

INOVYN  
AWARDS  
2019

# INOVYN AWARDS FOR INNOVATION WITH VINYL

**inovyn**  
An INEOS company



# FOREWORD

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Every three years, through our INOVYN Awards we recognise those at the forefront of innovation with vinyl.

A record 93 projects from 20 countries entered INOVYN Awards 2019 - with businesses, designers, academics, research organisations and students competing for top honours.

Our judges - independent experts from across our industry - were looking for excellence in innovation across four categories: sustainability, design, processes and products. They were not disappointed.

I would like to congratulate all of our worthy winners, whose projects were the epitome of innovation, helping to deliver significant benefits within their chosen field.

I would also like to recognize all of our entrants, for continuing to push the boundaries of what is possible with vinyl.

Through their collective efforts, our industry moves ever forward in discovering new, innovative and sustainable applications for this most versatile of materials.

Filipe Constant  
Business Director  
INOVYN



# INOVYN AWARDS FOR INNOVATION WITH VINYL 2019

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## **Leanne Taylor**

Leanne is Head of Content for the plastics division of Rapid News Communications Group, a publisher of leading B2B magazines, media and events.

A qualified and experienced journalist, marketer and event planner, Leanne is responsible for the management, development and direction of titles including British Plastics and Rubber (BP&R) and European Plastic Product Manufacturer (EPPM), as well as Interplas, the leading trade exhibition and conference for the UK plastics sector.

Leanne also leads Women in Plastics (WIP), an industry initiative and networking platform she personally launched in 2014.

Leanne is a passionate advocate of advancing skills, education and diversity in the plastics industry.



## **Maggie Saykali**

Maggie holds an MSc. Degree in Chemical Engineering from the Université Libre de Bruxelles (ULB), complemented by a two-year post-graduate research project at the ULB department of polymer science.

She has gained extensive international experience working in technical, commercial and marketing roles for over 20 years in the plastics and additives industry.

In 2009, Maggie joined CEFIC (The European Chemical Industry Council) and is currently Director for the Plastics Additives and Resins clusters, as well as managing the European Fine Chemicals Group.



## **Dr Martin Baitz**

Martin graduated in Chemical Engineering and until 2002 was Research Engineer and Head of Department at the LCA-Department IKP at the University of Stuttgart.

From 2003 - 2010 he was Director Process & Material Sustainability at PE INTERNATIONAL, Germany, working as a consultant mainly in the chemical, plastics and automotive industry. In 2011 he became Director Content of thinkstep AG (formerly PE INTERNATIONAL AG).

He is responsible for Management, Development & Innovation of the GaBi Databases and Content of thinkstep AG. He is a member of the German LCA standardisation body AA3 of DIN and country representative of Germany in the ISO framework. He is Co-Editor of the International Journal of Life-Cycle Assessment. Dr Baitz is also a leading member in the UNEP/SETAC Life Cycle Initiative of the United Nations Environment Programme (UNEP) and the Society for Environmental Toxicology and Chemistry (SETAC).



## **Phil Brownsord**

Phil is MD of Ginger Fox Consulting Ltd and an Advisor to the Materials and Design Exchange (MaDE)\*, which is a partnership connecting materials science, design and making to stimulate innovation.

Phil studied mechanical engineering at the University of Nottingham before going on to deliver a wide range of engineering projects. At Lotus Engineering he was part of the new product development projects leading work on body and exterior and interior trim. At Fisher and Paykel in New Zealand, he led a design team taking radical product ideas (in both use and manufacture) to market more swiftly. Whilst Region Director for Make UK (The Manufacturer's Organisation) he was able to bring the benefit of collaboration to the breadth of engineering, design and manufacturing businesses within his membership. Now running an independent consultancy, he helps support companies to deliver the right projects and programmes effectively and efficiently (be it electric vehicles, fibre-optic sensing or design thinking applied within organisations).



# 2019 WINNERS

## SUSTAINABILITY WINNERS

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Left to right: Martin Baitz (jury member), Linda Zellner (Perstorp), Anders Magnusson (Perstorp), Uwe Dietsch (INOVYN), Jenny Klevås (Perstorp), Markus Jönsson (Perstorp), Ivan Kurris (Pipelife Netherlands), Valeria Giraldo (UPC), Vicenç Teixidor (UPC), Thomas Hülsmann (AGPU).

### Sustainability Gold

#### **AGPU - BILCARE - PERLEN PACKAGING**

Pharma Blister Recycling - from concept  
to a value chain approach

see on page 19

### Sustainability Silver

#### **PERSTORP AB**

Plasticiser based on renewable content

see on page 27

### Sustainability Bronze

#### **PIPELIFE NETHERLANDS B.V.**

Pipelife with 3 pipe-lives for more  
sustainable future

see on page 28

### Sustainability Special Commendation

#### **UNIVERSITAT POLITÈCNICA DE CATALUNYA**

Urban jungle: hydroponics scaled to urban  
living

see on page 35

## DESIGN WINNERS

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Left to right: Daniel Martinz (INOVYN), Phil Brownsord (jury member), Andrew Swann (TechPlas), Philippe Gressier (Benvic Europe), Kristen Tapping, Dirk Willaert (INOVYN), Maxime Grimault (Geplast), Arthur Pugliese (represents Instituto Brasileiro do PVC).

### Design Gold

#### INSTITUTO BRASIILEIRO DO PVC

Adapting PVC elements as furniture and equipment for young neurological patients

see on page 43

### Design Bronze

#### BENVIC EUROPE & GEPLAST

PVC honeycomb profiles make Geplast's shutter box highly insulating

see on page 41

### Design Silver

#### TECHPLAS EXTRUSIONS

TechBoard planks: optimal geometry replaces timber scaffold for tough conditions

see on page 47

### Design Special Commendation

#### KIRSTEN TAPPING

Tectum: affordable roofing from recycled PVC

see on page 45

## PROCESS WINNERS

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Left to right: Luc Castin (INOVYN), Jürgen Schweikle (Coperion), Jorge Alejandro Kabbabe (Solvay), Johan Pauwels (Deceuninck), Pedro Pinto (Solvay), Maria Hoelzel (Coperion), Tatiana Vlăsova (Coperion), Karine Cavalier (Solvay), Alberto Galasco (Solvay), Maggie Saykali (jury member), Dirk Breitbach (Polymer-Chemie).

### Process Gold

#### COPERION GmbH

Innovation in cutting PVC pellets:  
Coperion's knife rotor minimise dust

see on page 53

### Process Silver

#### SOLVAY S.A.

Alve-One® solutions by Solvay: a new  
generation of sustainable chemical blowing  
agents

see on page 58

### Process Bronze

#### DECEUNINCK

Thermofibra 2.0: fully recyclable, more  
efficient PVC window frames

see on page 54

### Process Special Commendation

#### POLYMER-CHEMIE

Fire-retardant vinyl fibres for design flooring

see on page 56

## NEW PRODUCT WINNERS

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Left to right: Leanne Taylor (jury member), Daniel Martinz (INOVYN), Fabien Yvai (Aliaxis), Mark Kelly (Eurocell Profiles), Albert Moreno (UPC), Victoria Pina (UPC), Arthur Pugliese (Confort Banho), José-Luis Roman (INOVYN).

### New Product Gold

#### EUROCELL PROFILES LTD

Eurocell's Coastline Composite Cladding System

see on page 71

### New Product Silver

#### NICOLL

Nicoll reinvents the shower and bath syphon with Magnetech

see on page 78

### New Product Bronze

#### UNIVERSITAT POLITECNICA DE CATALUNYA

e-Dock: parking for electri scooters in Barcelona

see on page 80

### New Product Special Commendation

#### CONFORT BANHO

Confort Banho

see on page 68

# 2019 NOMINEES

# SUSTAINABILITY

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## AGPU - BILCARE RESEARCH - PERLEN PACKAGING

Pharma Blister Recycling - from concept to a value chain approach



see on page 21

## DECEUNINCK

PVCircular: new products from the same recycled products



see on page 27

## PERSTORP AB

Plasticiser based on renewable content



see on page 28

## PIPELIFE NETHERLANDS B.V.

Pipelife with 3 pipe-lives for more sustainable future



see on page 31

## PROTAN AS

Rooftop water attenuation with Protan BlueProof & BlueProof Green



see on page 35

## UNIVERSITAT POLITECNICA DE CATALUNYA

Urban Jungle: hydroponics scaled to urban living

## DESIGN

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see on page 41

### **BENVIC EUROPE & GEPLAST**

PVC honeycomb profiles make Geplast's shutter box highly insulating



see on page 43

### **INSTITUTO BRASILEIRO DO PVC**

Adapting PVC elements as furniture and equipment for young neurological patients



see on page 45

### **KRISTEN TAPPING**

Tectum: affordable roofing from recycled PVC



see on page 47

### **TECHPLAS EXTRUSIONS**

TechBoard planks: optimal geometry replaces timber scaffold for tough conditions



see on page 49

### **VULCAFLEX S.p.A.**

Fiberlast: breathable and sustainable synthetic leather

## PROCESS

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see on page 53

### **COPERION GmbH**

Innovation in cutting PVC pellets: Coperion's knife rotor minimises dust



see on page 54

### **DECEUNINCK**

Thermofibra 2.0: fully recyclable, more efficient PVC window frames



see on page 56

### **POLYMER-CHEMIE G<sup>MBH</sup>**

Fire-retardant vinyl fibres for design flooring



see on page 58

### **SOLVAY S.A.**

Alve-One® solutions by Solvay: a new generation of sustainable chemical blowing agents

## NEW PRODUCT

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### CONFORTBANHO

Confort Banho



see on page 71

### EUROCELL PROFILES Ltd

Eurocell's Coastline Composite Cladding System



see on page 78

### NICOLL

Nicoll reinvents the shower and bath syphon with Magnetech



see on page 80

### RENOLIT INDEX

Renolit PerfO2: regulating air flow for healthy farm animals; fire and condensation-resistant

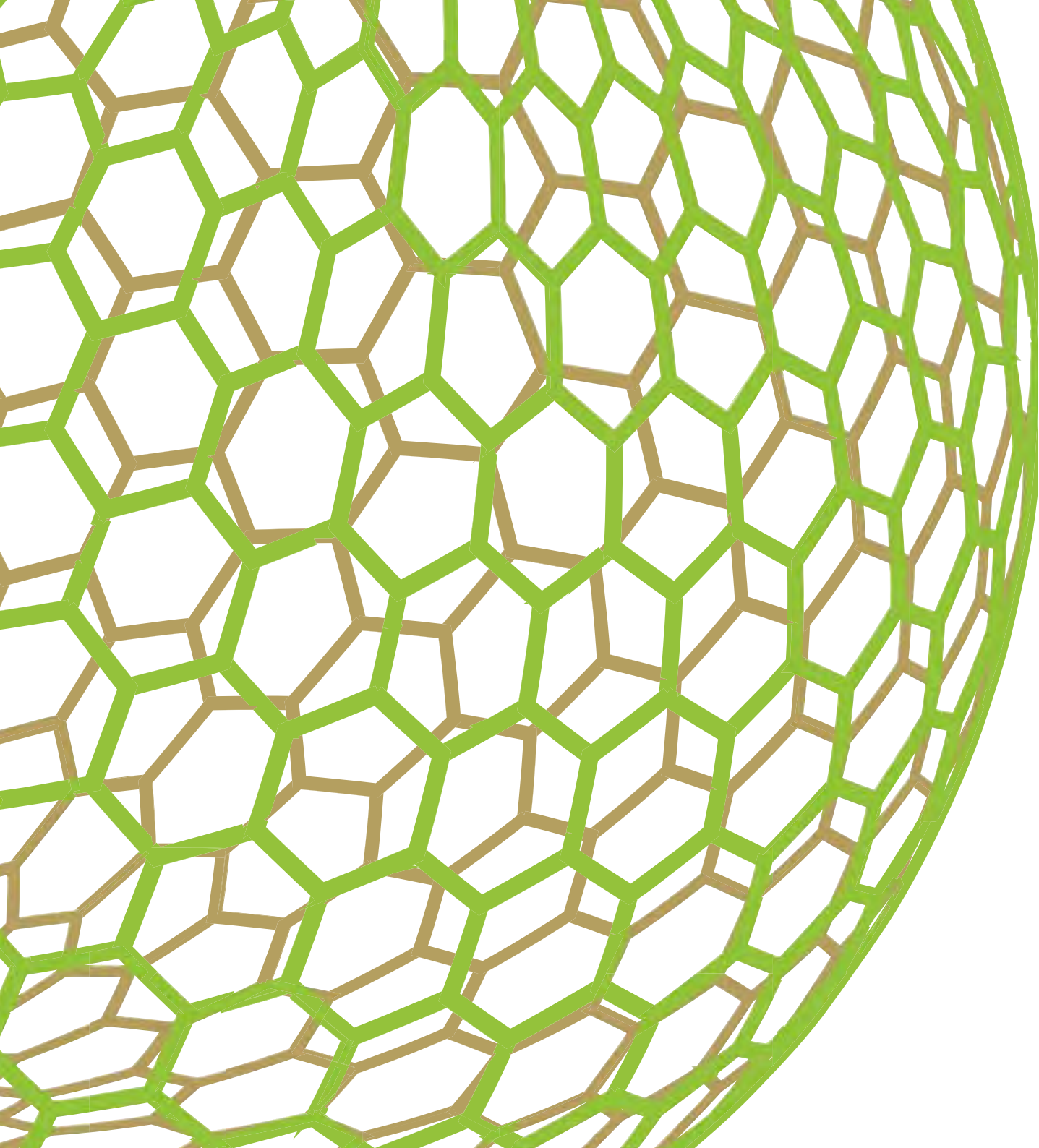


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### UNIVERSITAT POLITECNICA DE CATALUNYA

e-Dock: parking for electric scooters in Barcelona





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## ALIAxis - NICOLL

### **Nicoll Hometech: first acoustic line integrating 20% recycled materials in pipes and fittings**

Increasing building quality and noise reduction, Nicoll's Hometech is a complete line of soil and waste pipes and fittings that apply eco-design. A member of the Aliaxis group, Nicoll works with local suppliers to increase the use of recycled materials to 20% of production. While using those materials, Nicoll maintains the quality of the product, including fire-resistance and acoustic performance.

Aliaxis - Nicoll  
Fabien Yvai  
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France  
[www.nicoll.fr](http://www.nicoll.fr)  
[www.aliaxis.com](http://www.aliaxis.com)



## AGPU - BILCARE RESEARCH - PERLEN PACKAGING

**Pharma Blister Recycling – from concept  
to a value chain approach**

AGPU  
Thomas Hülsmann  
+ 49 228 917 83 0  
Germany  
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Pharma film producers Bilcare Research and Perlen Packaging have developed the recycling of PVC films used with aluminium foil for packaging medicines. With coordination by the AGPU (PVC and Environment Working Group) and supported by VinylPlus, the companies have organised a recycling network across the value chain, to turn waste into PVC recycle for building profiles and aluminium for the auto industry.





## **ATECO POLIMERI srl**

### **Ateco's recyclable PVC-E bag**

The Ateco polymers team aims to develop a PVC bag that can be repeatedly recycled, replacing those in polyethylene. The material could be recycled four to five times, giving it value as a raw material. It would fulfil a voluntary commitment to zero packaging waste by 2030.

Ateco Polimeri s.r.l.  
Riccardo Angelucci  
+39 0324 842 521  
Italy  
[www.atecosrl.com](http://www.atecosrl.com)



## **BOLON AB**

### **Recycling of PVC flooring containing mixed materials and fibres**

Bolon has a new recycling system to find a new life for its PVC woven flooring. That flooring includes glass fibre reinforcement and polyester multi-filament yarns. Its own recycling plant handles its waste as well as that of its suppliers. The technique, based on agglomeration, produces recycled material which is then used in the backing of Bolon's flooring. In 2018 the plant recycled 2000 tonnes of used flooring, with annual capacity of over 3000 tonnes.

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Torbjörn Klaesson  
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Sweden  
[www.bolon.com](http://www.bolon.com)



## CIPATEX IMP PAP TEC LTDA

### **Cipatex: artificial leather for vegans - without animal-based ingredients**

Already used to make shoes, bags and guitar straps, Cipatex combines all the best qualities of vinyl with a commitment to avoid the use of animal-based ingredients in the process. Any such ingredients are quickly replaced with vegetal raw materials, while maintaining the high quality and durability of synthetic leather.

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Fernando Brandao  
+ 55 15 99 11 39 916  
Brazil  
[www.cipatex.com](http://www.cipatex.com)



## DECEUNINCK

### **PVCircular: new products from the same recycled products**

Deceuninck can now make PVC profiles with continuous reinforced glass fibre using recycled scrap from its original application. Having invested in a new recycling company, it can crush, shred, filter and granulate the used profiles. It also developed extrusion tools to co-extrude the recycled material into the core of a new profile. The aim is not only to recycle, but to add improved mechanical characteristics.

Deceuninck  
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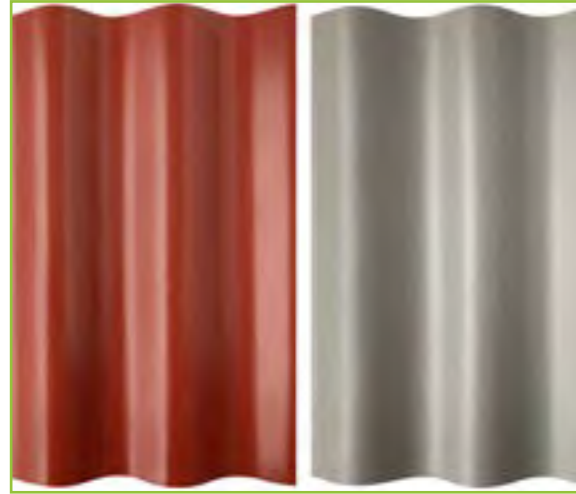


## DIAB INTERNATIONAL AB

### Recoboard: new life for PVC foam core

Specialising in core materials for aerospace, boating, wind energy and other sectors, the Diab Group has developed Recoboard. Waste from production of PVC foam is made into a new product with a lower price, eliminating landfill. They also plan a take-back solution to make Recoboard circular.

Diab International AB  
Per Hökfelt  
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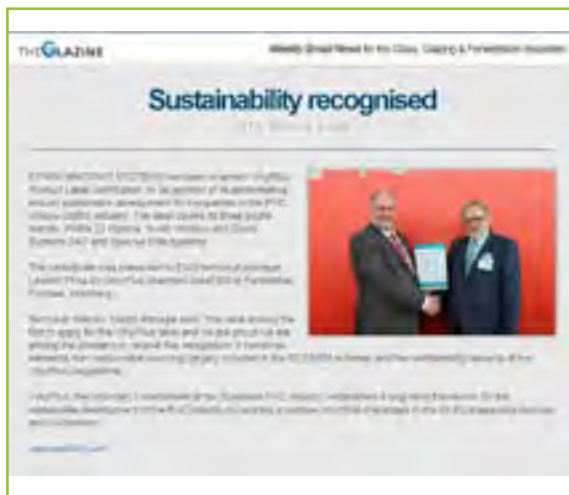


## EDIL PLAST SRL

### Recycled reversible plastic roofing for residential and industrial buildings

The thermoplastic Life roofing is made without heavy metals and is both UV and weather-resistant. It's coextruded with PVC resins, 40% mineral fillers and 30% recycled materials. Compared with sheet metal competitors, Edil Plast's roofing accelerates the trend toward a green and circular economy while respecting both environmental and human health standards. Life roofing also has low thermal conductivity compared with other products on the market.

Edil Plast Srl  
Alessandro Spada  
+ 39 0543 75 48 11  
Italy  
[www.firstcor.com](http://www.firstcor.com)



## EPWIN WINDOW SYSTEM

### Epwin Windows in the circular economy, with VinylPlus stamp of approval

In-house recycling and products made from 100% recycled material are part of Epwin's efforts toward a circular economy. It's one of the first companies to get the VinylPlus Product Label that identifies the most sustainable and high-performance PVC products. Epwin's suppliers must comply with the European Council of Vinyl Manufacturers.

Epwin Window Systems  
Gerald Allen  
+ 44 1952 283331  
UK  
[www.epwin.co.uk](http://www.epwin.co.uk)



## EUROCELL PROFILES LTD

### Eurocell and sustainability: recycling over and over

Eurocell has a 360-degree approach to recycling, processing up to 12,000 used U-PVC window frames per week, or around 6,000 tonnes per year. They are used to create a variety of new products, from thermal inserts to Eurocell's revolutionary Modus window system. Used PVC-U can be recycled and repurposed up to 10 times with the same quality and performance.

Eurocell Profiles Ltd  
Ian Kernaghan  
+ 44 7753 928816  
UK  
[www.eurocell.co.uk](http://www.eurocell.co.uk)



## HUNDHAUSEN KUNSTSTOFFTECHNIK GMBH

### Hundhausen: more sustainable PVC films through recycling

Pipe manufacturer Hundhausen is developing a new way to recycle PVC films into new materials, to avoid throwing them away. The request came from a pharma/food company, whose films' melting temperatures vary. The waste comes from the manufacturing process as well as returns from customers.

Hundhausen Kunststofftechnik GmbH  
Claus Hundhausen  
+ 49 4202 91530  
Germany  
[www.hkt-achim.de](http://www.hkt-achim.de)



## ICAIPLAST S.P.A.

### Bi-Leather that recycles for the circular economy

High-quality synthetic leather that can be recycled. The company's R&D department created a versatile and sustainable product that can be realised in different colours and patterns with different base fabrics, certified Oeko-Tex standard 100. Icaiplast's environment-minded mission: REDUCE – REUSE – RECYCLE.

Icaiplast S.p.a.  
Marta Parietti  
+ 39 0381 42121  
Italy  
[www.icaiplast.it](http://www.icaiplast.it)



## INSTITUTO BRASILEIRO DO PVC

### Papa Cartão® - hand-operated card recycling

Aimed at reducing waste from cards and badges, Papa Cartão® is crank-operated system that shreds them into recyclable material. They are installed in public institutions, schools, shopping malls and other venues, to encourage recycling. Partnerships with different segments of the market have helped stimulate sustainable practices among the wider public.

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



## MOPI srl

### Improvement of bitumen roofing membranes with recycled PVC

Recovering used PVC cables and window frames, Mopi has developed roofing membranes integrating the recycled materials. The recycled rigid or plasticised PVC can work as a modifier for bitumen, replacing virgin raw materials. Thanks to PVC, the roofing membranes are more flame-retardant and resistant to weathering.

MOPI srl  
 Camillo Cardelli  
 + 39 338 37 45 478  
 Italy  
[www.mopilab.com](http://www.mopilab.com)



## OMNIPLAST BV

### **Omniplast's Floating Island on PVC pipes: temporary base for nature during construction**

During the construction of an infrastructure project, Omniplast has built a floating artificial island made of 100% recyclable PVC pipes. The island, planted as a green natural belt to last a few years, measures 800 metres long and 10 metres wide, with Omniplast's multi-layer pipes of 250mm in diameter to create the buoyancy needed.

Omniplast BV  
Arjan Maarschalk  
+ 31 413 380 800  
The Netherlands  
[www.omniplast-group.com](http://www.omniplast-group.com)



## PERSTORP AB

### Plasticiser based on renewable content

Perstorp AB  
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Sweden  
[www.perstorp.com](http://www.perstorp.com)

Pevalen Pro is Perstorp's non-phthalate plasticiser for PVC products. It is ISCC-certified and based on partly renewable raw materials. The certificate from the International Sustainability & Carbon Certification (ISCC) organisation ensures the product was made sustainably, and it verifies the actual savings in CO<sub>2</sub> emissions. Prevalen Pro has a low carbon footprint, thanks to the more sustainable production process.





## PIPELIFE NETHERLANDS B.V.

### Pipelife with 3 pipe-lives for more sustainable future

Pipelife Netherlands B.V.  
Lisa Reus  
+ 31 228 355 555  
The Netherlands  
[www.pipelife.com](http://www.pipelife.com)

Pipelife Netherlands has signed an agreement with Alliander, one of three Dutch gas network operators, to provide **three colour-coded generations of piping**. It starts with yellow PVC-HI low-pressure gas pipe, which is then removed, shredded and micronized for a second life as red PVC cable protection pipe. The third life is a foamed middle layer in sewage pipes. **Total lifespan: 150 years or more.**





## PIPELIFE NORGE AS

### Pipelife Sustainability Conference: mobilising the industry in Norway

Uniting competitors in the plastics sector, Pipelife Norway has been organising sustainability conferences aimed at meeting environmental challenges for four years now. Participants include manufacturers, wholesalers, municipalities, contractors, suppliers and educational institutions. It's an effort to tear apart old myths about PVC and share best practices to promote a sustainable path for the industry.

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Line Løset  
+ 47 91 783 391  
Norway  
[www.pipelife.dom](http://www.pipelife.dom)



## POLYGLASS S.P.A (MAPEI GROUP)

### Lifetime prediction of PVC waterproofing membranes for underground use

Tunnel and underground infrastructure usually are made of PVC and last at least 100 years, but how much more? Polyglass has developed testing that determines the lifespan which considers four different layers: concrete, polypropylene geotextile, PVC waterproofing membrane and another slab of concrete to simulate the final lining.

Polyglass S.p.A (Mapei Group)  
Sara Cadamuro  
+ 39 0422 7547  
Italy  
[www.polyglass.com](http://www.polyglass.com)



## POLYSECURE GmbH

### Tracer Based Sorting - a new technology to enable the circular economy

To make recycling more efficient, the Tracer Based Sorting (TBS) system uses a two-photon Anti-Stokes process to mark plastics according to specification, manufacturer/brand and application. The Tracer Based Sorting then uses colour-coding to do the triage, having proven to work even in the dusty ambience of a PVC sorting facility. The system can also separate glass fibre-reinforced plastics (GFRP) from their polymer counterparts.

Polysecure GmbH  
Jochen Moesslein  
+ 49 171 1905 800  
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[www.polysecure.eu](http://www.polysecure.eu)

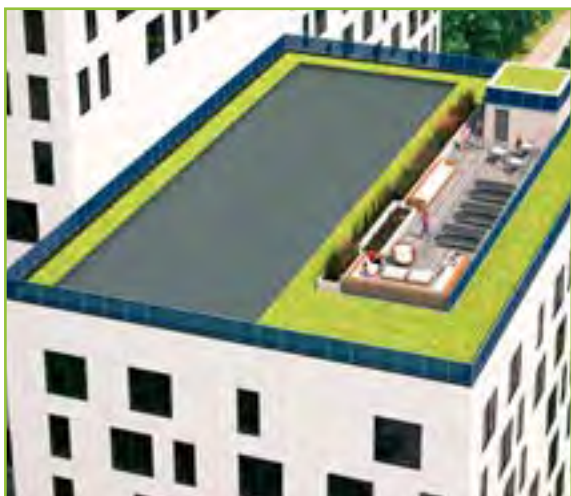


## PROFILINK Ltd

### Profilink separates, cleans and reprocesses used PVC into granules

Profilink separates, cleans and reprocesses used PVC into granules for further manufacturing. It's linked to Profilink's ambitious investment project to modernise production with new equipment to co-extrude with virgin and recycled material into one product. Tests show the co-extruded profiles are not only of the same quality but actually stronger. With this new tech, Profilink joins the European initiative Eco-innovation.

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+ 35 93 260 09 05  
Bulgaria  
[www.profilink.eu](http://www.profilink.eu)



## PROTAN AS

### Rooftop water attenuation with Protan BlueProof & BlueProof Green

Using Protan's single-ply thermoplastic roofing material, BlueProof makes it possible to turn a roof into temporary storage for storm water. The water is gradually drained into the storm drain network during up to 24 hours, avoiding possible flooding. Protan calculates the attenuation and drainage using its BlueKalk tool, computing water depth, volume and weight per area. Blue Proof Green combines water attenuation with other solutions, like green roofs, solar roofs and rooftop terraces. The knitted roof membrane is designed to withstand heavy pressure and is 100% recyclable.

Protan AS  
Sven Ove Bakke  
+ 47 91 82 89 80  
Norway  
[www.protan.no](http://www.protan.no)



## PVC FORUM SWEDEN

### PVC Forum Sweden: a continuous way of adapting PVC for a sustainable society

Working with the Innovation and Chemical Industries (IKEM), PVC Forum Sweden has been working to increase sustainability. Among the actions: increasing recycling, mapping all PVC products to determine an action plan, improving public and customer knowledge about PVC products and their use, and communicating the vinyl sector's progress in sustainability.

PVC Forum Sweden  
Lena Lundberg  
+ 46 70 662 93 31  
Sweden  
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## REFARMERS

### Refarmers vertical farm with Zipgrow hydroponics

Refarmers is developing a vertical farm which is highly productive and modular. It can be installed anywhere and at any scale. It is made of Zipgrow hydroponic towers, mobile racks, automated fertiliser and irrigation unit, LED lighting, and a monitoring, control and automation system. A large part of the system relies on extruded PVC profiles.

Refarmers  
Eric Dargent  
+ 33 6 35 48 25 22  
France  
[www.refarmers.com](http://www.refarmers.com)



## RENÉ HENTSCHEL

### Pressing device for hand laminates for manually operated fitting restoration

Also called the mSs System, the hand laminates were developed for renovation of waste water systems. mSs makes sure that contaminated waste water will not leak out of the drainage system and enter the underground water. The lamination can be prepared outside the drainage system, and it saves time because the lamination can stay in place during the curing time.

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Christoph Zell  
+ 49 160 96 98 24 38  
Germany  
[www.roechling-plastics.com](http://www.roechling-plastics.com)



## RESYSTA INTERNATIONAL GmbH

### Recycling network keeps Resysta products in circular economy

Consisting of about 60% rice husks, Resysta is made from leftover material from the food industry. Resysta is aimed at a circular economy: local raw materials and local production for local markets. End-of-life Resysta goes to 28 collection points in four countries, to reprocess into new products.

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Christian Daiber  
+ 49 1766 53 21 551  
Germany  
[www.resysta.com](http://www.resysta.com)



## RISE

### Rising to the occasion: pre-treating hospital waste to boost recycling

Researchers at RISE – Research Institutes of Sweden – are developing ways to pre-sort and pre-treat used PVC hospital gloves to recycle. They are developing new techniques for sterilisation of waste, and new technology for automated sorting. They're studying two pre-treatment methods – ozonation and hydrothermal – and are developing ways to make the waste recyclable as well.

RISE  
Nazdaneh Yarahmadi  
+ 46 705 49 59 21  
Sweden  
[www.ri.se](http://www.ri.se)



## ROSSI STAMP srl

### **Thinframe: high thermal insulating window frames for energy-efficient buildings**

The foam system of Thinframe limits the heat loss and is a cost-effective solution compared to simple PVC profile. The profiles are locally reinforced with glass fibre to give desired strength, substituting heavier, ordinary metals. They improve on PVC windows that dominate the European market, helping comply with the EU Energy Performance of Buildings Directive.

Rossi Stamp srl  
 Francesca Pandolfi  
 + 39 0532 80 70 09  
 Italy  
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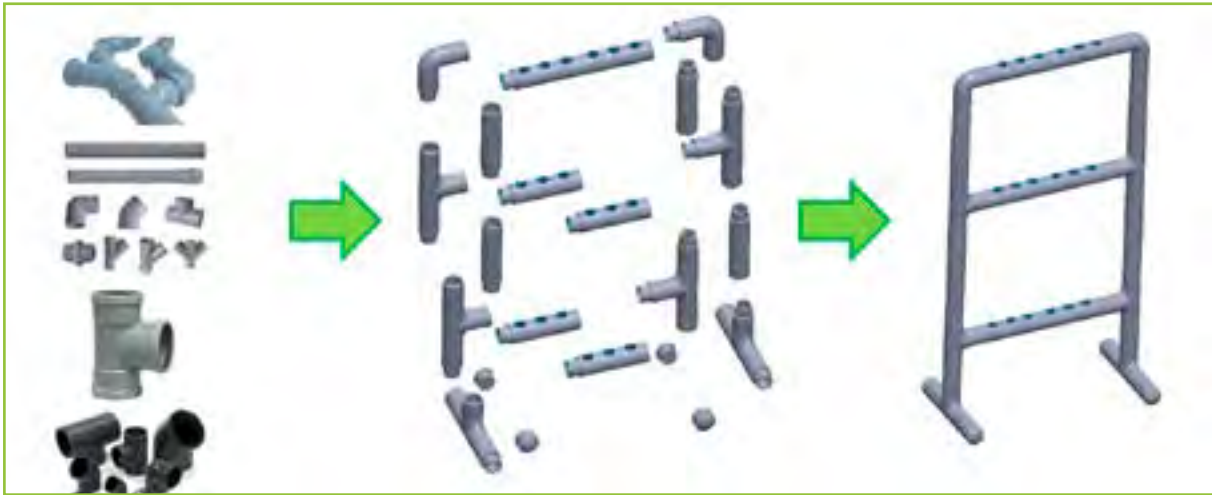


## SIKA TECHNOLOGY AG

### **Sika's heavy metal-free PVC roofing membrane**

Intended for mechanically fastened, exposed flat roofs, Sika's new roofing membrane maintains long-term durability and fire resistance without using heavy metals. To be first launched in Europe, it is a polyester-reinforced, multi-layer waterproofing membrane based on premium-quality PVC. It has excellent flexibility at cold temperatures, has high resistance to mechanical impact and emits far fewer emissions from hot air welding. It can be easily recycled and incorporated into the production process.

Sika Technology AG  
 Matthias Villiger  
 + 41 58 436 78 51  
 Switzerland  
[www.sika.com](http://www.sika.com)



## UNIVERSITAT POLITECNICA DE CATALUNYA

### Urban Jungle: hydroponics scaled to urban living

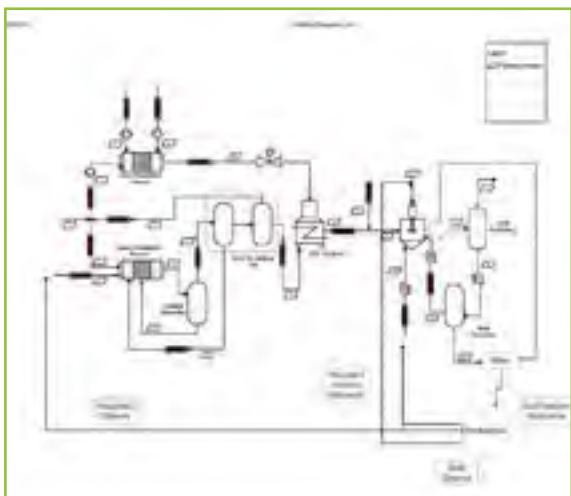
Universitat Politecnica de Catalunya  
 Ariadna Villegas  
 + 34 65 73 88 683  
 Spain  
[www.upc.com](http://www.upc.com)

Also called vertical gardening, UPC has created **hydroponics installations by recycling used PVC** piping from construction projects. It's **economical**, **easy to install**, and **integrates agriculture into an urban setting**. The project shows the great potential for re-evaluating PVC as a part of a business model that respects the environment.

Special  
Commendation

Sustainability  
Innovation





## VINAY PATEL

### **Saving energy and seawater with a new dual-purpose reactor for VCM production**

The scheme integrates VCM (vinyl chloride monomer) production with brine electrolysis to save energy. A CSTR (Continuous Stirred Tank Reactor) simultaneously neutralises hydrogen chloride and reacts with the remaining ethylene-dichloride. Coupled with a novel energy integration scheme, the final result is a more than one-third reduction in the overall energy demand of both electrolysis and vinyl chloride production, as well as a drastic reduction in the need to extract seawater for electrolysis.

Vinay Patel  
+ 44 7824 51 08 05  
UK  
vinayp23795@gmail.com



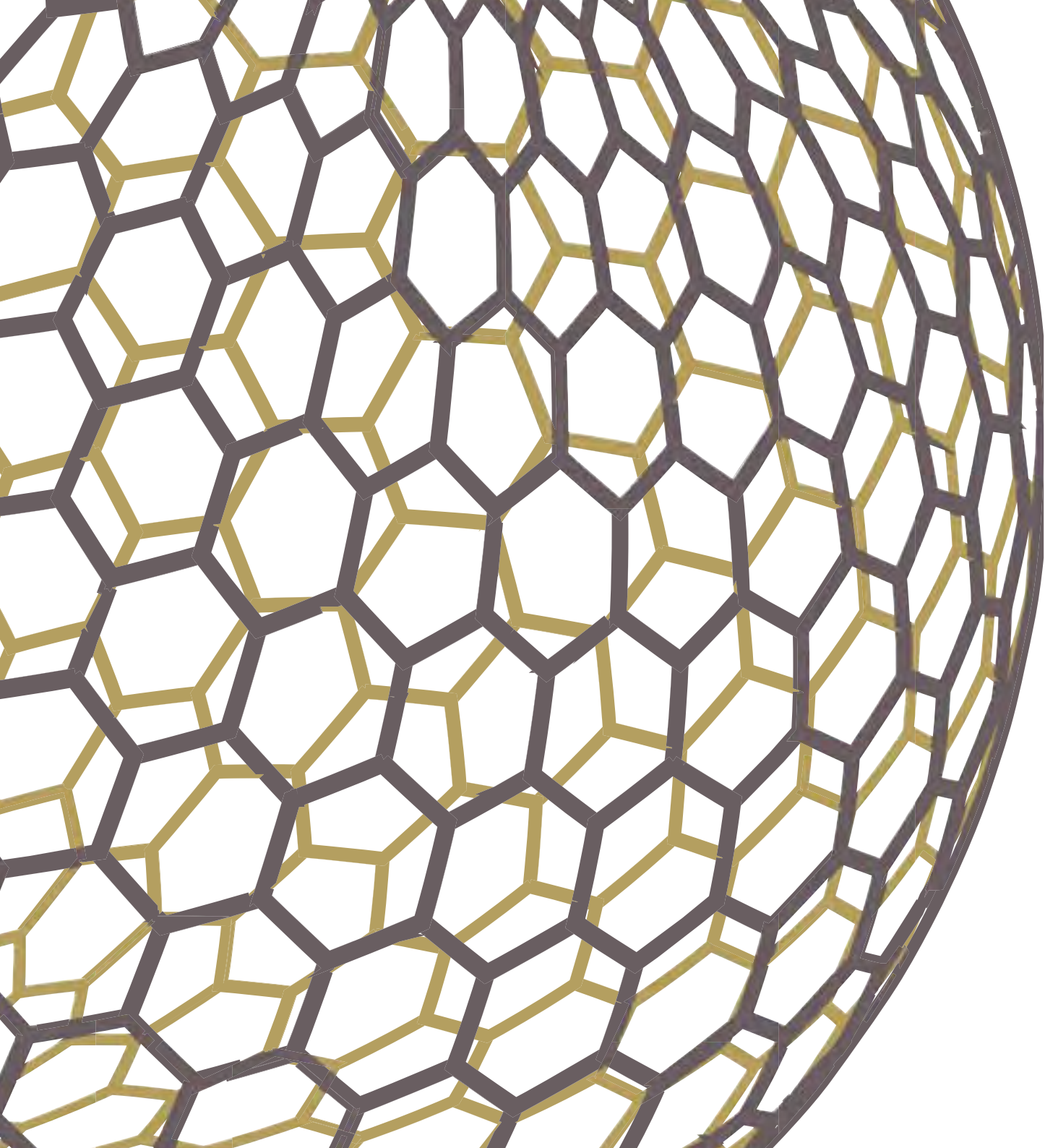
## VINILCHIMICA S.r.l.

### **Environmental impact of PVC compound production**

Producing rigid PVC granules for over 50 years, Vinilchimica is using Life Cycle Assessment (LCA) to show its customers that the environmental impact of PVC is completely comparable to that of other materials. That includes use of materials and energy to create a product that complies with environmental restrictions. Vinilchimica obtained Environmental Product Declaration (EPD) certification in 2018.

Vinilchimica S.r.l.  
Daniela Martinelli  
+ 39 0357 811 23  
Italy  
[www.vinilchimica.it](http://www.vinilchimica.it)





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## **ALIAxis**

### **Hidden drainage grids a car can drive over**

In a concrete floor, all you see is one thin slot. Injected in 100% recycled PVC, the 8mm gap provides drainage for tiles up to 8cm thick. Underneath, the PVC trap provides a clean channel for drainage. It's so strong, you can drive a car on it. That's Made for PVC load resistance.

Aliaxis  
Daniel Pichon  
+ 33 2 41 63 73 83  
France  
[www.aliaxis.com](http://www.aliaxis.com)



## BENVIC EUROPE & GEPLAST

### Bolon By You - woven vinyl flooring with an accent: yours

Benvic Europe & Geplast  
Philippe Gressier  
+ 33 6 10 31 50 35  
France  
[www.benvic.com](http://www.benvic.com)  
[www.geplast.fr](http://www.geplast.fr)

Bronze Winner

Design  
Innovation

Benvic helped Geplast develop its FoKus rolling shutter box with better thermal and acoustic insulation. It benefits from different grades of PVC – rigid and plasticised, virgin and recycled. The recycled PVC compound re-uses internal production scrap while maintaining similar performance. Fokus is the only shutter box to achieve 53 dB (without having to glue a heavy mass). Another innovation is that the shutter blade guarantees full darkness and thermal insulation when unrolled, while letting in four times more light and air than traditional blades.

Design



## INDEPENDENT TEXTILE DESIGN

### **MATRICE: a new kind of vinyl for wall covering**

After studying all characteristics of soft PVC as a wall covering, independent designer Justine Pereira and her team decided on an aqueous solution that fit the objectives. The result: MATRICE, ready to be manufactured according to the standards, demand and prices of the wall covering market. Pereira worked with creators, laboratories, technicians, suppliers, producers and users to determine the best wall covering to produce.

Independent Textile Design  
Justine Pereira  
+ 33 7 68 66 23 43  
France  
[justinepereiradt@gmail.com](mailto:justinepereiradt@gmail.com)



## INSTITUTO BRASILEIRO DO PVC

### Adapting PVC elements as furniture and equipment for young neurological patients

Instituto Brasileiro do PVC /  
Grace Gasparini  
Claudia T. Tsukamoto  
+ 55 11 21484735  
Brazil  
[www.pvc.org.br](http://www.pvc.org.br)

Developed by an occupational therapist, the Adjusted PVC Furniture project creates lightweight furnishings and equipment for children with neuromotor dysfunctions in need of support. The project gathers wires, pipes, connectors, sheets and other products made of PVC and turns them into shower chairs, positioning chairs, walkers and adjustable tables. Medical students can learn the technique from workshops at two institutions of higher learning.

Gold Winner

Design  
Innovation

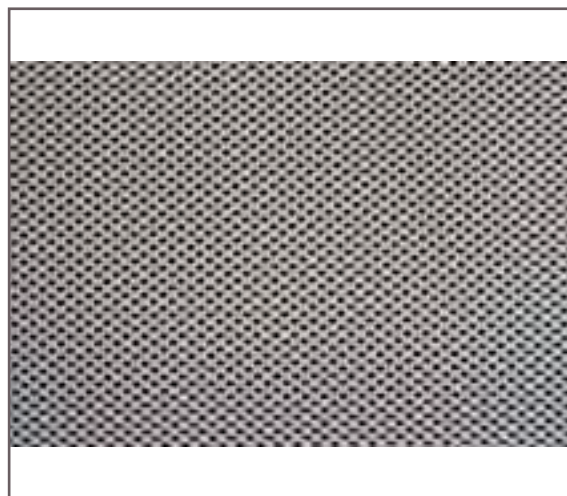


## **KAREN STEPHANI, SILVA CALDERON**

### **Yuna - Portable water purifier you can hang on your shoulder**

Made of PVC tubes filled with sand and rocks, the Yuna portable purifier can produce 3.5 litres of drinking water while slung on a person's shoulder. That can serve people living in remote areas as well as for hikers and military or disaster relief personnel. The valve lid can be used as a drinking cup. Water can be dispensed while strapped to the user or with Yuna set on its base.

Karen Stephani, Silva Calderon  
+ 44 7909 010170  
UK  
kareneste@icloud.com



## **LAMITOR S.A**

### **Lamitor's Neotec hybrid fabric for footwear, upholstery and clothing**

Achieving a warmer and more comfortable look, Lamitor developed Neotec fabric based on an innovative hybrid coating. It allows coexistence of both materials - different from traditional coating - without being blended or mixed. The result: a technical touch that looks and feels inviting, with shock, abrasion and fire resistance as well as thermal insulation.

Lamitor S.A.  
Javier Alonso Mercader  
+ 34 972 86 41 25  
Spain  
www.lamitor.com



## KRISTEN TAPPING

### **Tectum: affordable roofing from recycled PVC**

Kristen Tapping  
+ 34 675 296 534  
Spain  
[www.kristentapping.com](http://www.kristentapping.com)



Using end-of-life PVC from pipes, clothing and sheets, a project by London South Bank University has created low-cost roofing called Tectum, which insulates and also collects rainwater. For housing, farms and factories, the roofing is made by cutting pipes into half-moons to resemble the shape of tile roofs. The project was originally created in a competition sponsored by IOM3 and the British Plastics Federation.



## **PROJECT FLOORS GMBH**

### **Reinventing the past with Herringbone & Chevron LVT floor coverings**

PROJECT FLOORS has taken classic wood, stone and marble floorings and reinventing them in PVC. While competitors went for longer, bigger, wider planks, they went for more traditional installation patterns, with a look and feel from the past.

The additional Herringbone style premiered in 2017, and the Chevron style in 2019.

Project Floors GmbH  
Marco Knop  
+ 49 2233 96870  
Germany  
[www.project-floors.com](http://www.project-floors.com)



## TECHPLAS EXTRUSIONS

**TechBoard planks: optimal geometry replaces timber scaffold for tough conditions**

TechPlas Extrusions  
 Andrew Swann  
 + 612 96366755  
 Australia  
[www.techplas.com.au](http://www.techplas.com.au)

30% lighter and more durable than wood, the hexagonally reinforced PVC plank optimises the weight and strength of TechBoard. It's made in Australia for hot, punishing environments, lasting five times as long as timber, and meets international standards. TechBoard also has an end-of-life recycling scheme.



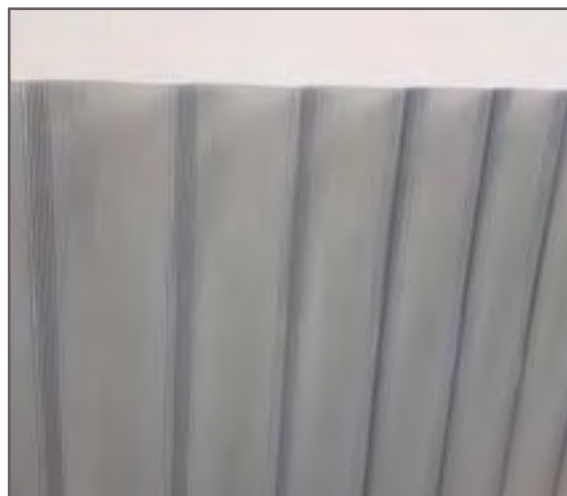


## VISUALS UNITED AG

### FOTOBODEN: Horizontal large-format poster for floor areas

Produced digitally with photorealistic printing, FOTOBODEN can be used for up to six months in public spaces as well as in retail, trade fairs and other events. It's designed to withstand heavy traffic and is easy to produce and install. 100% recyclable, it complies with fire protection and non-slip standards.

Visuals United AG  
Timo Michalik  
+ 49 917 128 48 248  
Germany  
[www.fotoboden.de](http://www.fotoboden.de)



## VPW NINK GmbH

### High-grade transparent PVC sheets with innovative groove structure

VPW Nink's developers innovated the underside of their SALUX opaque corrugated roofing sheets with a longitudinal embossing that allows the best drainage of any condensation. Trial and error resulted in SALUX-Strong - a combination of ingredients that also sticks to strict requirements for hail resistance. And it refracts light in tinted colours like anthracite or bronze.

VPW Nink GmbH  
Anja Schendzielorz  
+ 49 3464 541530  
Germany  
[www.salux.com](http://www.salux.com)

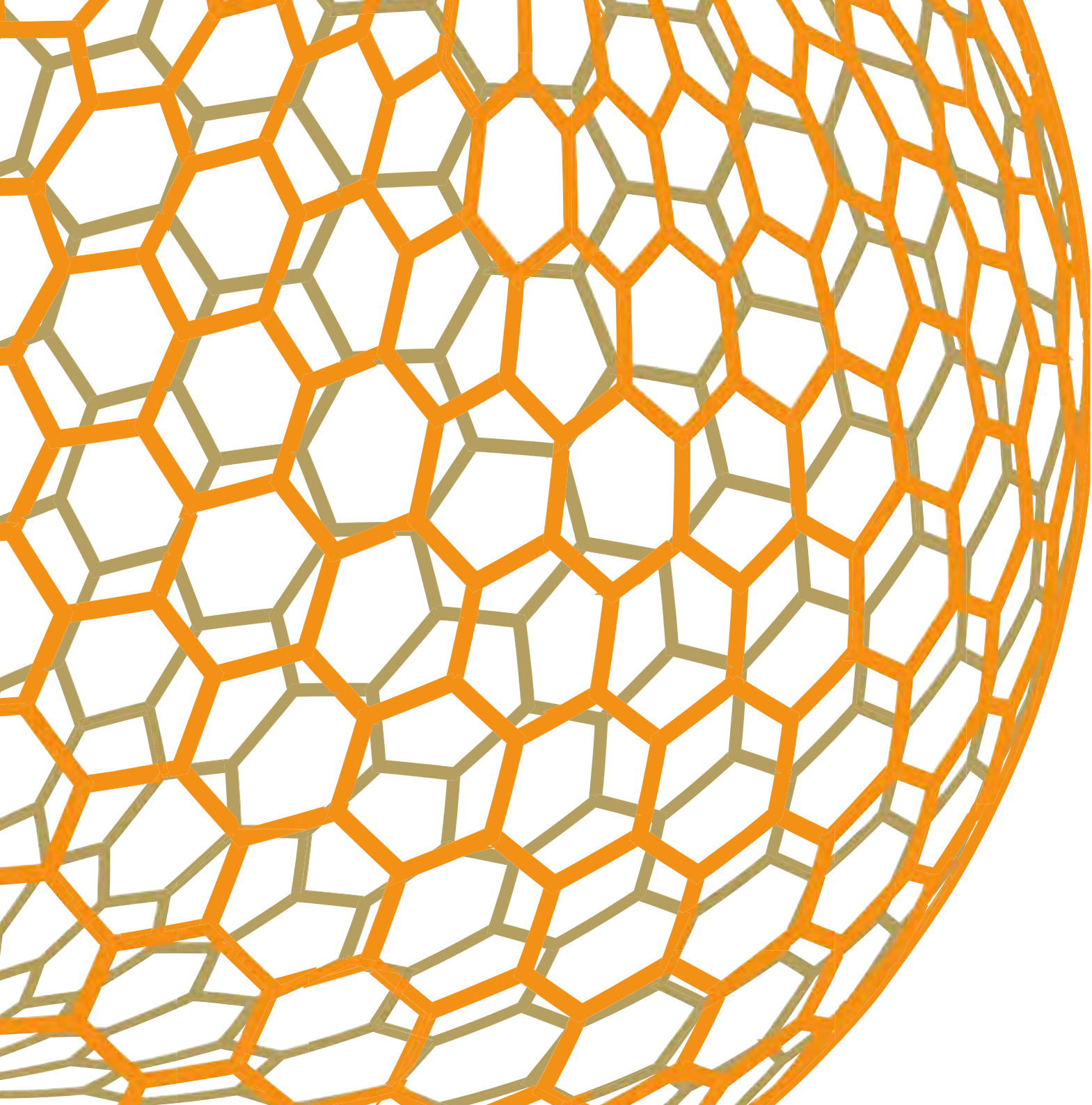


## **VULCAFLEX S.p.A.**

### **Fiberlast: breathable and sustainable synthetic leather**

Vulcaflex has developed perforated multilayer plasticised PVC (pPVC) that looks like leather and allows for ventilation as a seat covering. Despite the perforation it has very high tear strength. It's made with traditional coating techniques using coagulated fabric - half PA and half PU (polyether). 'And it's abrasion as well as fire-resistant.'

Vulcaflex S.p.A.  
Daniele Montanari  
+ 39 0545 37 411  
Italy  
[www.vulcaflex.com](http://www.vulcaflex.com)



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## CAPRIHANS INDIA LIMITED

### Plant modification for reduction in scrap/waste during and after production

Caprihans reduced its scrap and waste by about 25% during production of rigid film by modifying the process in terms of materials, methods and labour practices. Scrap production was reduced from 6% to 4.5% of the total. That adds to Caprihans' commitment to make the PVC industry more sustainable.

Caprihans India Limited  
Dr. Gourishanker Jha  
+ 96 16 55 67 66  
India  
[www.caprihansindia.com](http://www.caprihansindia.com)



## CELOTEC GmbH & CO. KG

### Electron beam coating on a PVC layer by a roll-to-roll process

Solvent-free and without the use of heating chambers, Celotec produces PVC foil in a roll-to-roll process involving curing the top layer by electron beams. The base layer is made with extruded PVC. The result is a decorative film to laminate on window profiles, sheets and other elements.

Celotec GmbH & Co. KG  
Charlotte Franke  
+49 1707 952381  
Germany  
[www.celotec.com](http://www.celotec.com)



## COPERION GmbH

### Innovation in cutting PVC pellets: Coperion's knife rotor minimises dust

Coperion GmbH  
Maria Hoelzel  
+ 49 711 897 3076  
Germany  
[www.coperion.com](http://www.coperion.com)

It's a two-stage process that took extensive testing in pilot plants. Called Kombiplast, it closely intermeshes a twin-screw extruder and a single-screw extruder. With the new design, the knife retains its pre-setting for the die plate, preventing formation of fines during cutting.





## DECEUNINCK

### **Thermofibra 2.0: fully recyclable, more efficient PVC window frames**

Deceuninck  
Johan Pauwels  
+ 32 476 46 90 21  
Belgium  
[www.deceuninck.com](http://www.deceuninck.com)



Replacing steel reinforcement in window profiles, Thermofibra 2.0 gets its extra strength and insulation from continuous glass fibres. They are impregnated in a bath of PVC latex called Nanovin, later dried and gelated to create a tape which is introduced in a pultrusion die to reinforce the profiles. Thermofibra makes windows more sustainable by using up to 80% recycled PVC, making window frames with 18% better thermal insulation, and 25% lighter, and the profiles are fully recyclable.

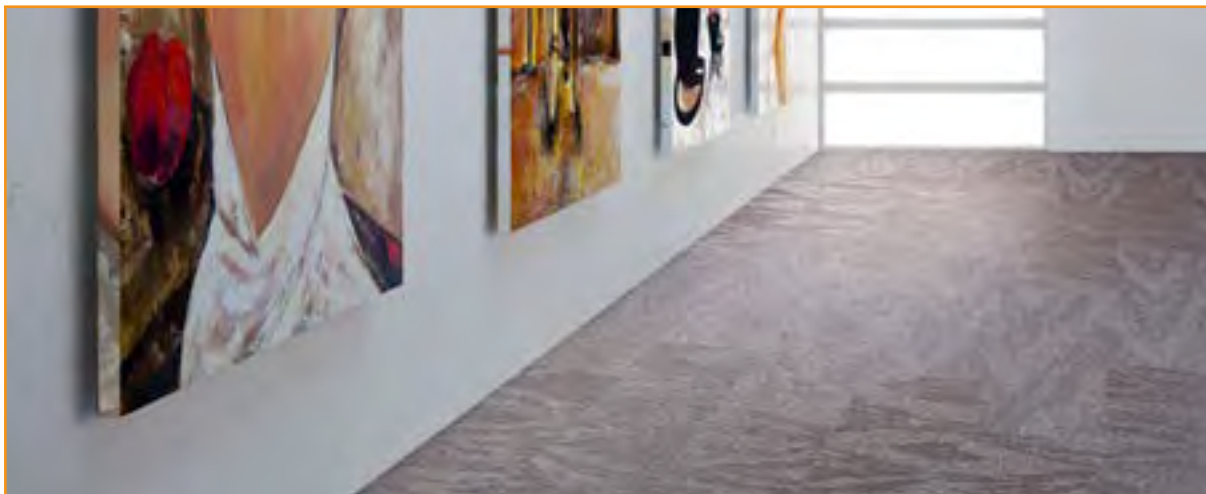


## **KURO KUNSTSTOFFE GMBH**

### **CLEAN TUBE battles germs with microsilver inside**

KURO Kunststoffe makes CLEAN TUBE using a PVC compound with a special kind of microsilver. Silver is widely effective against a variety of micro-organisms like bacteria, fungi and viruses on the skin and mucous membranes. Positively charged silver ions, caused by oxidation of silver when in contact with moisture, bind to cell proteins and stop germ growth by 99.9%.

KURO Kunststoffe GmbH  
Torge Giese  
+ 49 4405 988 824  
Germany  
[www.kuro-kunststoffe.de](http://www.kuro-kunststoffe.de)



## POLYMER-CHEMIE GmbH

### Fire-retardant vinyl fibres for design flooring

Polymer-Chemie GmbH  
 Sascha Schmahl  
 + 49 1511 21 74 280  
 Germany  
[www.polymer-chemie.de](http://www.polymer-chemie.de)

It's a continuous co-extrusion process that produces fibres in the form of yarn, coated with fire-retardant plasticised PVC. Polymer Chemie's customer Copaco Screenweavers takes the coated yarn and weaves it tightly to make design flooring called Ntgrate. The biggest challenge was finding the proper adhesion between the fibre and a stable colour matching.





## RIFLEX FILM AB

### Cinema screen development and evaluation room

For cinema, event and home entertainment screens, Riflex has developed a new screen development room with a wide range of applications. It offers flexible mounting, front and back projections as well as high-contrast silver screens with ALR (Ambient Light Rejecting) properties. The light settings are adjustable, allowing comparison of screens side-by-side.

Riflex Film AB  
Andreas Persson  
+ 46 7093 354075  
Sweden  
[www.riflexfilm.com](http://www.riflexfilm.com)



## SKZ-KFE GMBH

### High-insulating PVC-based façade elements in one step

Streamlining the manufacturing process, SKZ has developed a single-step way to make PVC-based façades with polystyrene-filled thermal insulation. It involved developing the right foam formulation, a suitable machine concept, the appropriate extrusion die, as well as a controlling process to monitor the system. The new process saves energy and CO2 emissions.

SKZ-KFE GmbH  
Kersten Kurda  
+ 49 931 4104-160  
Germany  
[www.skz.de](http://www.skz.de)



## **SOLVAY S.A.**

**Alve-One® solutions by Solvay: a new generation of sustainable chemical blowing agents**

Solvay S.A.  
Karine Cavalier  
+ 32 2 264 30 73  
Belgium  
[www.alve-one.com](http://www.alve-one.com)



A cost-competitive foaming agent, Solvay's Alve-One® is an efficient alternative to ADCA (azodicarbonamide). PVC plastisols foamed with it emit no pungent gases. It allows faster time-to-market, lower logistic costs, and a more than 90% improvement in carbon footprint based on Lifecycle Analysis. Applications include flooring and artificial leather for the automotive industry as well as cables, cladding, foam sheets, pipes, footwear and packaging.

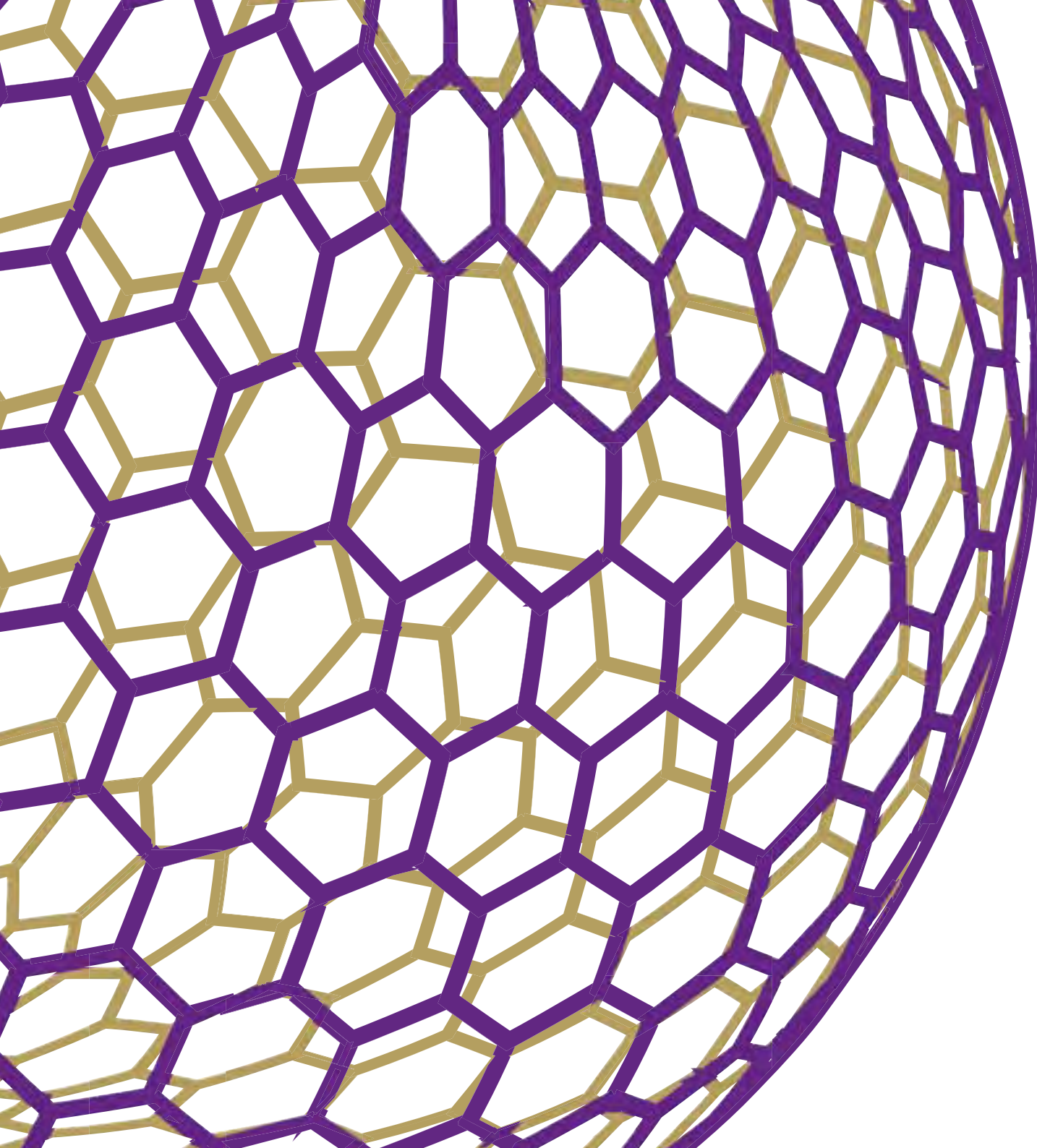


## **TMG AUTOMOTIVE**

### **Crack-resistant hybrid TPU-PVC for automotive seating**

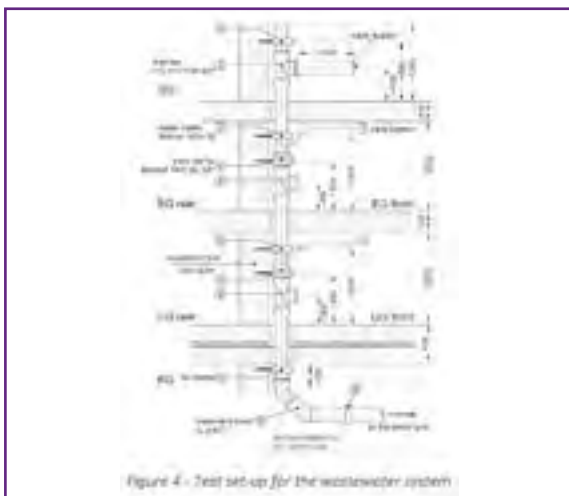
Called PVU, the hybrid of TPU and PVC is more resistant to cracking under heavy and long-term use in automotive seating. Using both coating and extrusion technologies, TMG was able to achieve compatibility between polymers and the interlayer adhesion without using external adhesives. Upgrading PVC's properties made it more suitable for high-end usage, even in the most demanding applications.

TMG Automotive  
Elizabete de Pinho  
+ 351 96 6787807  
Portugal  
[www.tmgautomotive.pt](http://www.tmgautomotive.pt)



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## ADEQUA WS, SLU

### Soundproofing wastewater pipes based on alternative mineral fillers

Developing alternative dry-blends for better acoustic insulation, Adequa is re-researching the performance of different minerals. It's studying the availability, density and cost of the materials, as well as the ease of transformation, compatibility of the resin, stability of the dry blend, toxicity and recycling aspects. The most promising materials that are compatible with PVC have been selected, with results showing improved acoustic performance of pipe systems. Trials at an industrial level are planned.

Adequa WS, SLU  
Enrique Díaz  
+ 34 661 420279  
Spain  
[www.adequa.es](http://www.adequa.es)



## ALFATHERM S.p.A.

### Serica - Anti-scratch, anti-fingerprint material for furnishings

Incorporating anti-scratch and anti-fingerprint technology, Alfatherm's new Serica has a warm and silky finish for interior design. It's a giant leap forward in super matte technology, to cover all types of furnishings for homes, stores and offices in solid colours or wood finish. Because of the thermo-formability of its polymeric foils, Serica offers greater freedom of design, with 3D membrane pressing or 2D flat lamination and profile wrapping for five-piece doors.

Alfatherm S.p.a.  
Francesco Talamonti  
+ 39 366 6522176  
Italy  
[www.alfatherm.it](http://www.alfatherm.it)



## ALUPLAST GmbH

### Multifalz: the future of series production of window sashes

Multifalz is the first window sash that can be glazed conventionally with glazing blocks, or by bonding the glass. Multifalz and the innovations in glueing can be easily integrated in serial production. They're applicable with all three Aluplast sashes: fixed, bonded or energeto® windows.

aluplast GmbH  
Patrick Seitz  
+ 49 0721 471470  
Germany  
[www.aluplast.net](http://www.aluplast.net)



## ALUPLAST GmbH

### Serica - Anti-scratch, anti-fingerprint material for furnishings

With concealed hardware technology, smart-slide lets in a maximum amount of light and allows a small construction depth of 70mm. That hardware tech includes a selection of opening mechanisms as well as a self-closing door. Aluplast's line of profiles include anti-burglary safetec technology and powerdur foam insulation.

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## BENVIC EUROPE AND GROUPE MAINE

**Groupe Maine and Benvic team up to raise the performance of PVC profiles**

Benvic has developed PVC compounds resistant to high temperature. It meets an increasingly demanding market for profiles with larger windows, darker glazing or double or triple glazing.

The compounds avoid shrinking, warping or cracking under temperatures exceeding the softening point for PVC. The challenge was to devise a new formulation that can be extruded on existing tools. Benvic used PVC resins with a higher Vicat point, and glass fibre to add to the stiffness to fight shrinkage and linear expansion.

Benvic Europe and Groupe Maine  
Philippe Gressier  
+ 33 6 10 31 50 35  
France  
[www.benvic.com](http://www.benvic.com)



## BERC POLYMAT

**For 3D printing: rheology PVC in Fused Filament Fabrication (FFF)**

Polymat is developing PVC for use in 3D printing, adapting it to Fused Filament Fabrication (FFF), which democratised the new mode of printing. Through rheological research, the developers were able to produce user-friendly PVC filaments for use in open source devices. PVC's versatility allowed multi-material printings, combining rigid and flexible materials.

Berc Polymat  
Roberto Hernandez  
+ 34 943 018494  
Spain  
[www.polymat.eu](http://www.polymat.eu)

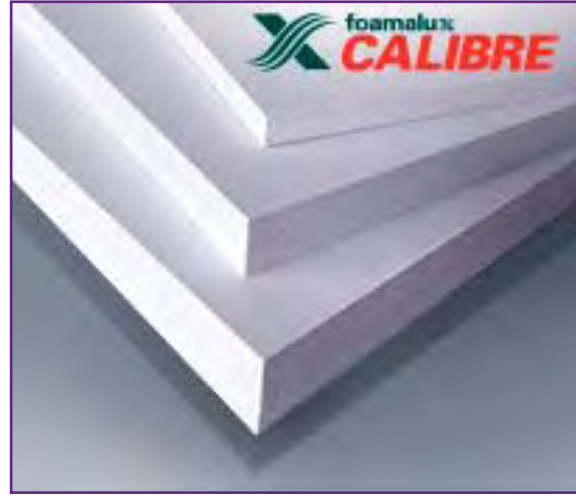


## BESA PLASTIK SUNI DERA SAN. A.S.

### Simulated leather shoes with improved durability during harsh winters

Besa Plastik has integrated Inovyn 370 LT – made for tarpaulins – into its shoe-making. With outstanding bonding properties, it prevents the separation between simulated leather from polyester textiles, especially in harsh winter conditions. Adhesion strength increased between 30 and 55% compared to general purpose PASTE-PVC.

Besa Plastik Suni Dera San. A.S.  
Cigdem Yalcin  
+ 905 33 49 93 150  
Turkey  
[www.besasunideri.com](http://www.besasunideri.com)

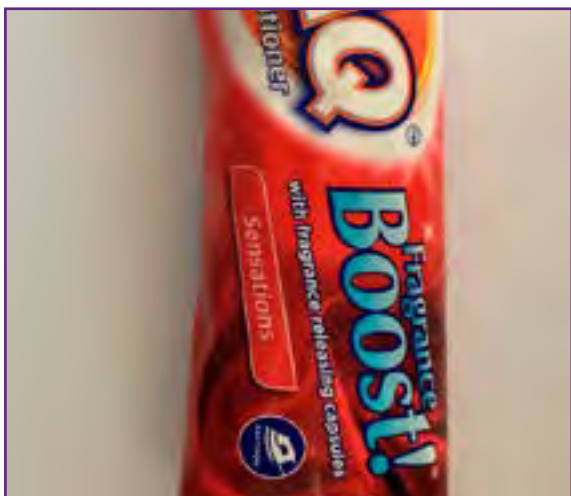


## BRETT MARTIN LTD

### Foomalux Calibre - foam PVC

With a bubble structure made from a special calibration process, Foamalux Calibre is strong material but 20% lighter than similar products, requiring less energy to transport. Brett Martin uses 25% renewable energy in its manufacturing process, as well as a lot of recycled material, adding to the greater sustainability of the brand.

Brett Martin LTD  
Melanie Talbot  
+ 44 2890 849999  
UK  
[www.brettmartin.com](http://www.brettmartin.com)



## CAPRIHANS INDIA LIMITED

### Smell the fragrance inside: Flexible PVC film for pouch applications

With good surface tension and printability for consumer products, Caprihans' PVC film is durable yet enables the customer to smell the fragrance inside without having to open the packaging. As "intelligent packaging," it has high tear strength and a glossy appearance. It's part of Caprihans' wide selection of rigid and flexible PVC films.

Caprihans India Limited  
Dr. Gourishanker Jha  
+ 96 16 55 67 66  
India  
[www.caprihansindia.com](http://www.caprihansindia.com)



## CELOTEC GMBH & CO. KG

### Decorative vinyl foil with electron beam treatment, avoiding solvents

Giving PVC a new look and touch, Celotec has developed decorative film to laminate on PVC window profiles, sheets and other elements. Avoiding solvents and plasticisers, production is a roll-to-roll process using an electron beam and other steps to add a wood effect, ultra matte, high gloss and others.

celotec GmbH & Co. KG  
Charlotte Franke  
+ 49 1707 952381  
Germany  
[www.celotec.com](http://www.celotec.com)



## CONFORT BANHO

### Confort Banho

ConfortBanho  
Arthur Pugliese  
+ 351 925 87 44 85  
Portugal  
[www.confortbanho.com.br](http://www.confortbanho.com.br)

Invented by a professional nurse who saw the need in his daily work, Confort Banho is a shallow inflatable bathtub for bedridden patients of all ages. A group of social entrepreneurs saw the potential and launched the project, which uses 100% vinyl. It fits right on top of the bed, and being waterproof, it protects against mould and moisture.





## CROSWOOD SP. Z O.O. SP.K.

### Resysta composite outdoor lamps with PVC and rice husks

With its simulated wood appearance, Resysta is a rice husk and PVC composite material that Croswood is using in its new outdoor lamps. Available in a wide range of colours, Resysta resists discolouration, is waterproof and is category 1 against fungal decay. It can help in preventing deforestation, thus a great example of combining material sustainability with wood-like design.

Croswood Sp. z o.o. Sp.k.  
Michał Czajkowski  
+ 48 60 83 69 029  
Poland  
[www.croswood.pl](http://www.croswood.pl)



## DYKA GROUP

### Dyka Air: Ventilation and duct system improves energy efficiency

Reducing resistance, Dyka Air's ventilation system helps reduce energy usage as well as noise. Injection moulding, thermoforming and profile extrusion takes maximum advantage of the design freedom PVC offers versus traditional construction materials. This allowed more aerodynamic shapes, lowering air resistance, noise levels and energy use.

Dyka Group  
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## ELBTAL PLASTICS GmbH & Co. KG

### Ultimate Border: waterline protection for swimming pools

Fighting dirt and stains along a swimming pool's waterline, Elbtal Plastics has developed ULTIMATE BORDER - a 28cm-wide PVC film that can be cleaned using simple cleaning agents. Elbtal used sandpaper to test it for scratch and abrasion resistance, and it sprayed the border with graffiti to test the use of a solvent-based cleaner without damaging the print on the material. For customers to see it for themselves, Elbtal offers a test set allowing them to try out ULTIMATE BORDER's performance.

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## ESPIROFLEX S.A.

### Metalpress oil hose: 4 layers of materials resistant to industrial oils and fuels

Competing with rubber, Espiroflex has developed a hose with a special coating for galvanised steel spiral and a polyester mesh for industrial oils and fuels. Made with a specially modified extrusion process, it shows the versatility of PVC as a replacement for rubber hoses. The key was to develop a special hose construction facilitating the use of PVC.

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## EUROCELL PROFILES LTD

### Eurocell's Coastline Composite Cladding System

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It's a breakthrough in materials technology – a patented triple composite of polymer resins, inorganic minerals and acrylic colourings. Its minimal contraction and expansion, whatever the weather conditions, means no rectification visits. With the aluminium rail and fixing system, there's no mortar or rendering involved in the installation, and easier to handle than cement boards. There's practically no maintenance required for at least 10 years, and Coastline is 100% recyclable.

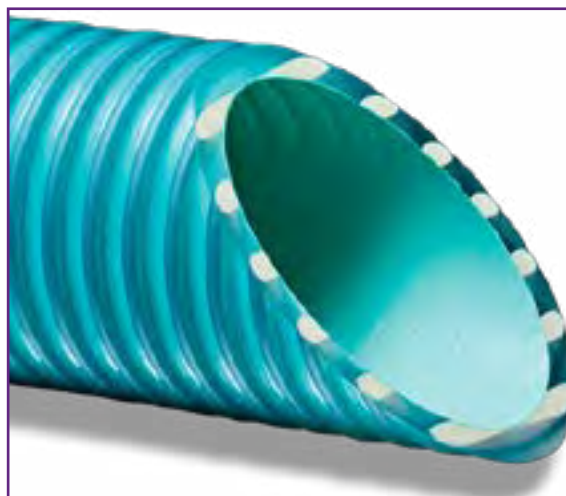


## FILLAMENTUM

### Vinyl 303 - 3D printable PVC

For prototyping and production of components, Fillamentum's 3D printable polyvinyl chloride is an important innovation. The Fillamentum Industrial family is focussed on producing 3D filaments suitable for industrial applications. Vinyl 303's rigidity is comparable to Nylon CF 15 Carbon - micro carbon fibre-reinforced filament. It is chemical-resistant, has low water absorption, and is recyclable.

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## FITT S.p.A.

### Crush-resistant Fitt B-Active flexible hose for pools and hot tubs

With an innovative PVC spiral design for 50% more strength and durability, Fitt's B-Active flexible hose is suitable for swimming pools and hot tubs. It is lined inside with a patented Chlorine Defence System and a D-shaped spiral which is extremely resistant to crushing (up to 34 kN/sqm). The smaller curvature radius (up to 125mm) makes installation easier in uneven terrain. The Spiral Protection Barrier lining prevents premature embrittlement.

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## FITT S.p.A.

### **Fitt BLUFORCE RJ: polymer alloy pipes with joint restraint system**

Fitt's new BLUFORCE RJ pipe is highly resistant to cracking, crushing, corrosion, chlorine and pollutants. It is the world's first polymer alloy pipe with restraint joint and is the first polymer-based pipe made in Europe. It slashes pipe-laying times and is a decisive application on soft or sloping terrains and directional changes, as it eliminates the need for anchor blocks. BLUFORCE RF adds tensile strength to enhanced flow rate and lower weight.

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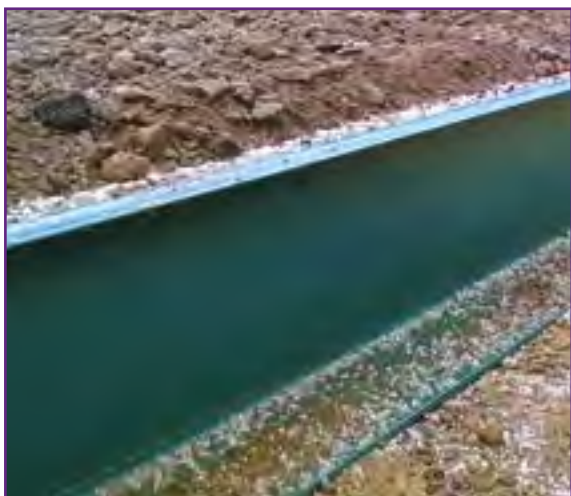


## GRABOPLAST LTD.

### **Fire and smoke-resistant floor coverings for e-vehicles**

Graboplast creates flooring for electric buses. As the demand increases for lithium battery vehicles, so does the demand for flooring that complies with tougher fire safety requirements. That means greater resistance to fire and smoke toxicity. While Graboplast has been making slip- and wear-resistant floors for buses for decades, its new plasticised PVC floor fits the more stringent requirements.

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## GRANZPLAST SA

### Road fencing profile made from PVC-rice fibre composite to protect wildlife

Using locally sourced rice fibre, Granzplast-Sodilor has created a composite with PVC to make a profile that is specifically adapted to protect small animals like baby birds from roadways. Unable to fly yet, they cross roads in environmentally protected areas, and the fence keeps them off the roads. The rice stem fibre, usually burned, is recycled into the composite used to make the profile.

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## KABELWERK EUPEN AG

### Self-locking sleeve for PVC-U pipe makes installation lighter and easier

Eupen's self-locking EUCALOCK sleeve for PVC-U pipe is machined out of high-thickness tubes on a CNC machine tool. The locked seals are made on special injection machines that allow the elastomer to be injected around the high-corrosion-resistant alloy segments. The PVC compound is EU-approved for drinking water pipes, with a lifespan of up to 100 years. No need for concrete reinforcement, making it a strong and lightweight system that is easier to install.

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## KOPOS KOLÍN a.s.

### Parapet trunkings - wiring material

Kopos has developed double-sided parapet trunkings, combining rigid and flexible construction. Thanks to its versatility, PVC was the suitable material for creating the thin walls inside the profile. Kopos' lab team devised a special PVC composition to make it work. With its PVC parapet channels, Kopos can divide and shield power and data networks.

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## KOPOS KOLÍN a.s.

### Wiring boxes - double injection

Combining rigid and soft vinyl, Kopos has created wiring boxes for passive houses, wooden houses and other structures. It takes advantage of the versatility of PVC that allows for both a rigid and flexible dimension. Kopos' other new wiring boxes include those with membrane inputs, parapet trunking, and for thermal insulation.

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## MOLECOR TECNOLOGÍA, S.L.

### CPVC-O Pipes: larger diameter yet still tough under high temp and pressure

Challenging the limits, Molecor has developed CPVC-O pipes of higher diameters and reduced thickness than those currently included in CPVC (chlorinated polyvinyl chloride) standards. With temperatures above 100 degrees Celsius, they retain their dimensional stability. Nominal pressure, usually limited to PN=10 bar, can be increased to as much as PN=16 bar. Thinner, lighter, stronger, with a smaller carbon footprint.

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## MONDOPLASTICO SPA

### Floating solar panels on inflatable PVC+PU

With a minimum quantity of additives, Mondoplastico has created a calender PVC+PU for inflatable articles that can be used for floating photovoltaic panels. PVC+PU has good mechanical performance, thermal stability and minimal deformation when exposed to an atmospheric agent. It has lower migration of substances on water, lower permeability than the standard version, and has minimum eco-toxicity.

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## **NEXOLEUM BIODERIVADOS S.A.**

### **Phthalate-free cable and wire compound**

A joint project between Nexoleum and Dacarto, petroleum-based plasticisers are replaced with renewable-based alternatives. The product maintains the performance in 70-degree Celsius cables, meeting tests of resistance, strength and breaking-point stress after ageing in a ventilated oven. As the plasticisers used are vegetable-based, they aid in the effort to reduce greenhouse gases by providing a competitive alternative.

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## NICOLL

### Nicoll reinvents the shower and bath syphon with Magnetech

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How to build a shower or bath with a compact PVC syphon that keeps the drainpipe odours from escaping and gives architects more flexibility? Nicoll's Docia Magnetech is a **rethink of the syphon**, using **three magnets to open and close a valve**. Instead of the European standard 50mm water guard, the "magnet technology" in a **PVC body opens and closes the valve according to the amount of water that collects** in the shower. It's easily adaptable for bath use.





## OHLA PLAST & FÄRGTEKNIK AB

### CeGe Green for chemical welding: rethinking the process

Mainly intended for joining PVC floors, OHLA Plast has developed a way to avoid having to weld flooring the day after installation. They developed CeGe Green, with a process and a tube that applies the cold welding underneath the flooring, saving extra work and using a safer, non-flammable solvent.

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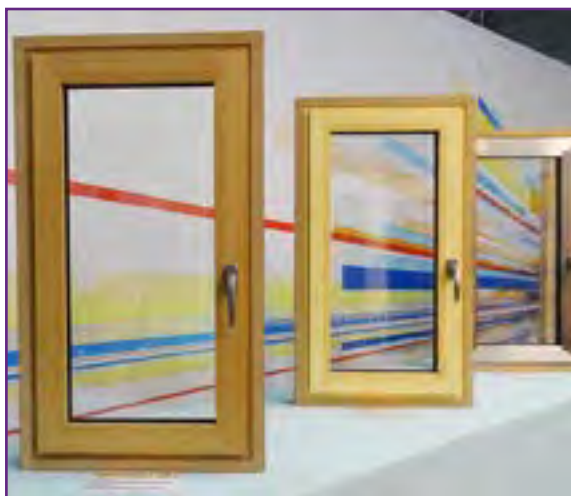


## POLYSECURE GmbH

### Product authentication and sorting based on fluorescent markers and optical detectors

To fight counterfeiting as well as accurately sort materials, Polysecure worked with R&D organisations and with its clients to develop fluorescent markers and optical detectors. The goal was to create strong signals with small amounts of marker particles. Those markers are seen by BRANDPROOF® pocket detectors, which can eventually be linked to smartphones.

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## PROFIALIS SAS

### **Profialis' multi-purpose composite core window of the future**

Using PVC composite with high mineral content, Profialis has developed hybrid PVC/aluminium window frames that can be drilled and welded. The aluminium provides the rigidity and appearance, while the PVC provides thermal and acoustic insulation. The PVC composite reinforcement avoids thermal expansion of PVC, following the same dilation rate as aluminium.

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## RENOLIT INDEX

### **Renolit Perf02: regulating air flow for healthy farm animals; fire and condensation-resistant**

For use in livestock barns, Perf02 is the first anti-bacterial ventilating ceiling. Renolit developed it in collaboration with leading builders of pig barns, creating a PVC ceiling that is also anti-condensation and 100% resistant to ammonia. It's also resistant to phytosanitary products as well as fire.

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## TPV COMPOUND SRL

### High-performance PVC compound for peristaltic pump segment

TPV Compound has developed a better-performing compound for pump segment extrusion. Tubes extruded with this new material have improved stress cracking resistance. Blood flow rate stability is improved 30%. There's also better performance of the hemodialysis treatment and a longer pump segment life. It's free of phthalates, latex, BPA and TSE.

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## TPV COMPOUND SRL

### High-performance PVC compound for weather-resistant rolling shutters

To make rolling shutters more efficient, TPV Compound specifically engineered a PVC compound with improved weather resistance. Tested in dark brown and green colours, the shutters can resist heat distortion by more than a third. And they're colourfast, even after 2000 hours of exposure to xenon arc light. Combined with light weight and thermal and acoustic insulation, they have a longer lifespan than their metallic competitors.

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## UNIVERSITAT POLITECNICA DE CATALUNYA

### e-Dock: parking for electric scooters in Barcelona

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Improving interurban mobility, e-Dock is a system of parking and charging points in Barcelona for electric scooters.

The stations provide a safe place to temporarily park and load. This supports the drive toward renewable energy and greener mobility.



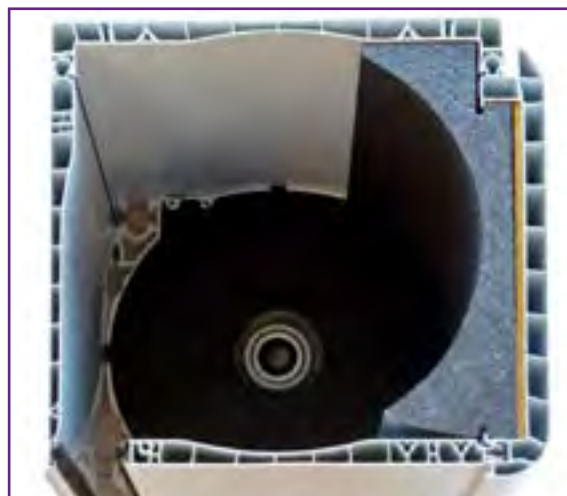


## VÄLINGE INNOVATION S WEDEN AB

**Liteback – Sustainable core technology for lighter, glue-free thermoplastic flooring**

Liteback thermoplastic glue-free floors by Välinge are up to 20% lighter than their competitors, thanks to a special machine. The Liteback grooving unit mills grooves on the underside of the floorboards, removing material from the core, making the floating floors lighter and installation easier while maintaining high strength and performance. Lighter flooring also makes shipping easier and saves energy, reducing the carbon footprint.

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## VIUDA DE RAFAEL ESTEVAN GIMÉNEZ, S.L.

**Quieter shutter boxes with acoustic insulation made from PVC**

Increasing acoustic insulation in register and shutter boxes, LaViuda has developed a specific composition to replace adhesive bituminous foils with a PVC profile. It's based on PVC INOVYN 271DF, epoxidised soybean oil (ESBO) as a prime plasticiser and co-stabiliser, and a barium sulphate mineral filler (BaSO<sub>4</sub>). Through extrusion, the result is a foil that is integrated on the rigid PVC profile of the register box lid. The foil is attached to the structure by a laminating process and a bonding process using reactive polyurethane.

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