimental Learning on Sustainable Management organised by the Politecnico di Milano in July.

#### United Nations Partnership

The United Nations Commission on Sustainable Development (CSD) was established by the UN General Assembly in December 1992 to ensure the effective follow-up on the United Nations Conference on Environment and Development (UNCED), also known as the Earth Summit. The Commission is responsible for reviewing progress in the implementation of Agenda 21 and the Rio Declaration on Environment and Development. The Commission is also responsible for providing policy guidance to follow up the Johannesburg Plan of Implementation (JPOI) at the local, national, regional and international levels.

Since 2004, Vinyl 2010 has been a Partnership registered with the Secretariat of the UN Commission on Sustainable Development. The aim of this is to contribute to the development of effective industrial partnerships and to the exchange of experiences at global level.

In May 2010, Vinyl 2010 was invited to showcase Vinyl 2010 and its sustainable development initiatives in a 3-hour interactive presentation on: *‘How do you drive a whole industrial sector towards sustainability?’*



Highlighting Vinyl 2010 Progress Report  
in a dynamic way

<sup>6</sup>PlasticaVerde: [www.plasticaverde.eu](http://www.plasticaverde.eu)

<sup>7</sup>Polimerica: [www.polimerica.eu](http://www.polimerica.eu) and [www.polimerica.it](http://www.polimerica.it)

“I hadn't been prepared for the holistic way in which companies began to orientate their entire manufacturing and marketing activities in terms of sustainability. I didn't think I would be looking today at a PVC industry which is showcased as a leader in environmental progress and open dialogue”

**Philip K. Law**

British Plastics Federation, Public & Industrial Affairs Director

*10 years of Sustainable Development: vision, approach, lessons learnt and achievements* within the working sessions of the UN CSD-18 Partnerships Fair. During the session the animated video, the Sustainable Thinking Platform and the Vinylgame were also presented, stimulating discussion and receiving positive feedbacks.

#### Conferences and Exhibitions

In 2010, Vinyl 2010 continued in its open and constructive dialogue on sustainable development with its stakeholders through active participation in primary high level conferences, events and exhibitions:

- **ECVM and Vinyl 2010 General Assembly in London, UK, 27-28 April.**

The Vinyl 2010 General Assembly addressed achievements and future perspective of the Vinyl 2010 initiatives. The event was an occasion to present the 2010 Progress Report and the new video animation. Representatives of the PVC associations of Australia, Brazil, Japan and the US participated in the industry works.

- **PolyTalk'10 – PlasticsEurope General Assembly in Brussels, Belgium, 19-21 May.**

PolyTalk, is a major plastics industry event intended to be an innovative networking event for the plastics industry value chain to get together to discuss, decide and develop. Vinyl 2010 participated in the PolyTalk'10 workshop on social

media with a case history on how industry associations can address social media to improve their dialogue with the public.

- **Friends of Europe President's Dinner in Brussels, Belgium, 14 October.**

The dinner is a yearly Brussels' Friends of Europe landmark event. In 2010, it brought together some 350 high-level guests including Friends of Europe Trustees, EU Commissioners, Members of the European Parliament, and other top officials, representatives from business, NGOs, and the international press. Vinyl 2010 had a dedicated table for its stakeholders and an info desk. In order to increase understanding on the value of recycling, Vinyl 2010 presented a special gift to all guests: a sports bag produced with PVC recycled from advertising banners.

- **K 2010 in Düsseldorf, Germany, 27 October-3 November.**

The K is the most important European trade fair on plastics. Vinyl 2010 was hosted at the Reagens (www.reagens.it) stand where a mini exhibition was organised with transparent PVC bubbles, used to disseminate information in an original and fashionable way.

- **IdentiPlast 2010 in London, UK, 8-10 November.**

More than 160 specialists, industry leaders, academics and European policy-makers attended IdentiPlast 2010 in London to share and discuss the most advanced technologies on identification and sorting of plastics waste. Vinyl 2010 was one of the sponsors and participated with an info corner.



**Identiplast, London, November 2010:**  
identifying the value from end-of-life plastics

# Milestones and Targets

## MAIN FINAL ACHIEVEMENTS

### PVC Production

- 94% of total and partial compliance with the ECVI Industry Charters for VCM/S-PVC and E-PVC in the EU-27

### Plasticisers

- EU Risk Assessments for phthalates **completed**

### Stabilisers

- Cadmium-based stabilisers **phased out** in EU-27 in line with the 10-year target
- **75.9% substitution of lead**-based stabilisers, exceeding the 10-year target of 50% in the EU-15

### Recycling

- **260,842 tonnes** of post-consumer PVC waste **recycled**, i.e. an increase of 220,000 tonnes over the 1999 volumes, exceeding the 10-year target of 200,000 tonnes<sup>a</sup>
- Collection and recycling schemes for PVC waste stream created and successfully managed through Recovini
- Vinyloop®/Texyloop® process for solvent based mechanical recycling successfully developed

## ACHIEVEMENTS AND RESULTS FOR 2010

### Quarter 1

- **ESPA**: publish 2009 statistics on PVC stabiliser tonnages → achieved

### Quarter 2


### Quarter 3

### Quarter 4

- **ECVI**: compliance with the Industry Charters for VCM/S-PVC and E-PVC → partially achieved (90%)
- **Recovini**: ensure recycling of 240,000 tonnes of PVC waste throughout the year → achieved
- **Rewindo**: collect 26,000 tonnes of waste to produce 19,000 tonnes of R-PVC → achieved
- **Roofcollect**®: recycle 1,500 tonnes end-of-life roofing and waterproofing membranes → achieved
- **EPFLOOR**: collect to be recycled 2,400 tonnes post-consumer flooring waste → achieved
- **Vinyloop**®: treat 7,700 tonnes of waste to produce 5,000 tonnes of R-PVC → not achieved

<sup>a</sup> From 'Vinyl 2010 – Voluntary Commitment of the PVC industry', October 2001 (p.2): 'The recycling in 2010 of 200,000 tonnes of post-consumer PVC waste. This objective will come in addition to 1999 post-consumer recycling volumes and to any recycling of post-consumer waste as required by the implementation after 1999 of the EU Directives on packaging waste, end-of-life vehicles and waste electronic and electrical equipment' ([www.vinyl2010.org/library/voluntary-commitment.html](http://www.vinyl2010.org/library/voluntary-commitment.html))





“The most difficult challenge to overcome has been the creation of the necessary trust in each other to work together, both for raw material suppliers as well as converters.”

**Roel van't Veer**  
TEPPFA, Vinyl 2010 Project Manager

# Project Reports

## PVC RESIN MANUFACTURING

### ECVM Charters

PVC resin manufacturers have signed Industry Charters<sup>9</sup> for the production of PVC by the suspension (VCM & S-PVC Charter) and emulsion (E-PVC Charter) processes aimed at reducing environmental impact and improving eco-efficiency in the production phase.

Compliance with the ECVM Industry Charter was audited in 1998 and 2002 (VCM & S-PVC) and in 2005 (E-PVC) by the external verifier DNV<sup>10</sup>.

In October 2008, following EU enlargement and the subsequent entry of new ECVM members from new EU Member States, the Vinyls Committee decided in favour of a further verification, in line with the Voluntary Commitment deadline. The verification covered the period January-June 2010, and was followed by visits by DNV to all the plants between August and October 2010. All site reports were completed in January 2011 and the global report made available to ECVM.

The preliminary results show 90% compliance achieved across all applications of the verification standards, 4% partial compliance (i.e. one non-compliant result) and 3% non-compliance; 3% of all applications of the standards could not be verified.

	1st VCM & S-PVC verification	2nd VCM & S-PVC verification	E-PVC verification	VCM & S-PVC + E-PVC verification
Reference period	October-December 1998	January-June 2002	July-December 2004	January-June 2010
Number of plants	44	38	14	60
Overall compliance	88%	93%	71%	Full 90% Partial 4%

Results unfortunately fall short of 100% compliance. This is partly due to new members being verified for the first time and to the fact that a few plant modifications were not completed or not started up. Furthermore, many partial compliances are due to sites not following the prescribed methodology (e.g. frequency and period for measurements, sampling methodology), often because local regulation or permit requirements prescribe different methodologies.

Following the preliminary results, the Vinyls Committee has decided to again verify all the criteria which were partly or not compliant, so as to include the improved results in the 2012 Progress Report. This verification will also include the plants which could not be verified because production was too low during the verification period due to the economic crisis.

### Eco-profiles and Environmental Product Declaration (EPD)

The Eco-profiles on 'Energy consumption and emissions of conversion processes' – initiated in 2007, which are based on the PVC resin Eco-profiles and on information from converters were successfully completed by TNO<sup>11</sup> in 2010 and published on the website of PlasticsEurope – <http://lca.plasticseurope.org/index.htm>.

### REACH Registration

The REACH (acronym of 'Registration, Evaluation, Authorisation and Restriction of Chemical substances') is the EU Regulation on chemicals and their safe production and use.

Even though PVC as a polymer is not subject to REACH Registration obligations, the monomer VCM and the intermediate EDC (ethylene dichloride or 1,2-dichloroethane) are. The registration procedures were successfully completed in 2010, for both VCM and EDC.

<sup>9</sup> The ECVM Industry Charters are available at [www.pvc.org/Sustainability/Industry-Responsible-care/European-Council-of-Vinyl-Manufacturers-ECVM-Charters](http://www.pvc.org/Sustainability/Industry-Responsible-care/European-Council-of-Vinyl-Manufacturers-ECVM-Charters)

<sup>10</sup> DNV: Det Norske Veritas, a Norwegian testing and verification organisation ([www.dnv.com](http://www.dnv.com))

<sup>11</sup> TNO: Dutch research organisation ([www.tno.nl](http://www.tno.nl))

## PLASTICISERS

Plasticisers are substances which when combined with PVC and other polymers create a whole new world of high performing applications and uses that bring a myriad of benefits to everyday life. Over 90% of plasticisers consumed in Europe are employed for flexible PVC applications, largely for the construction, automotive and durable goods sectors.

ECPI (European Council for Plasticisers and Intermediates) is the Pan-European trade association representing the major European plasticiser producers. The plasticiser industry is committed

provided valuable input to legislative and regulatory authorities, non-government organisations and consumer groups.

The main phthalate plasticisers – DINP, DIDP, DEHP, BBP and DBP – have all been subject to comprehensive European Union Risk Assessments conducted under the EU Regulation 793/93. The Risk Assessments were completed and published in the EU Official Journal respectively:

- Di-isonyl phthalate (DINP), 2006
- Di-isodecyl phthalate (DIDP), 2006
- Di-n-butyl phthalate (DBP), 2006
- Benzyl butyl phthalate (BBP), 2008
- Di-(2-ethylhexyl)phthalate (DEHP), 2008.

## Active Engagement with Regulators on the REACH Regulation

The industry supported and assisted the development of the REACH Regulation to provide consumers with the reassurance of safe products now and for the future. The REACH Registration of DINP, DIDP, and DPHP was completed well ahead of the deadline. The data sets provided were complete, not only fulfilling the minimum data demands defined under REACH, but exceeding these demands due to a comprehensive and extensive data bank. DEHP and other Low Molecular Weight phthalates were also registered.

“Many very divergent scientific, technical and economic opinions have been expressed about PVC's possible, actual or imagined effect on human health and the environment... The successful completion of Vinyl 2010 would demonstrate that there can be viable alternatives to legislation”

John Purvis

former Member of the European Parliament

to supporting research and the safe and environmentally responsible use of plasticisers, in line with the global chemical industry initiative Responsible Care® principles and the requirements of the REACH Regulation.

European phthalates producers are continuously striving to increase the sustainability of their products and to comply with the evolving demands of the market and of legislators.

### 10 Years of Continued Commitment to Plasticiser Health and Environmental Safety

Over 10 years of commitment in the framework of Vinyl 2010, the European plasticisers industry represented by ECPI has consistently invested in high quality research, testing and expert evaluations. In line with its mission, ECPI has

The Risk Assessments confirmed that DINP and DIDP represent no hazard, do not require classification and labelling for CMR (carcinogenic, mutagenic, reproductive) or any other effects and that risk reduction is not required for any current use. Precautionary restrictions are in place for toys and childcare articles which can be placed in the mouth. DINP, DIDP and DPHP were REACH registered in early 2010, well ahead of the REACH Registration deadline.

The Risk Assessments confirmed that DEHP, DBP, and BBP require Category 2 Classification as repro-toxic substances. These LMW (Low Molecular Weight) phthalates have been REACH registered, are now on the REACH Candidate List and have been placed on the first REACH Authorisation List in February 2011. LMW phthalates are restricted in all toys and childcare articles and in cosmetics.



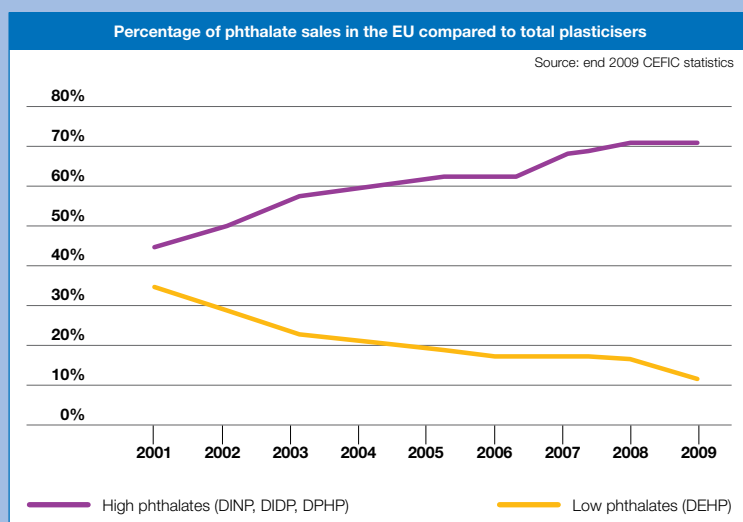
Strong resistance



“Voluntary commitments are very often discussed within any industry, but not very often translated into reality. In Vinyl 2010’s journey to sustainability, it’s been crucial to know where to go, to trust your partners and to remain open minded to input from outside.”

Norbert Scholtz  
ECPI Chairman

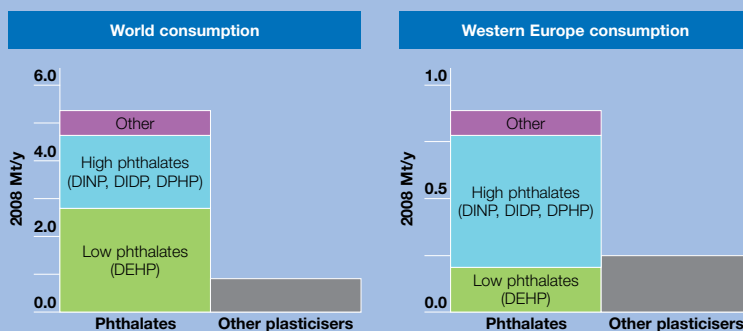
ECPI has also been proactively engaged with ECHA<sup>12</sup> on the ongoing re-evaluation of phthalate restrictions with significant scientific input being made on new data available since the EU Risk Assessments were completed. This new data addresses the areas of liver effects, exposure, endocrine data and combined effects. A comprehensive review of the available data for DINP and DIDP shows that they are not endocrine disrupters. ECHA have published interim re-evaluation reports acknowledging these new data, recognizing the differences between LMW and HMW phthalates and ECPI will continue to work with ECHA as appropriate.



### Evolution from Classified LMW Phthalates to Non-Classified HMW Phthalates

As a result of the EU Risk Assessments and the REACH Regulation, and thanks to the constant efforts of the plasticiser industry to adapt to both regulatory and market demand, the use of plasticisers in Europe has evolved in a progressive shift from Low (DEHP, BBP, DBP, DIBP) to High (DINP, DIDP, DPHP) Molecular Weight phthalates and – to a smaller extent – to some other plasticisers.

This evolution of the use of plasticisers illustrates a significant change in the last 10 years: several ECPI members have phased out classified LMW phthalates from their portfolio, and new non-classified products – both HMW phthalates and other plasticisers – have been developed by ECPI members.



DEHP represents 50% of the phthalates used worldwide but only 20% of the phthalates used in Europe

<sup>(1)</sup> Other plasticisers include: Adipates, Trimellitates, Benzoates, DINCH® and Citrates

<sup>(2)</sup> Other phthalates include: Linears, DIUP, DTDP, DOTP, DIBP and DBP

HMW phthalates (DINP, DIDP, DPHP) today represent over 70% of the plasticiser market in Europe. DEHP continues to be used in some applications and it is understood that the main DEHP producer in Europe will be seeking Authorisation in line with the REACH Regulation.

<sup>12</sup> ECHA: European Chemicals Agency (<http://echa.europa.eu>)



Sustainable functionality of PVC coated textiles

“The most difficult challenge is to improve the reputation of PVC due to historical reasons. It is hard to make people understand that, today, its production processes adopt the most advanced solutions especially in terms of health and prevention.”

Oraldo De Toni  
former EMCEF representative

### Plasticisers Safety Testing and Research

Scientific research is an important part of ECPI's activities with significant contributions to bio-monitoring and environmental monitoring:

- Human bio-monitoring programme (2004-2010). Funded with €1 million over seven years, the study, which was reviewed by an ethics committee, is part of an international, multi-centre research programme conducted in independent laboratories in Belgium and the UK. Several articles are currently under review for publication by peer-reviewed journals. This research provides robust validation of the calculation of exposure from urinary metabolites, and validates other research which shows that exposure to phthalates is well within safe limits.
- Environmental monitoring programme (ongoing). Started in 2007 as a follow-up to the previous 1999-2001 environmental monitoring study, this programme is being carried out in collaboration with independent international research institutes, and has so far received funding of around €250,000. The preliminary environmental monitoring results were presented at the SETAC<sup>13</sup> Europe meeting in 2010. This research has shown that levels of HMW phthalates are not increasing in the environment and supports the conclusion that they are not PBT<sup>14</sup> chemicals under REACH.

- In 2010, a literature research on available multi-generation fish and invertebrate studies sponsored by ECPI was published in the 'Human & ecological risk assessment journal'. This research shows that High Molecular Weight phthalates had no significant impact, including endocrine effects when specimen were exposed over several studies.

A new environmental marine food chain accumulation study will start in 2011.

### Proactive Communication with Key Stakeholders

The main aim of ECPI is to provide interested parties with clear and concise information, supported by extensive scientific research where appropriate, to support the safe use of plasticisers.

An important communication initiative has been addressed to European Institutions and Member States to make sure they are correctly informed about the responsible use of additives as well as the trend of the phthalates market. Over the past three years, informative Plasticiser road shows were organised in 10 Member States (Denmark, France, Germany, Hungary, Italy, Poland, Sweden, Spain, the Netherlands and the UK), at the European Commission, and at ECHA.

Furthermore, workshops with academics on key issues and international meetings with plasticiser associations from the US and Japan were organised to share knowledge and information. Several meetings with the media and key players of the PVC value chain (converters, brand holders, retailers) were also organised to promote flexible PVC as a safe material of choice.

New electronic and printed materials were produced to explain the developments in the plasticiser industry and the differentiation between HMW and LMW, and used in active dialogue with brand holders, retailers and media to discuss issues concerning phthalates and flexible PVC.

<sup>13</sup> SETAC: Society of Environmental Toxicology and Chemistry ([www.setac.org](http://www.setac.org))

<sup>14</sup> PBT: Persistent, Bioaccumulative and Toxic substances as specified in the Annex XIII of the REACH Regulation ([www.reach-compliance.eu/english/REACH-ME/engine/sources/reach-annexes/launch-annex13.html](http://www.reach-compliance.eu/english/REACH-ME/engine/sources/reach-annexes/launch-annex13.html))

## STABILISERS

Stabilisers are added to PVC to allow its processing and to improve its resistance to external factors such as heat and sunlight (ultraviolet rays).

### Lead Replacement

In the Voluntary Commitment, ESPA and EuPC committed to replacing lead stabilisers completely by 2015 in the EU-15, with interim targets of a 15% reduction by 2005 and a 50% reduction by 2010. The commitment of 100% phase-out by 2015 was extended to the EU-27 in 2007.

The progressive substitution of lead-based stabilisers is ongoing and confirmed by the corresponding growth in calcium organic stabilisers, used as an alternative to lead-based stabilisers.

In the period 2000-2010, lead stabilisers (in the EU-15) decreased by 96,448 tonnes (-75.9%), and calcium organic stabilisers (in the EU-15 plus Norway, Switzerland and Turkey) increased by 60,171 tonnes. ESPA successfully reached the 50% lead stabilisers reduction two years ahead of the 2010 interim target.

It is important to highlight that in EU-27 lead-based stabilisers reached 37,545 tonnes versus 48,921 tonnes in 2009 (as reported in the Vinyl 2010 Progress Report 2010). This demonstrates how solidly lead-based stabilisers replacement is progressing also in the Eastern European countries and even against the good recovery of PVC consumption in 2010.

Tonnes of Stabiliser Systems	2000	2010	Reduction (%)
Formulated* lead stabilisers	127,156	30,708	75.9

\* Formulated means that these systems are complete stabiliser/lubricant packages and many also include pigments or fillers as a service to the customer. Their major use is in pipes and profiles for construction and electrical cables.

### European Production Data

The following table shows sales of other stabilisers in the EU-15 plus Norway, Switzerland and Turkey:

Tonnes of Stabiliser Systems	2000	2010
Formulated* calcium organic stabilisers e.g. Ca/Zn systems <sup>(1)</sup>	17,579	77,750
Tin stabilisers <sup>(2)</sup>	14,666	13,246
Liquid stabilisers – Ba/Zn or Ca/Zn <sup>(3)</sup>	16,709	15,328

\* Formulated means that these systems are complete stabiliser/lubricant packages and many also include pigments or fillers as a service to the customer.

<sup>(1)</sup> Includes food contact and medical applications, plus all lead replacement systems.

<sup>(2)</sup> Used primarily in rigid applications including food contact use.

<sup>(3)</sup> Used in a wide range of flexible applications, calendered sheets, flooring, etc.

### EU-27 Production Data

The stabiliser figures for the EU-27 are reported in the following table:

Tonnes of Stabiliser Systems	2007	2010
Formulated lead stabilisers	99,991	37,545
Formulated calcium organic stabilisers e.g. Ca/Zn systems <sup>(1)</sup>	62,082 <sup>(2)</sup>	91,948 <sup>(2)</sup>
Tin stabilisers <sup>(2)</sup>	16,628 <sup>(2)</sup>	13,790 <sup>(2)</sup>
Liquid stabilisers – Ba/Zn or Ca/Zn <sup>(3)</sup>	19,000 <sup>(1)(2)</sup>	15,982 <sup>(2)</sup>

<sup>(1)</sup> EU-27 plus Norway, Switzerland and Turkey

<sup>(2)</sup> EU-27 figure for liquid stabilisers is approximated in 2007. The reason is that under the rules of Cefic – the European Chemical Industry Council – statistics cannot be published if fewer than three companies are reporting. This is to avoid disclosure of individual information.

<sup>(1)</sup> Includes food contact and medical applications, plus all lead replacement systems.

<sup>(2)</sup> Used in rigid applications including food contact use.

<sup>(3)</sup> Used in a wide range of flexible applications, calendered sheets, flooring, etc.

### Cadmium Phase-out

The phase-out of cadmium stabilisers was completed in the EU-15 by 2001, and in the EU-27 by the end of 2007.



## PVC WASTE MANAGEMENT: SECTORAL PROJECTS

### Recovinyl

Recovinyl is the organisation set up in 2003 by Vinyl 2010 to ensure a steady supply of post-consumer PVC waste for recycling in Europe. Recovinyl facilitates the collection, sorting, dispatching and recycling of mixed PVC post-consumer waste, mainly from the building and construction sectors, by involving and motivating the existing accredited waste recovery companies and recyclers.

Recovinyl has progressively integrated various collection and recycling schemes and initiatives developed by the EuPC sectoral project over the years.

Recovinyl is active in 17 European countries: Austria, Belgium, the Czech Republic, Denmark, France, Germany, Hungary, Ireland, Italy, Poland, Portugal, Romania (since 2010), Slovakia, Spain, Sweden, the Netherlands and the UK.

In 2010, Recovinyl achieved and exceeded its recycling target of 240,000 tonnes, with a registered recycled volume of 254,814 tonnes of post-consumer PVC waste.

This figure was achieved despite the persistent difficult economic conditions experienced in 2010, especially in the first quarter of the year.

The total increase of 37% in registered recycled volumes resulted mainly from the extension of the network of recyclers, but it is important to also underline a 27% increase in volume recycled by the existing network. Out of the 32,297 tonnes produced by new recyclers, 14,052 tonnes came from seven new recyclers involved in Germany.

The market confirmed the absence of problems in selling the high-quality recycled material to the converters.

As in 2009, the lower gate fees (down to 50€/t) at incineration plants in Northern European countries which were due to high availability of incineration capacity, generated a contraction in the collection of sorted waste. As a consequence, recyclers had difficulties in acquiring the material and there were higher prices for the waste collectors at recyclers' gate.

In Southern European countries, there was higher pressure on the waste collectors to sort more waste before sending it to landfill. An increase of the export towards the Far East and Northern Africa was also registered.

In 2010, Recovinyl began activities in Romania, training a new agent who is currently mapping the area. Some recyclers have already been identified and involved in the scheme. Despite the favourable labour cost, very small waste volumes are imported from other

EU countries, due to the cost of logistics.

In the Benelux, the increase of recycled volumes was mainly due to a large long-term order made by a pipe converter to one specific recycler. The recycling of cable waste increased by 133% compared to 2009, despite the fact that finding collectable material is becoming increasingly difficult due in part to the Chinese export. One Belgian recycler has since started to treat PVC material once more. The other recycler which

“Vinyl 2010 has created a platform to bring up the necessary funding to make it possible to implement a recycling programme which guaranteed that PVC recycling became an integral part of the use of this sustainable material”.

Eric Criel  
Recovinyl European Director

Recovinyl registered recycled volumes per country

	Year 2005*	Year 2006*	Year 2007*	Year 2008*	Year 2009*	Year 2010*
Austria	-	-	-	4,398	3,815	4,616
Belgium	1,500	2,739	1,954	3,462**	5,493**	5,141
Czech Republic	-	-	1,165	5,858	13,685	16,464
Denmark	-	-	2,896	2,586	2,445	2,923
France	2,000***	7,446	13,276	16,943	10,890	17,377
Germany	-	5,522	35,927	77,313	71,081	92,242
Hungary	-	-	256	804	538	617
Italy	-	828	4,252	16,115	15,681	16,417
Netherlands	4,500	10,972	8,959	10,731	10,009	16,909
Poland	-	-	475	3,518	7,648	13,227
Portugal	-	-	-	477	903	1,437
Romania	-	-	-	-	-	27
Slovakia	-	-	-	-	994	1,959
Spain	-	2	-	6,293	9,093	14,838
Sweden	-	94	-	-	-	1,277
UK	8,000	17,087****	42,162	42,895****	33,963	49,343
<b>TOTAL</b>	<b>16,000</b>	<b>44,690</b>	<b>111,322</b>	<b>191,393</b>	<b>186,238</b>	<b>254,814</b>

\* Actual figures in tonnes

\*\* Belgium figures include the ones from Luxembourg in 2008 and 2009

\*\*\* This volume was recycled by PVC Recyclage, now included in Recovinyl

\*\*\*\* UK figures include the ones from Ireland in 2006 and 2008

had announced that it would end activity last year, clearly showed interest in continuing to be involved in PVC recycling in 2010.

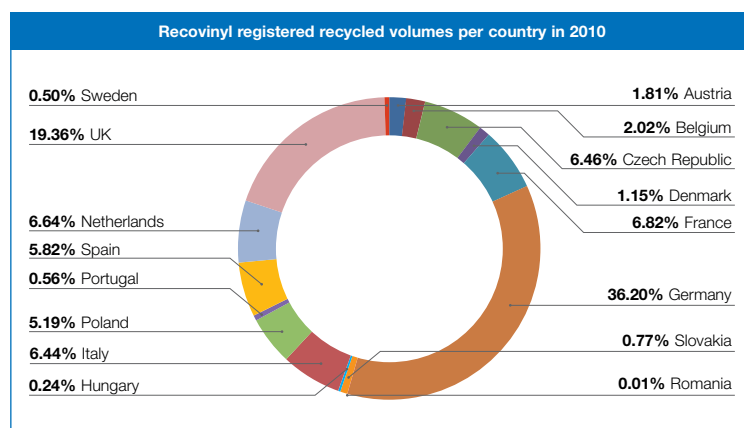
In Denmark, the crisis of the building sector influenced the existing recyclers' activity, but the entry of a new recycler in the system allowed an increase of 20% in recycled volumes.

In Sweden, a new cable recycler, also active in Denmark, Finland, Norway and Italy, joined Recovinyl.

In Germany, the overall increase of 21,161 tonnes recycled helped Vinyl 2010 reach its recycling target. Seven new recyclers joined the network bringing about an additional 14,052 tonnes recycled, whilst the existing network increased its production by 14,846 tonnes. In 2010, Germany in particular within the Northern European countries had to face high availability of incineration capacity, important overseas export and low sorting activity. Normally road works decrease in winter, but the extremely cold winter created a lot of extra road works, increasing the demand for traffic management products and consequently more demand for traffic applications realised from PVC cable waste.

In France, the 60% increase in registered recycled volumes came mainly from new recyclers with 5,465 additional tonnes. The existing network increased its volumes by 16%, which is significant considering the current situation in the French construction market. Two recyclers, which ceased their activity in 2009, restarted their operations in 2010. EDF<sup>15</sup> announced a sustainable choice by appointing recyclers which can guarantee the reuse of the collected material.

In the UK, an extraordinary recovery of the market was registered. The impact of new recyclers was small (only 2,438 tonnes) within the overall increase of 16,850 tonnes recycled. Construction of new buildings is still decreasing, but renovation and refurbishment are showing significantly higher activities. The increase of landfill taxes and stricter policies on the reuse of materials also stimulated the sorting of waste before final disposal.



#### Recovinyl registered recycled volumes per application

	Year 2009	Year 2010
<b>RIGID PVC APPLICATIONS</b>		
Pipes	16,928	25,131
Profiles	82,887	106,657
Rigid Films	5,890	5,891
<b>TOTAL RIGID PVC APPLICATIONS</b>	<b>105,705</b>	<b>137,679</b>
<b>FLEXIBLE PVC APPLICATIONS</b>		
Cables	54,285	79,310
Mixed	26,248	37,825
<b>TOTAL FLEXIBLE PVC APPLICATIONS</b>	<b>80,533</b>	<b>117,135</b>

The significant decrease of cable recycling registered in previous years was also restored in 2010. In 2009, the cable converters decreased stock level to an absolute minimum. Currently the demand of finished products and their stock levels are increasing.

In the Czech Republic and Slovakia, the growing production of the existing network and two new recyclers helped the system reach almost 18,500 tonnes of recycled volumes. The export to China and the increased demand for cable replacement in Germany had a high influence on the price and availability of the material in the Czech Republic. Germany is still the main supply market of waste materials both for the Czech Republic and for Slovakia.

Poland is also highly dependent on the situation in Germany. Transport costs and the currency variation were the main reasons for the higher prices to buy PVC waste. Five new recyclers

combined with a growth of nearly 29.8% in the volumes recycled by the existing network made Poland one of the better performing countries in 2010.

In Italy, no new recyclers joined the network. One recycler ended activity due to operating permit issues. Nevertheless recyclers feel quite positive about the future. In the last quarter of 2010, prices went up. Increased prices, combined with a focus on better quality, rather than on increasing volume, also boosted margins. Expo 2015, which will take place in Milan, should stimulate construction activities. Recently, a stricter control of landfills increased sorting and recycling activities. Mixed rigid plastics material exports to the Far East, India and North Africa is also increasing.

In Spain and Portugal, the existing network showed a significant growth (40.7%) in 2010, and two new recyclers entered the network. The construction segment is still in a stagnation phase,

<sup>15</sup> EDF: Energie De France ([www.edf.com](http://www.edf.com))

“I have learned that contrary to other industries’ voluntary commitments, Vinyl 2010 is one of the few which has been extremely successful. All goals have been achieved. The annual Progress Report is proof of the steady progress of our industry.”

**Ulrike Grawe**  
EPPA Executive Secretary

but the higher price of virgin PVC also helped the recovery of recycling activities. Many recyclers within the Recovinyl network are focusing their sales towards France, Italy, Portugal and Spain.

In 2011, Recovinyl will concentrate on keeping the network of agents and recyclers active and paying attention to new possible recyclers. A platform of selected recyclers will be created to define future strategies. Major challenges in recycled volumes will probably affect three major countries (France, Germany and the UK), who have already announced that a difficult 2011 lies ahead.

Furthermore, Recovinyl intends to explore the possibilities of creating pull-market and will be visiting specific converters (selected by application) and larger recyclers (regranulation and micronisation) to analyse the situation.

#### Window Profiles

EPPA<sup>16</sup> window collection and recycling schemes are well consolidated in Germany with Rewindo<sup>17</sup>. Systems,

stimulated by Recovinyl, are in place in Austria (ÖAKF<sup>18</sup>), Belgium, Denmark, France, Ireland, Italy, the Netherlands, Spain and the UK.

In Germany, Rewindo confirmed a slight input volume increase from 24,000 tonnes in 2009 to 25,325 tonnes in 2010, and output of about 17,850 tonnes in 2010 versus 16,550 tonnes in 2009. In 2011, Rewindo expects to collect 29,000 tonnes of PVC post-consumer windows to produce 22,000 tonnes of recycle.

Rewindo actively supports its collection and recycling initiatives with a strong communication, so as to stimulate positive behaviour and motivate its stakeholders. The main achievements were: the recycling of more than 1,200 post-consumer window frames and sashes in Aachen, supported by a press conference and participation in a programme on the WDR (Westdeutsche Rundfunk) TV station; the recycling of more than 350 post-consumer window frames and sashes in Mannheim (student hostel) followed by a press conference; and the recycling of about

100 post-consumer window frames and sashes from GEWO BAG (www.gewobag.de) in Hessen.

The success of these activities was recognised in 2010 when Rewindo was also awarded a prize for environment care for its successful recycling of windows in Aachen.

In 2010, Rewindo participated at the Berchtesgaden Conference of housing industry, the Prowindo (Alliance for Plastic Windows) conference in Bad Godesberg, the IFAT fair in Munich and the Prowindo press conference at Fensterbau/Frontale fair in Nürnberg.

For 2010, the recycling results of EPPA member company REHAU (www.rehau.de) are reported in the Vinyl 2010 audited volumes.

In Austria, ÖAKF recycled 1,023 tonnes in 2010, below the expected target of 1,250-1,500 tonnes. In 2010, the replacement of 2,200 PVC windows, supported by a marketing campaign, took place in a large Viennese housing estate. ÖAKF also



“The Vinyl 2010 programme is an excellent example of closeness and unity. The charisma embedded in our achievements and creativity has sent a strong signal from our industry to society.”

**Michael Vetter**  
Rewindo General Manager

<sup>16</sup> EPPA: European PVC Window Profile and Related Building Products Association, an EuPC sector group (www.eppa-profiles.org)

<sup>17</sup> Rewindo: Fenster-Recycling-Service (www.rewindo.de)

<sup>18</sup> ÖAKF (Österreichischer Arbeitskreis Kunststoff-Fenster): Austrian Organisation for Plastic Windows Recycling (www.fenster.at)





Secure waste systems containing post-consumer PVC recyclates

“We were aware our targets were going to be hard to achieve. When we constructed the right vehicle to incentivize the recycling of PVC, then we suddenly realised we had gold in our hands”.

Hans Telgen

Vinyl 2010 Board Member and Chairman of TEPPFA

started the preparatory work on basic documents for the certification of 'Best Practice PVC for Window Profiles and Pipes' in cooperation with the Austrian Ministry of Environment.

In Denmark, the German recycler Tönsmeier Plastics GmbH & Co KG ([www.toensmeier.de](http://www.toensmeier.de)) signed a cooperation agreement in October 2009 with the Danish WUPPI<sup>19</sup> A/S (Herlev, Denmark), operational from January 2010. About 3,000 tonnes per year, pre-treated in Denmark, are delivered to Tönsmeier Plastics at Hörter (Germany) where the material is further processed and recycled. The recycled volumes are reported as part of Recovinyl volumes.

In France, the SNEP (le Syndicat National de l'Extrusion Plastique) recycling scheme PVC Recyclage ([www.pvcrecyclage.fr](http://www.pvcrecyclage.fr)) recycled 17,377 tonnes of post-consumer PVC waste in 2010, 55% of which was made up of windows and profiles. The increase in recycled volumes compared to 13,000 tonnes in 2009 was achieved thanks to growing demand in France, as well as the progress made in sorting out PVC from the waste stream and the acquisition of new recyclers.

In 2010, SNEP was also very active in the promotion of the Voluntary Commitment and in the development of recycling schemes with specific communications and media relations actions. A French quality label for profiles was created for the use of recycled materials in certified products.

In 2010, EPPA company members continued in their phase-out of lead

stabilisers. A 95% Pb-free production is expected by mid 2011, and 100% is expected in 2012 at the latest.

EPPA activities in 2010 also included members participating in the Vinyl Foundation and the support of Vinyl 2010 in its discussions to continue the successful Voluntary Commitment for at least the next 10 years.

Among the initiatives supported by EPPA in 2010, it is important to underline the work on the standard EN 12608:2003 '*Unplasticised polyvinylchloride (PVC-U) profiles for the fabrication of windows and doors – Classification, requirements and test methods*' on the re-use of recyclate in profile applications, and the partnership with the BUILD UP initiative ([www.buildup.eu](http://www.buildup.eu) – the European portal for energy efficiency in buildings), focused on achieving energy efficiency with modern PVC windows all over Europe.

Furthermore EPPA member companies' experts continued their work on Environmental Product Declarations for PVC windows and profiles, showing all possible benefits of recycling.

### Pipes and Fittings

TEPPFA<sup>20</sup> decided to join the PVC Voluntary Commitment from the beginning, as they are convinced that PVC acts as an excellent material for pipes and fittings. Moreover daily practice has proved that it can be recycled back into quality pipes. Independent studies (amongst others TNO) have shown that for both pressure and non-pressure PVC pipes a lifetime of 100 years is realistic. This long life expectancy is the reason why at present not much pipe waste is yet

available. TEPPFA members, however, have learned how to use un-plasticised PVC recyclates from other products such as profiles.

From 4,000 tonnes in 2000, the recycling of PVC pipe waste increased to 25,172 tonnes in 2010. Although no exact figures are available, the European plastic pipes industry is estimated to use 50,000 tonnes of PVC recyclates annually. Both 2009 and 2010 suffered from the effects of slow demand in the pipes market together with concerns about the possible presence of legacy cadmium additive content of recyclate from non-pipe products.

In 2010, a lot of effort was put into collecting data for the EU Commission DG Enterprise to prove that legacy cadmium in pipes containing recyclate from non-pipe products does not migrate into sewage fluids or soil. It is essential to obtain a REACH derogation allowing 1,000ppm of legacy cadmium, otherwise the use of mixed un-plasticised PVC recyclates would be jeopardised.

In the Netherlands, the regular meetings of BureauLeiding ([www.bureauleiding.nl](http://www.bureauleiding.nl)) with the Ministry of Environment, who wish 'to reduce the environmental impact of PVC by 20% in 2015', resulted in a positive working atmosphere. A lot of information was exchanged between demolition-waste sorting-incineration companies and recyclers to improve collection and quality of recyclates. The Ministry wants to avoid the incineration of PVC waste as much as possible 'as recycling brings much greater environmental benefits'. The Ministry intends to use

<sup>19</sup> WUPPI: Danish company set up to collect and recycle rigid PVC ([www.wuppi.dk](http://www.wuppi.dk))

<sup>20</sup> TEPPFA: European Plastic Pipes and Fittings Association, an EuPC sectoral association ([www.teppfa.org](http://www.teppfa.org))

“In public procurement for building products it is important to defend the positive image of PVC. Vinyl 2010 has helped to finance sustainable solutions for the future of our business.”

Karin Arz  
Roofcollect® General Manager

Green Public Procurement to achieve its target, but a too early minimum recycle percentage specification could endanger recycling efforts due to the current limited availability.

In Denmark, the new contract between the WUPPI collection scheme for un-plasticised PVC waste with German recycler Tönsmeier resulted in better quality and therefore better usable PVC recyclates. In addition, efforts are ongoing to reduce the costs per tonne of collected PVC waste.

For the coming decade TEPPFA will focus on sustainability, quality and communication. For all relevant product groups, Environmental Product Declarations (EPDs) are being developed (six have been finalised so far), to provide a scientific base for a good position in Green Public Procurement. In order to support sustainability and further improve the EPDs, the use of recyclates will be promoted.

Based on an inquiry amongst members, all three TEPPFA Market Application Groups selected non-pressure product categories as products where recycle can be better used. Nevertheless quality of PVC recyclates remains a priority and together with recyclers, CEN-TC155 WG25 (the CEN working group on plastics pipes) is developing quality standards for recyclates to be used in pipes. Similarly the standards for products containing recycle are being reviewed.

The sales force of TEPPFA members will be trained explaining the sustainability of PVC pipes and the use of recycle in relevant products without loss of quality. A training package and customer information is being developed together with PVC4PIPES ([www.pvc4pipes.com](http://www.pvc4pipes.com)), the association founded in Brussels in 2003 with the mission of developing and promoting sustainable PVC piping systems in the global market.

The replacement of lead stabilisers is progressing. The relevant TEPPFA members are expected to finalise the replacement by 2011, even though the costs of lower production output and higher scrap volumes remain high.

### Roofing Membranes

In 2010, ESWA<sup>21</sup> recycled 1,586 tonnes of end-of-life roofing and waterproofing membranes through its project Roofcollect®, increasing the recycled volumes by 22.2% over 2009 (1,297 tonnes) and exceeding its set targets for 2010 (1,500 tonnes) by 5.7%. Germany, still the main market, contributed a recycled volume of 1,304 tonnes.

In 2010, Roofcollect® continued and consolidated its marketing and communications activities in Europe. Logistical Groups meetings were organised in France, Ireland, Italy and Norway to explore potential treatment, collection and recycling schemes. For Austria, Germany and Switzerland a meeting of logistical teams was organised in April 2010 and it was confirmed that logistics and transport operate without problems with local partners.

In Norway, a working team which involves the company Protan was established. In the Netherlands, a scheme for transport and recycling was organised in cooperation with VESCOM (producer of wall covering membranes – [www.vescom.com](http://www.vescom.com)).

In Italy, further meetings with Vinyloop® are foreseen in order to verify the potential of membranes recycling.

In France, Le Comité des Membranes d'Etanchéité Synthétique (CMES) represents ESWA converters operating on the French market. CMES

### Recycling of end-of-life roofing and waterproofing membranes in Europe in 2010 (volumes per country in tonnes)

Belgium	5
Germany	1,304
Netherlands	34
Norway	172
Poland	6
Switzerland	65
<b>TOTAL</b>	<b>1,586</b>

coordinates collection and recycling operations of PVC end-of-life roofing and waterproofing membranes for the Roofcollect® system in France. A series of collection points (with several others planned for the future) facilitates the collection and transport of waste to recyclers.

A meeting of the French logistical team was organised in June 2010. The collaboration of Roofcollect® with EPFLOOR<sup>22</sup> and SFEC (Syndicat Français des Enducteurs Calandriers) continued successfully.

For 2011, Roofcollect® aims to continue its activities in existing as well as new recycling markets. These activities mainly concern the extension of collecting schemes to countries not having one yet as well as grinding and recycling tests with compounded and non-compounded materials in Ireland, Italy, Spain and the UK. In France, Roofcollect® will continue working with the logistical chain.

In terms of marketing and communications, Roofcollect® intends to continue to promote the 'green' and

<sup>21</sup> ESWA: European Single Ply Waterproofing Association, an EuPC sectoral association ([www.eswa.be](http://www.eswa.be))

<sup>22</sup> EPFLOOR: European PVC Floor Manufacturers, an EuPC sectoral group ([www.epfloor.eu](http://www.epfloor.eu))



“I haven’t been surprised how successful our efforts have been. However, we cannot accept any standstill and we have to make further progress in our Voluntary Commitment.”

Michael Kundel  
Vinyl 2010 Board Member

‘sustainable’ image of PVC roofing membranes. Communication activities will include media relations, participation in international trade fairs and the continuous updating of the Roofcollect® website with hotline, pricing, forms for logistics and transport in eight countries and five languages.

The main challenges for 2011 are the development of recycling schemes in Ireland and the UK and the potential recycling offered by Vinyloop®.

### Flooring

In 2010, EPFLOOR reached its target and collected 2,448 tonnes of post-consumer PVC flooring waste. Out of those 2,294 tonnes were recycled. Collection was overall stable, despite the economic downturn, but competition with incineration in Germany put collection under pressure.

In the UK, the Recofloor™ collection system continued to acquire new partners and in November 2010 was awarded the Chartered Institution

of Waste Management (CIWM) for Environmental Excellence in the Innovative Practice in Waste Management and Resource Recovery (SME) category. Recofloor™ collection volumes increased by 25% in 2010 as the number of drop-off sites was expanded from 20 to 66. In 2011, EPFLOOR will work for the involvement of PVC flooring manufacturers in its collection system, in order to possibly manage bigger contracts compared to the ones that can be signed by installers, generally of very small dimension.

EPFLOOR offers recycling solutions to any flooring installers, waste collectors or municipalities in Europe. 2011 will be a transition year in which collection and recycling will be maintained. For the future EPFLOOR intends to support, under conditions to be agreed, a new 10-year Voluntary Commitment.

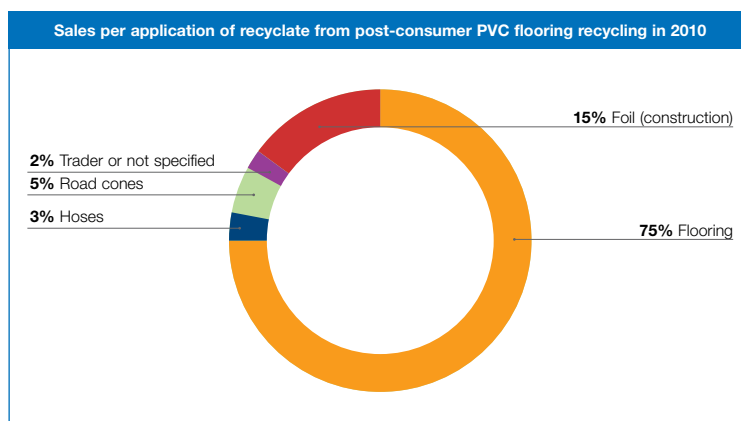
The development of new recycling solutions (e.g. feedstock recycling) is of vital importance to increase recycling

of some soft and mixed PVC fractions. EPFLOOR will therefore support Vinyl 2010, in cooperation with other EuPC sector groups and associations, in order to develop new research projects starting in 2012.

### Coated Fabrics

EPCoat<sup>23</sup> recycled 3,243 tonnes of post-consumer PVC coated fabrics within the operations of Recovynil and through its IVK<sup>24</sup> collection and recycling scheme throughout 2010.

For 2011 EPCoat-IVK expects to recycle 4,000 tonnes of post-consumer PVC coated fabrics.



<sup>23</sup> EPCoat: EuPC PVC Coated Fabrics Sector Group

<sup>24</sup> IVK: Industrieverband Kunststoffbahnen – Association of Coated Fabrics and Films ([www.ivk-frankfurt.de](http://www.ivk-frankfurt.de))



## PVC WASTE MANAGEMENT: RECYCLING TECHNOLOGIES, PLANTS AND PROJECTS

### Vinyloop®

Vinyloop® is a mechanical, solvent-based, recycling technology that produces high quality R-PVC (recycled PVC) compounds. The purpose of Vinyloop® is, among others, to recycle PVC composite waste which cannot be satisfactorily recycled by a grinding process.

After the installation of the modified decanter and the integration with the Taxyloop® process in 2009, Vinyloop® experienced significant technical improvements in 2010.

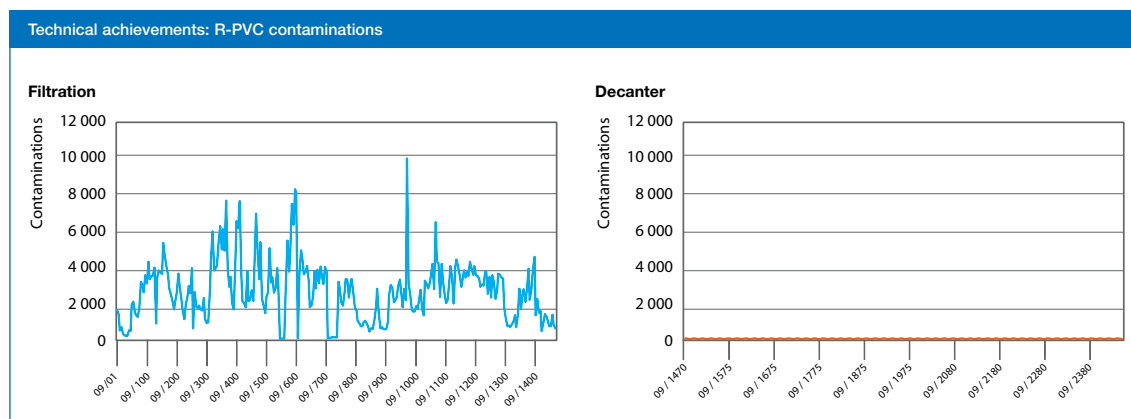
with the coloration of the fibres were also solved and the plant can now deliver white fibres. Further fine tuning of the plant is in progress, but the productivity is now of 4 t/day of tarpaulin treated.

These technical improvements resulted in an increase of the volumes treated and of the R-PVC production: in 2010, Vinyloop® treated 5,656 tonnes of PVC waste of which 5,416 tonnes were cables and 174 tonnes were tarpaulins; 66 tonnes were made up of low quality window profiles scraps otherwise

difficult to use, resulting in a production total of 3,615 tonnes of R-PVC.

The high quality of the R-PVC obtained in the Vinyloop® plant was confirmed by the technical data collected in 2010.

The Ferrara Vinyloop® plant is used also as pilot plant for industrial research. In 2010, trials started for the treatment of coated textiles (cotton and PET), and a new product, called FP101, was developed. The FP101 formulation may include rigid scraps that grant a greater rigidity to the compound.



“Legislation is not necessary to best answer in every situation. Vinyl 2010 is a perfect example of an industry doing something on a voluntary basis to act in the interest, not only of themselves or of consumers, but of the European Union as a whole.”

Sajjad Karim

Member of the European Parliament and Member of the Vinyl 2010 Monitoring Committee

With regards to the centrifugal decanter, successful trials were conducted with lower rotational speed which resulted in energy consumption savings. Mechanical problems concerning, for example, mechanical seals and screw conveyors were also solved.

Likewise, for Taxyloop® several technical problems were solved. These included improvement in the strength of materials such as the bottom valve and the agitator; the clogging of the filtration plate due to the presence of fibres. Problems

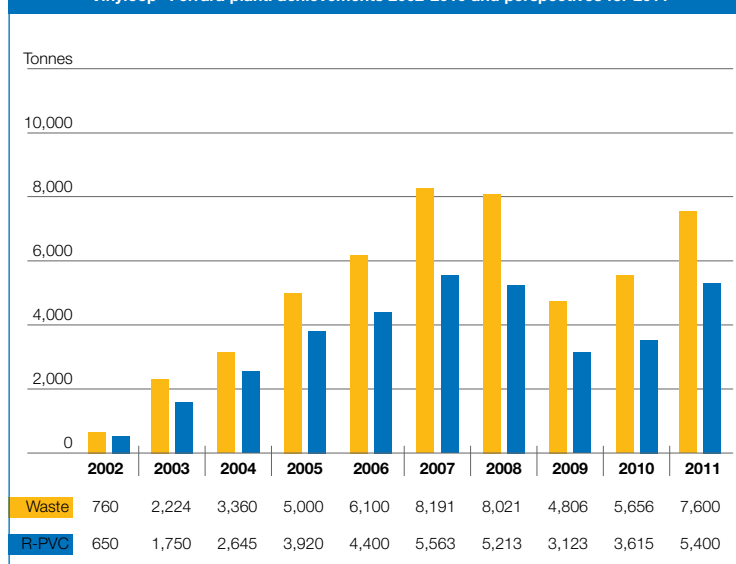
### Technical achievements: product contents (cable)

	Filtration	Decanter
<b>Quantity of filler (%)</b>	25%-30%	15%
<b>Density</b>	1.47	1.39
<b>Enforced break (MPa)</b>	13 MPa	17 MPa
<b>Elongation at break (%)</b>	200%	260%
<b>Contaminations</b>		
- copper	5	<1
- others	3,500	10
<b>Shore A</b>	84	82



Vinyloop® Ferrara plant, Italy

Vinyloop® Ferrara plant: achievements 2002-2010 and perspectives for 2011



Further trials are scheduled in 2011, and different waste streams such as flooring, roofing membranes and coated textiles with cotton, PET and glass fibre will be tested. Important research will be conducted on the possibility of obtaining a semi-rigid R-PVC, adding not only rigid scraps to the flexible PVC generally treated, but also a filler.

In 2010, Vinyloop® experienced increasing signs of higher sensitivity to recycled products: from a higher demand for treating new kinds of scraps and for tailor-made production, to pressure from final consumers (environmental sensitive people and retailers) to Vinyloop®'s potential customers, as demonstrated by a

market research institute. Furthermore, Vinyloop® received several proposals to build new plants from different countries in Asia and South America.

For the future, based on the developments of the Vinyloop® process and the increasing demand from the market, the Vinyloop® management is planning to develop LCA studies on the process and the main commercial applications, to give an added environmental value to customers. The management will also aim at interacting with a new kind of potential proactive customers ready to consider Vinyloop® as a genuine partner supplier in sustainable development.

## PVC WASTE MANAGEMENT: OTHER PROJECTS

### ERPA<sup>25</sup> – CIFRA<sup>26</sup>

In 2010, CIFRA recycled PVC post-consumer waste products within the framework of Vinyl 2010's activities. This recycled material was used in the production of recycled PVC rigid films for use in ultra lightweight modular structures (GEOlight™) for the retention of storm water.

### REACH and Recycling

Cadmium stabilisers were used in several PVC applications until a 100-ppm limit was introduced in 1991 (Directive 91/338/EEC) for most applications, except profiles and roofing membranes. The Directive 91/338/EEC is now part of the Annex XVII<sup>27</sup> (Restrictions) of REACH.

In the framework of Vinyl 2010, cadmium use was voluntarily stopped in the EU-15 in 2001. This commitment was extended to and completed in the new EU countries in 2006 (EU-25) and 2007 (EU-27).

Despite the current reduction in use, the cadmium contained in profiles waste will only peak between 2015 and 2020, due to the long life of these applications.

Even if, for technical reasons, use of post-consumer waste in profiles is limited, post-consumer profile waste can be recycled in other rigid applications (e.g. pipes), still subject to the 100-ppm limitation.

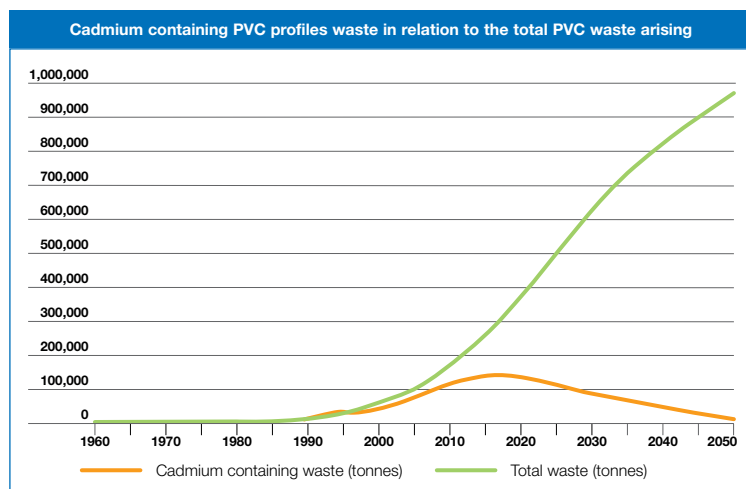
The studies, carried out in the past two years and reported in Vinyl 2010 Progress Report last year, concluded that granting an exemption up to 1,000 ppm in selected applications for cadmium brought in by recovered PVC would have environmental benefits (see also 'Study on the cadmium content of recycled PVC waste' conducted by VITO, on behalf of Vinyl 2010 – December 2009; and the 'Socio-economic impact of a potential update of the restrictions in the marketing and use of cadmium' assessment conducted by RPA on behalf of DG Enterprise – January 2010).

After the presentation of the two studies, discussions with DG Enterprise and DG Environment started to address concerns about the potential risks of such an exemption.

<sup>25</sup> ERPA: European Rigid PVC Film Association ([www.pvc-films.org](http://www.pvc-films.org))

<sup>26</sup> CIFRA: Calandrage Industriel Français – a French calendering company ([www.cifra.fr](http://www.cifra.fr))

<sup>27</sup> Annex XVII: Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles of the REACH Regulation ([www.reach-compliance.eu/english/REACH-ME/engine/sources/reach-annexes/launch-annex17.html](http://www.reach-compliance.eu/english/REACH-ME/engine/sources/reach-annexes/launch-annex17.html))



A workshop on the potential migration of Cd into waste water was organised by the EU Commission in March 2010, as the middle layer of three-layered sewage pipes forms the largest outlet for rigid post-consumer PVC waste. The workshop was attended by representatives from several Member States; DG Enterprise and DG Environment; ECHA and industry representatives and by an expert on migration modelling from the FABES Institute in Munich ([www.fabes-online.de](http://www.fabes-online.de)).

The general agreement amongst experts and Member States was that Cd migration risk is negligible.

A draft Commission Regulation was presented at the 15-17 June CARACAL (Competent Authorities for REACH and CLP<sup>28</sup>) meeting. A further meeting of experts on Risk Management Activities was held on 8 October 2010, with the objective to discuss the Commission proposal. The situation was presented again to the CARACAL meeting held at the end of October 2010.

On 25 November 2010, the REACH Committee endorsed a slightly amended version of the Commission proposal. The elements of the final Commission proposal concerning PVC in particular are:

- the prohibition of placing on the market all articles from a specified list of polymers (including PVC) if they contain cadmium above a concentration limit of 100 ppm;

- the 100-ppm limit shall not apply to the following mixtures and articles containing recovered PVC if their cadmium concentration does not exceed 0.1% of the plastic material in the following rigid PVC applications:
  - profiles and rigid sheets for building applications
  - doors, windows, shutters, walls, blinds, fences, and roof gutters
  - decks and terraces
  - cable ducts
  - pipes for non-drinking water if the recovered PVC is used in the inner layer of a multilayer pipe and is entirely covered with a layer of newly produced PVC in compliance with the 100-ppm limit;
- the obligation to mark articles containing recovered PVC;
- the derogation will be reviewed with a view to reducing the limit value for cadmium by 31 December 2017.

The proposal is currently under the scrutiny of the EU Parliament and the EU Council. The Parliament (acting by majority) and the Council (acting by qualified majority) have three months to oppose the adoption of the proposal.

The Regulation shall enter into force on the twentieth day following its publication in the Official EU Journal and shall apply from six months after the entry into force.

In the framework of the REACH Regulation, restrictions have been adopted for Butyltin, which will have to be less than 1,000 ppm in most articles from January 2012 (in some from 2015).

In addition Denmark introduced a restriction proposal for Low Molecular Weight phthalates.

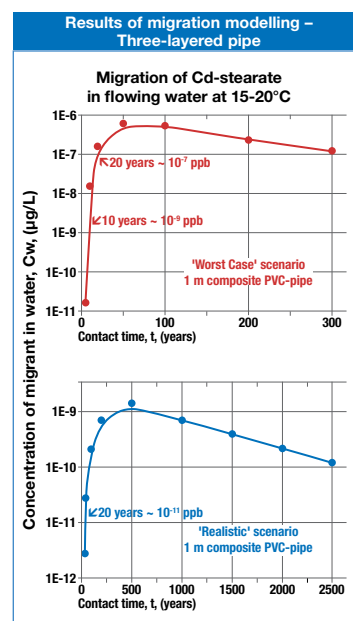
In September 2010, the REACH Committee endorsed the proposal by which authorisations need to be obtained for specific uses and for a limited period of time for substances that, like DEHP, BBP and DBP, are included in the first list of the Annex XIV<sup>29</sup> of REACH. Consultation of the EU Parliament and the EU Council is still required.

### SDS-R (Safety Data Sheets for Recyclates) project

The 'Guidance on Waste and Recovered Substances' published by ECHA on 12 May 2010 states that most recyclers (except those directly manufacturing an article from waste) are considered manufacturers according to REACH. They benefit from an exemption from Registration (art. 2.7.d), but are subject to requirements of:

- pre-registration
- providing (extended) Safety Data Sheets to their customers (art. 31) when required.

In 2010, ECHA also published a specific 'Guidance on the Compilation of Safety Data Sheets' (the October 2010 draft is available in the ECHA website [http://guidance.echa.europa.eu/guidance4\\_en.htm](http://guidance.echa.europa.eu/guidance4_en.htm)) which is expected to be available in the final version around April 2011.



<sup>28</sup> CLP: European Regulation on Classification, Labelling and Packaging of chemical substances and mixtures

<sup>29</sup> Annex XIV: the list of substances subject to authorisation requirements of the REACH Regulation ([http://echa.europa.eu/doc/authorisation/annex\\_xiv\\_rec/annex\\_xiv\\_subst\\_inclusion.pdf](http://echa.europa.eu/doc/authorisation/annex_xiv_rec/annex_xiv_subst_inclusion.pdf))

Devised for all kinds of users, the document is not specific for recyclers. To support recyclers in their compliance with the REACH Regulation requirements, EuPC and EuPR<sup>30</sup> started the SDS-R project in 2009. The aim is to develop a software database of polymers and applications where recyclers will be able to enter basic information (statistical or analytical) and obtain the specific required SDS-R at the push of a button.

A dedicated team was created for the development of the SDS-R project.

Presently, the project has completed several steps: the compilation of the statistical information on (historical) additives used in several plastics; the determination of the worst case formulations (where additives and components are unknown); the development of Safety Data Sheets complying with REACH.

A toxicologist is completing the background report, and when all the information will be available, the SDS will be fine-tuned to the actual recycler formulations. This could lead to some 300 different SDS.

A Guidance Document was also developed and published by EuPR and version 1.0 of the dedicated website was launched in November 2010 (<http://www.sdsrtool.eu>).

The Guidance Document explains in a direct and simple way how to register in the SDS-R Tool and how to create a specific SDS.

Furthermore a dedicated 'REACH Club' was created to support the companies' REACH officers in their job.

The 'REACH Club' is a community of plastics experts which brings together people with responsibilities related to



Traffic separators for cycle lanes made from post-consumer PVC waste

the implementation of REACH in their companies and who have an in-depth knowledge of the EU Regulation. The Club also offers privileged access to the website forum and free access to the webinars.

“We have been told by people who know what other industries have done, that Vinyl 2010 is practically the only programme which has fulfilled what it has promised. That makes us proud and gives us hope for the future.”

**Joachim Eckstein**  
Vinyl 2010 Vice Chairman

#### Vinyl Foundation

The Vinyl Foundation is a non-profit independently managed trust which provides a mechanism to fairly collect contributions from the whole European converting industry, including companies who are not members of trade associations. The Foundation was set up in 2007 by EuPC in collaboration with Vinyl 2010.

The contribution to the Vinyl Foundation is based on the actual volume of PVC resin consumed. Thus, the contributions paid are equitably allocated across the market. The accountancy firm KPMG Fiduciaire operates a confidential 'black box' system, fully in line with EU competition law, and independently administers the collection of funds on behalf of the Vinyl Foundation.

In 2010, the Vinyl Foundation collected an estimated sum of €780,000.

The list of PVC converters contributing to the Vinyl Foundation, and therefore to the Vinyl 2010 recycling schemes, is published on the website [www.vinylfoundation.org](http://www.vinylfoundation.org) and regularly updated.

#### VINYL FOUNDATION BOARD

**Mr. Michael Kundel**  
Chairman (RENOLIT AG)

**Mr. David Clark**  
Tarkett

**Mr. Alexandre Dangis**  
EuPC

**Mr. Joachim Eckstein**  
ERPA

**Mr. Andreas Hartleif**  
VEKA AG

**Mr. Hans Telgen**  
Tessenderlo Group\*

**Mr. Henk ten Hove**  
Wavin\*\*

\* from April 2010

\*\* until March 2010



## In 2010 contributors were:

### Austria

Aluplast Austria GmbH  
Dietzel GmbH  
Pipelife Austria  
Poloplast GmbH  
REHAU GmbH  
Sattler AG

### Belgium

Allaxis Services  
Deceuninck NV  
Dyka Plastics NV  
Floridienne Chimie SA  
Pipelife Belgium NV  
Profel NV  
RENOLIT Belgium NV  
Tessenderlo Chemie NV  
Wavin Belgium BV  
Wymar International NV

### Czech Republic

Pipelife Czech S.R.O.

### Denmark

Nordisk Wavin A/S  
Primo Danmark A/S

### Estonia

Pipelife Eesti AS

### Finland

KWH Pipe Oy AB  
Pipelife Finland Oy  
Upofloor Oy  
Uponor Suomi Oy

### France

Akzo Nobel Nippon Paint AB  
Alphacan France  
CIFRA  
CTS-Cousin-Tessier SAS  
CTS-Saplast SAS  
Forbo Chateau Renault SAS  
Forbo Reims  
Gerflor SAS  
Gerflor Tarare Snc  
Girpi  
Nicol  
Plastival SAS  
Profine France  
REHAU SA  
RENOLIT Ondex SAS  
S.I.D.I.A.C.  
Sotra-Seperef SAS  
Tarkett SAS  
VEKA SAS  
Wavin France SAS  
WR Grace

### Germany

A. Kolckmann GmbH  
Alkor Kunststoffe GmbH  
Alphacan Omniplast GmbH  
Aluplast GmbH  
AMS Kunststofftechnik GmbH & Co. KG  
Armstrong DLW AG  
Bilcare Research  
Bohm GmbH  
CTW  
Debolon Dessauer Boden  
FDT Flachdach Technologie GmbH & Co. KG  
Gealan Fenster Systeme GmbH  
Georg Fischer Deka GmbH  
Gerflor Mipolam GmbH  
Henkel AG & Co. KGaA  
Heubach GmbH  
Heytex Bramsche  
Heytex Neugersdorf GmbH  
IKA GmbH KG  
Inoutic/Deceuninck GmbH  
John GmbH  
Karl Schoengen KG  
Klöckner Pentaplast GmbH & Co. KG  
Konrad Hornschuch AG  
Marley Deutschland  
Mehler Technologies GmbH  
MKF Folien

MWK Kunststoffverarb. GmbH  
Peter Van Eyk GmbH & Co. KG  
Pipelife Deutschland GmbH  
Profine GmbH  
REHAU AG & Co.  
RENOLIT SE  
Roechling Engineering Plastics KG  
Rowa Rohstoff  
Salamander Industrie Produkte GmbH  
Schueco PWS GmbH & Co.  
Sika-Trocac GmbH  
Stockel GmbH  
Tarkett GmbH & Co. KG  
VEKA AG  
Verseidag-Indutex GmbH  
Wavin GmbH

### Greece

Pipelife Hellas S.A.

### Hungary

Marley Hungaria  
Pannunion Csomagolóanyag  
Pipelife Hungaria  
Profilplast Muanyagtermekgyarto KFT  
Wavin Hungary

### Ireland

Gemord Limited  
Wavin Ireland Ltd

### Italy

Alphacan Spa  
Commerciale Emiliana  
Ergis Eurofilms SA  
Eurplast  
F.P.F. Srl  
Finstral AG  
FIP  
Flag Spa  
Profina Italia  
Redi  
Sis-Ter Spa  
Vi.Pa Srl

### Lithuania

Wavin Baltic

### Luxembourg

Tarkett GDL SA

### Netherlands

Alphacan BV  
Dyka BV  
Forbo Flooring Coral  
Forbo Flooring NV  
Forbo-Novilon BV  
Nitta Corp. Of Holland BV  
Pipelife Nederland BV  
RENOLIT Nederland BV  
Vescom BV  
Wavin BV  
Wavin Nederland BV

### Norway

Norsk Wavin A/S  
Protan AS

### Poland

CTS-TCT Polska Sp. Zoo  
Dyla Polska Sp. Zoo  
Orlanex Sp. Zoo  
Pipelife Polska SA  
Poliplast  
VEKA Polska  
Wavin Metalplast

### Portugal

Baquelite Liz SA

### Slovenia

Juteks D.D.

### Spain

Alphacan España Transformados  
Alphacan Perfiles SLU  
BM SLU

Industrias REHAU SA  
Pipelife Hispania SA  
Profine Iberia  
RENOLIT Hispania SA  
RENOLIT Ibérica SA  
Riuvert  
Solvay Bervic Ibérica  
Uralita Sistemas de Tuberias SA  
VEKA Ibérica

### Sweden

Forbo Project Vinyl AB  
Pipelife Sverige AB  
Tarkett AB

### Switzerland

Forbo Giubasco  
REHAU GmbH  
Sika Sarnafil Manufacturing AG

### UK

Altro Limited  
Amtico International  
Eurocell Profiles Ltd  
Forbo Flooring UK Ltd  
Hepworth Build. Prod. Ltd  
Hunter  
Marley P&D  
Newmor  
Polyflor  
REHAU Ltd  
RENOLIT UK Ltd  
Tarkett Ltd  
VEKA Plc  
Wavin Plastics Ltd

## PVC producers supporting the Voluntary Commitment:

Anwil (Poland)  
Arkema (France and Spain)  
Borsodchem (Hungary)  
Ercros (Spain)  
Ineos Vinyls (Germany, Norway, Sweden, UK)  
Oltchim (Romania)  
LVM NV (Belgium, France, Netherlands)  
Novacke Chemicke Zavody (Slovakia)  
Shin-Etsu PVC (Netherlands, Portugal)  
SolVin (Belgium, France, Germany, Spain)  
Spolana A.S. (Czech Republic)  
Vestolit GmbH & Co. KG (Germany)  
Vinnolit GmbH & Co. KG (Germany)

## Stabilisers producers supporting the Voluntary Commitment:

Akdeniz Kimya (Turkey)  
Akcros (UK)  
Asua (Spain)  
Arkema (France)  
Baerlocher (Germany)  
Chemson Polymers-Additives AG (Austria)  
Chemtura (Germany)  
Floridienne Chimie (Belgium)  
Lamberti Spa (Italy)  
Reagens (Italy)  
The Dow Chemical Company (Switzerland)

## Plasticisers producers supporting the Voluntary Commitment:

BASF SE  
Evonik Oxeno GmbH (Germany)  
ExxonMobil Chemical Europe Inc.  
Perstorp Oxo AB (Sweden)

# Financial Report

**Expenditure by Vinyl 2010 including EuPC and its members amounted to €6.64 million in 2010, down from €7.95 in the previous year.**

The decrease in expenditure can be explained on the one hand by an increase in efficiency in projects such as EPPA, TEPPFA, Roofcollect® and Recovynyl. Moreover, the slow return of economic growth meant a decreased pressure on chain deficits. Finally, in order to support the significant growth of recycled volumes in 2010, Recovynyl used accumulated reserves in order to cover a part of this year cost.

“Vinyl 2010 demonstrated what can be achieved when an entire industry unites with a clear long-term vision, strong commitments and the will to do whatever is required to succeed.”

Arjen Sevenster  
Vinyl 2010 Controller

Vinyl 2010 — Waste management projects	Total expenditure including EuPC and its members	
Figures in €1,000s	2010	2009
<b>EPCoat</b>	330*	245**
<b>EPFLOOR</b>	697	721
<b>EPPA</b>	588	745
<b>ESWA/Roofcollect®</b>	123	127
<b>Recovynyl</b>	3,953	4,884
<b>Studies</b>	206	121
<b>TEPPFA</b>	749	1,111
<b>Other</b>	0	0
<b>TOTAL</b>	<b>6,647</b>	<b>7,954**</b>

\* The EPCoat expense could not be verified by KPMG before the date of publication of this Progress Report. A separate audit report will be issued later in the year. The EPCoat cost 2010 is an estimate to be confirmed after the audits are concluded.

\*\* Some projects did close their accounts or an audit could be undertaken only after this statement was made in the last year Progress Report. The EPCoat net operational cost could be documented to amount to €207,558.58 in 2009 on top of the allowance for coordination reported last year. Moreover, the operational cost for the EPPA project was overestimated by €2,742.07 in 2009. The corrected amounts have been reported here.

# Verification Statements

## KPMG CERTIFICATION OF EXPENDITURE

### Independent Accountants' Report on Applying Agreed-Upon Procedures

To the Management of Vinyl 2010

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 Vinyl 2010, as included in the Vinyl 2010 Progress Report for the period from January 1, 2010 to December 31, 2010 prepared by the management of Vinyl 2010.

#### 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-recognised supervisory body for statutory auditing.

Vinyl 2010's 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 Vinyl 2010. 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 or 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 Vinyl 2010 in response to specific questions or as obtained and extracted from Vinyl 2010 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 Vinyl 2010, as included in the Vinyl 2010 Progress Report related to the activities of the year 2010 and verify of the mathematical accuracy of this.

The total expenses amount to KEUR 6.647.

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

b • Verify that these costs are recorded in the financial statements 2010 of Vinyl 2010 AISBL

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

c • For projects EPFLOOR, EPPA and 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, 2010 and December 31, 2010.

We found no exceptions as a result of applying this procedure

d • For projects EPFLOOR, EPPA and 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, 2010.

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

e • For project Recovynyl, reconcile costs declared in the table presenting the supported charges for the different projects of Vinyl 2010 with the income recognized in financial statements of Recovynyl 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 15,59% of total expenses.

Note that financial statements of Vinyl 2010 AISBL, TEPPFA AISBL, Recovynyl AISBL are certified by KPMG.

#### Use of this Report

This report is intended solely for the information and use of the management of Vinyl 2010 board, and is not intended to be and should not be used by anyone other than these specified parties.

KPMG Réviseurs d'Entreprises SCRL civile  
Represented by



Dominic Rousselle,  
Réviseur d'Entreprises / Bedrijfsrevisor  
Louvain-la-Neuve, March 22, 2011

## KPMG CERTIFICATION OF TONNAGES

### KPMG Advisory, a Belgian civil CVBA/SCRL

Report of the independent expert concerning the audit of the tonnages non regulated post-consumer PVC waste collected and recycled by the sector groups EPcoat, EPFLOOR and EPPA of the EuPC, by the sector associations ESWA & TEPPFA of the EuPC and by Recovinyl Inpa during the period January 1st 2010 to December 31st 2010.

In accordance with the assignment, which was entrusted to us by Vinyl 2010, we give an account of our audit of the following tonnages for the different projects of Vinyl 2010 mentioned in the Vinyl 2010 Progress Report related to the activities of the year 2010.

The conclusions of this audit are summarized in the below-mentioned overview:

PROJECT	Type of PVC post-consumer waste	Tonnage recycled in 2009	Tonnage recycled in 2010	% increase
<b>EPcoat</b> (incl. Recovinyl)	Coated fabrics	5,880*	6,278*	6.77 %
<b>EPFLOOR</b>	Flooring	2,559*	2,294*	-10.36 %
<b>EPPA</b> (incl. Recovinyl)	Window profile waste & profile related waste	83,288	108,678	30.48 %
<b>ESWA - ROOFCOLLECT and Recovinyl</b>	Flexible PVC	21,444 tons which consist of:	33,218 tons which consist of:	see detail
<b>ESWA - ROOFCOLLECT</b>	Roofing and waterproofing membranes	1,297*	1,586*	22.28 %
<b>Recovinyl</b>	Flexible PVC applications	20,147	31,632	57.01 %
<b>TEPPFA</b> (incl. Recovinyl)	Pipes & fittings	16,978	25,172	48.26 %
<b>ERPA</b> via Recovinyl (incl. CIFRA)	Rigid PVC films	5,890	5,891	0.02 %
<b>Recovinyl</b> (incl. Vinyloop Ferrara)	Cables	54,285	79,311	46.10 %
<b>TOTAL</b>		<b>190,324</b>	<b>260,842</b>	<b>37.05 %</b>

\* Tonnage including Norway and Switzerland

The persons responsible for establishing the table presenting the supported tonnages for the different projects of Vinyl 2010 have provided us with all explanations and information which we required for our audit. Based on our review of the provided information, we believe that all waste that was taken into account was non regulated post-consumer PVC waste, according to the Vinyl 2010 definition of non regulated post-consumer PVC waste and that we have not recognized any elements which are of nature to influence significantly the presented information.

KPMG Advisory, a Belgian civil CVBA/SCRL  
represented by



**Ludo Ruysen,**  
Partner  
Brussels, March 23, 2011



## **SGS VERIFICATION STATEMENT – 2011 PROGRESS REPORT**

Established in 1878, SGS has become the world's leading inspection, verification, testing and certification company. Recognised as the global benchmark for quality and integrity, we employ over 64,000 people and operate a network of more than 1,250 offices and laboratories around the world...

SGS was for the third year commissioned by Vinyl 2010 to provide an independent verification of the "Progress Report 2011". This report presents the achievements made by the Vinyl 2010 project in 2010 and summarises the key milestones of the past 10 years.

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

### **Verification Process**

The verification consisted of checking whether the statements in the Report give an honest and true representation of Vinyl 2010's 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 Vinyl 2010 such as plans, agreements, minutes of meetings, presentations, technical reports and more.
- Communication with Vinyl 2010 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**

It is our opinion that this "Progress Report 2011" represents Vinyl 2010's performance in 2010 in a reliable way; this report reflects the PVC industry's effort to comply with its revised Voluntary Commitments of May 2006.

For 2010, specific targets were established in the previous "Vinyl 2010 Progress Report 2010". Despite great effort noticed at the Vinyl 2010 partnership organisations, there are a few cases of criteria not or partially compliant; this is considered as an unwelcome fact in an otherwise successful achievement of the Vinyl 2010 targets.

In 2010, ECVN requested Det Norske Veritas (DNV), an independent verifier, to carry out industrywide verification exercises for ECVN against their Industry Charter for the production of VCM, E-PVC and S-PVC at all ECVN member sites across Europe. DNV concluded that this 2010 verification has brought mixed results with regards to compliance to the ECVN charter, and that overall compliance is at 90% but has decreased slightly from a previous audit; this was in part due to the inclusion of sites of companies from new EU countries who joined ECVN after previous verifications. In the meantime the Board of ECVN has decided to request in 2011 a new verification of:

- the criteria found not compliant or partially compliant;
- the plants which were not verified due to lack of production.

In 2010, Vinyl 2010 has been working with The Natural Step, which is a Swedish Sustainable Development NGO, in order to develop a progressive new initiative for the European PVC Industry and to build on the current results of the Vinyl 2010 voluntary commitment. The Natural Step has provided strategic advice on the future direction the PVC industry must take to move toward sustainability; more details of the new Sustainability Initiative "VinylPlus" will be revealed at the Vinyl 2010 General Assembly in Brussels on 22 June 2011.

Also in 2010 a continuous strive for comprehensive and accurate outside communication has been shown again during multiple initiatives, events, conferences, meetings and also by up-to-date website information and publications from Vinyl 2010. In comparison, reference can be made to the website of The Vinyl Council of Australia where interesting and balanced information about the sector can be found as well.

As conclusion of this Verification Statement, it is SGS's opinion that the European PVC Industry has shown accurate outside communication and transparency in relation with its commitments, challenges and successes in the Vinyl 2010 programme; 10 years of comprehensive work resulted in a continuously attaining of higher levels of sustainable development.



**ir Pieter Weterings,**  
SGS Belgium NV  
S&SC Certification Manager  
Brussels, March 22, 2011

# Appendix 1 – Glossary

<b>Agenda 21</b>	Agenda 21 is a programme run by the United Nations relating to sustainable development. The full text of Agenda 21 was revealed at the United Nations Conference on Environment and Development (Earth Summit), held in Rio de Janeiro on 14 June 1992 ( <a href="http://www.un.org/esa/dsd/agenda21/">www.un.org/esa/dsd/agenda21/</a> )	<b>DNV</b>	Det Norske Veritas, a Norwegian testing and verification organisation ( <a href="http://www.dnv.com">www.dnv.com</a> )
<b>ASEAN</b>	Association of Southeast Asian Nations ( <a href="http://www.aseansec.org">www.aseansec.org</a> )	<b>DPHP</b>	Di(2-Propyl Heptyl) phthalate
<b>Ba/Zn</b>	Barium-zinc	<b>DPR</b>	Deutsche PVC-Recycling GmbH ( <a href="http://www.pvc-recycling.org">www.pvc-recycling.org</a> )
<b>BBP</b>	Butyl Benzyl phthalate	<b>ECHA</b>	European Chemicals Agency ( <a href="http://echa.europa.eu">http://echa.europa.eu</a> )
<b>Ca/Zn</b>	Calcium-zinc	<b>ECPI</b>	European Council for Plasticisers and Intermediates ( <a href="http://www.ecpi.org">www.ecpi.org</a> )
<b>CARACAL</b>	Competent Authorities for REACH and CLP. CARACAL is an expert group which advises the European Commission and ECHA on questions related to REACH and CLP. It was founded as 'European Commission Working Group on the Practical Preparations for REACH' in May 2004. As of September 2007, it was re-named into 'REACH Competent Authorities (REACH CA)' and, as of March 2009, into 'Competent Authorities for REACH and CLP (CARACAL)'	<b>ECVM</b>	European Council of Vinyl Manufacturers ( <a href="http://www.pvc.org">www.pvc.org</a> )
<b>Cd</b>	Cadmium	<b>ECVM Charters</b>	ECVM Industry Charters for the Production of VCM and S-PVC (1995) and for the Production of E-PVC (1998) ( <a href="http://www.pvc.org">www.pvc.org</a> )
<b>CEN</b>	European Standardisation Committee	<b>ECVM 2010</b>	the ECVM's formal legal entity registered in Belgium
<b>CIFRA</b>	Calandrage Industriel Français (a French calendering company – ( <a href="http://www.cifra.fr">www.cifra.fr</a> ))	<b>EDC</b>	Ethylene dichloride or 1,2-dichloroethane
<b>CLP</b>	European Regulation on Classification, Labelling and Packaging of chemical substances and mixtures. The legislation introduces throughout the EU a new system for classifying and labelling chemicals, based on the United Nations' Globally Harmonised System (UN GHS)	<b>EEC</b>	European Economic Community
<b>CMES</b>	Comité des Membranes d'Etanchéité Synthétique	<b>EMCEF</b>	European Mine Chemical and Energy Workers Federation ( <a href="http://www.emcef.org">www.emcef.org</a> )
<b>CMR</b>	Carcinogen, Mutagen, Reproductive (repro-toxic) agent	<b>EN</b>	European Norm
<b>CSD</b>	Commission on Sustainable Development	<b>EPA</b>	Environmental Protection Agency
<b>CW</b>	Concentration of migrant in Water	<b>EPCOAT</b>	EuPC PVC Coated Fabrics Sector Group
<b>DBP</b>	Di-n-butyl phthalate	<b>EPD</b>	Environmental Product Declaration
<b>DEHP</b>	di(2-ethylhexyl) phthalate	<b>EPFLOOR</b>	European PVC Floor Manufacturers, an EuPC sectoral group ( <a href="http://www.epfloor.eu">www.epfloor.eu</a> )
<b>DIDP</b>	Di-isodecyl phthalate	<b>EPPA</b>	European PVC Window Profile and Related Building Products Association, an EuPC sector group ( <a href="http://www.eppa-profiles.org">www.eppa-profiles.org</a> )
<b>DINP</b>	Di-isononyl phthalate	<b>E-PVC</b>	Emulsion polyvinyl chloride
<b>DNOP</b>	di-n-octyl phthalate	<b>ERPA</b>	European Rigid PVC Film Association ( <a href="http://www.pvc-films.org">www.pvc-films.org</a> )
		<b>ESPA</b>	European Stabiliser Producers Association ( <a href="http://www.stabilisers.org">www.stabilisers.org</a> )
		<b>ESWA</b>	European Single Ply Waterproofing Association, an EuPC sectoral association ( <a href="http://www.eswa.be">www.eswa.be</a> )
		<b>EU</b>	European Union
		<b>EuPR</b>	European Plastics Recyclers ( <a href="http://www.plasticsrecyclers.eu">www.plasticsrecyclers.eu</a> )

<b>EuPC</b>	European Plastics Converters ( <a href="http://www.plasticsconverters.eu">www.plasticsconverters.eu</a> )	<b>RPA</b>	Risk & Policy Analysts Limited, an independent consultancy providing expert advice to both public and private sector clients around the world ( <a href="http://www.rpald.co.uk">www.rpald.co.uk</a> )
<b>GWP</b>	Global Warming Potential	<b>rpm</b>	revolutions per minute
<b>HCl</b>	Hydrogen chloride	<b>R-PVC</b>	Recycled PVC
<b>HMW plasticisers</b>	High Molecular Weight plasticisers	<b>SDS</b>	Safety Data Sheet
<b>IVK</b>	Industrieverband Kunststoffbahnen (Association of Coated Fabrics and Films – <a href="http://www.ivk-frankfurt.de">www.ivk-frankfurt.de</a> )	<b>SDS-R</b>	Safety Data Sheet for Recyclate
<b>KPMG</b>	KPMG is a global network of professional firms providing Audit, Tax and Advisory services ( <a href="http://www.kpmg.com">www.kpmg.com</a> )	<b>SETAC</b>	Society of Environmental Toxicology and Chemistry ( <a href="http://www.setac.org">www.setac.org</a> )
<b>kt/a</b>	Kilo tonne/year	<b>SFEC</b>	the French Association of Calenderers
<b>LCA</b>	Life cycle assessments	<b>SGS</b>	Société Générale de Surveillance, the world leading testing and verification organisation ( <a href="http://www.sgs.com">www.sgs.com</a> )
<b>LMW phthalates</b>	Low Molecular Weight phthalates	<b>SME</b>	Small and Medium-Sized Enterprise
<b>Mt/y</b>	Million tonne per year	<b>S-PVC</b>	Suspension polyvinyl chloride
<b>µg</b>	microgramme (equal to one millionth of a gramme)	<b>SVHC</b>	Substances of Very High Concern
<b>µg/L</b>	microgramme per litre	<b>t</b>	(metric) tonne
<b>ÖAKF</b>	Österreichischer Arbeitskreis Kunststoff-Fenster (Austrian Organisation for Plastic Windows Recycling – <a href="http://www.fenster.at">www.fenster.at</a> )	<b>TEPPFA</b>	European Plastic Pipes and Fittings Association, an EuPC sectoral association ( <a href="http://www.teppfa.org">www.teppfa.org</a> )
<b>OCU</b>	Organización de Consumidores y Usuarios (Spanish Consumers and Users Organisation – <a href="http://www.ocu.org">www.ocu.org</a> )	<b>TNO</b>	Dutch research organisation ( <a href="http://www.tno.nl">www.tno.nl</a> )
<b>PBT</b>	Persistent Bioaccumulative and Toxic substances	<b>TNS</b>	The Natural Step ( <a href="http://www.naturalstep.org">www.naturalstep.org</a> )
<b>PET</b>	Polyethylene terephthalate	<b>UN</b>	United Nations
<b>PlasticsEurope</b>	Association of Plastics Manufacturers ( <a href="http://www.plasticseurope.org">www.plasticseurope.org</a> )	<b>UNCED</b>	United Nations Conference on Environment and Development
<b>ppb</b>	part per billion (also equivalent to 1 µg per kg)	<b>UNEP</b>	United Nations Environment Program
<b>ppm</b>	part per million (also equivalent to 1 mg per kg)	<b>VCM</b>	Vinyl chloride monomer
<b>PVC</b>	Polyvinyl chloride	<b>VITO</b>	Vlaamse Instelling voor Technologisch Onderzoek (the Flemish Institute for Technological Research – <a href="http://www.vito.be">www.vito.be</a> )
<b>PVC-U</b>	Unplasticised polyvinylchloride	<b>WRAP</b>	Waste & Recovery Action Programme
<b>REACH</b>	Registration, Evaluation, Authorisation and restriction of Chemicals	<b>WRIC</b>	Waste Recovery Industry Chain
<b>Rewindo</b>	Fenster-Recycling-Service ( <a href="http://www.rewindo.de">www.rewindo.de</a> )	<b>VUB</b>	Free University of Brussels ( <a href="http://www.vub.ac.be">www.vub.ac.be</a> )
<b>ROHS</b>	Restriction of Hazardous Substances	<b>WUPPI</b>	Danish company set up to collect and recycle rigid PVC ( <a href="http://www.wuppi.dk">www.wuppi.dk</a> )

# Vinyl 2010 and its Members

**Vinyl 2010 represents the whole PVC industry chain.  
Its four founding members are:**



**The European Council of Vinyl  
Manufacturers**

Avenue E Van Nieuwenhuyse 4/4  
B-1160 Brussels  
Belgium  
Tel. +32 (0)2 676 74 41  
Fax +32 (0)2 676 74 47  
[www.pvc.org](http://www.pvc.org)



**The European Plastics  
Converters**

Avenue de Cortenbergh 71  
B-1000 Brussels  
Belgium  
Tel. +32 (0)2 732 41 24  
Fax +32 (0)2 732 42 18  
[www.plasticsconverters.eu](http://www.plasticsconverters.eu)



**The European Stabiliser  
Producers Association**

Avenue E Van Nieuwenhuyse 4/2  
B-1160 Brussels  
Belgium  
Tel. +32 (0)2 676 72 86  
Fax +32 (0)2 676 73 01  
[www.stabilisers.org](http://www.stabilisers.org)



**The European Council for  
Plasticisers and Intermediates**

Avenue E Van Nieuwenhuyse 4/1  
B-1160 Brussels  
Belgium  
Tel. +32 (0)2 676 72 60  
Fax +32 (0)2 676 73 92  
[www.ecpi.org](http://www.ecpi.org)





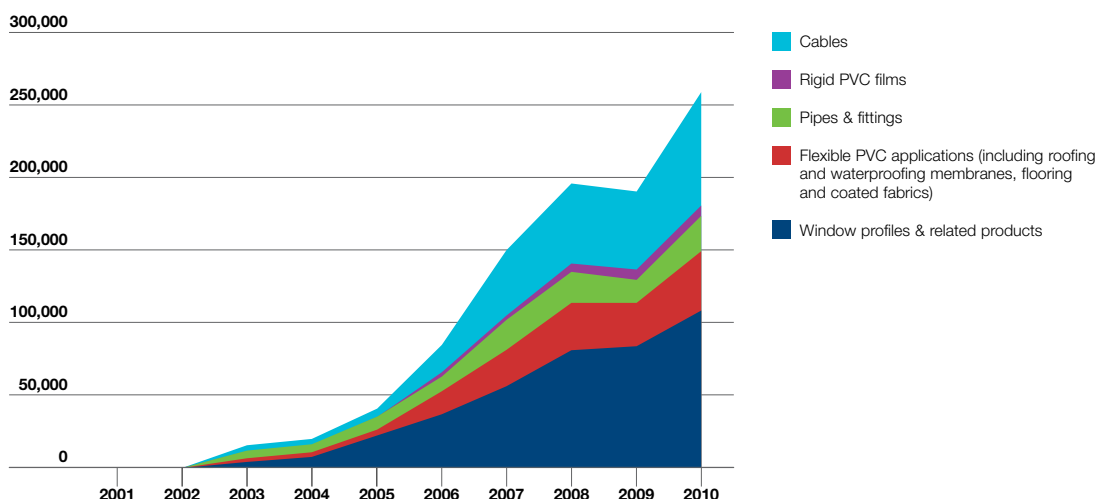
# Vinyl 2010 – Key Milestones of the Voluntary Commitment of the **PVC Industry**

Vinyl 2010 has now reached the end of its foreseen lifetime. The graphs and tables on the following pages summarise the key milestones and achievements of the past 10 years.

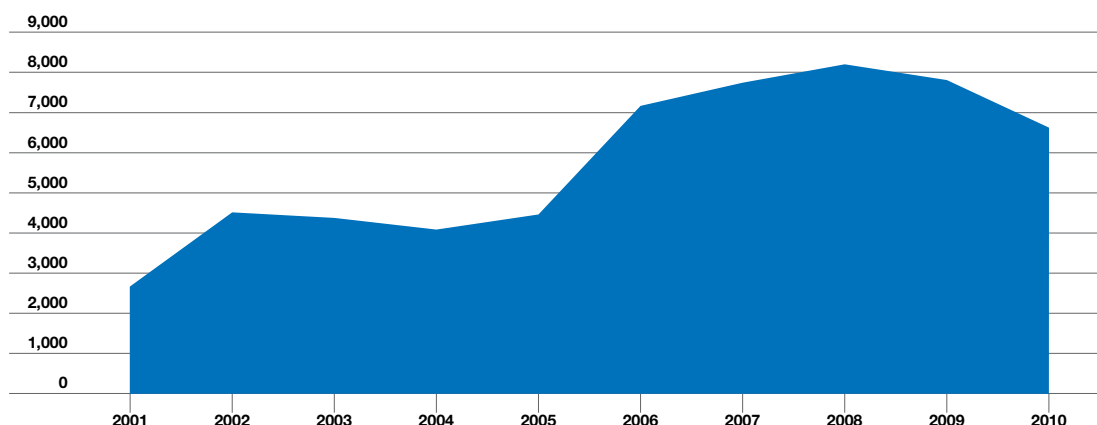
Naturally, 10 years of work and progress, projects, initiatives, research and development cannot be wholly captured in this report.

For more information and details on the different projects and activities, please refer to the previous yearly Progress Reports, all available at [www.vinyl2010.org](http://www.vinyl2010.org)

PVC post-consumer waste recycled (in tonnes) within Vinyl 2010's framework



Financial investment (€1,000s)



[www.vinyl2010.org](http://www.vinyl2010.org)

**Vinyl 2010**

Avenue E Van Nieuwenhuysse 4/4, B-1160 Brussels, Belgium  
Tel. +32 (0)2 676 74 41 – Fax +32 (0)2 676 74 47

**Registered office:**

Avenue de Cortenbergh 71, B-1000 Brussels, Belgium



The European PVC Industry's Sustainable Development Programme