KÖPP
experts in foam

insight.

MAGAZINE
No. 20

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  Sustainable packaging chips
- **Ecological alternative**
  Bio qualities of PE
- **Sustainable renovation**
  New: A solar plant at our main factory

Patent secured:

Rubber goes green

A great success in the area of climate neutrality

Achim Raab, Managing Director

Dear Reader,

Rubber goes green. That has a ring to it, doesn't it? Perhaps contradictory? It's a fact: Rubber must become greener. It's also a fact: Rubber can become greener. This edition of **insight.** offers many examples.

Among other announcements, we present two bio qualities: Bio EPDM and our new Bio PE. And I can promise you: We don't do any "green-washing". The process chains for our Bio products are really 100% sustainable. And that is certified!

We are particularly proud of our involvement in further reducing CO_2 in rubber manufacture and processing to a new level. KÖPP is the only company to develop and patent a process to foam a new type of rubber that is produced in a climate-neutral way. The applications and material properties are equal to those of an EPDM. The new material would also be a real alternative; a big win for our climate.

I believe that we have a special responsiblity to protect the environment, especially as manufacturers of rubber and plastic products. The latest developments in rubber manufacture demonstrate strikingly how great the potential is to reduce CO_2. We just have to follow through on it. Ultimately, of course, buyers are also needed. However, I am confident that the general increase in climate awareness will prepare the market for green rubber products.

We hope you enjoy reading this magazine and I wish you all the best,

Achim Raab
Managing Director

SOLAR POWER SYSTEM AND INSULATION –

Energy system renovation at our location in Aachen

In use for over 60 years: the oil-fired heating system, which is now being replaced as part of the renovation of the energy system.

Additional insulation and a solar power system with an output of 225 kWp make the roof of our main factory fit for the future. Installed at an optimal gradient, with a near-perfect southeast orientation, it will considerably reduce our overall energy needs at our Aachen location.

In the course of the renovation of the energy system, an old oil-fired heating system from 1963 will be replaced. It was maintained for a long time, and until now it has continued to work reliably. This old system will be replaced by a highly efficient gas condensing boiler, prepared for biogas and hydrogen (H2 Ready).

Our positive experiences at our plant in Romania have encouraged us to make investments, including in photovoltaic systems in Aachen. Several solar power systems are now in operation there, with an overall output of around 1,000 kWp.

"We are convinced that the measures will be completed before the end of the next heating period", says Managing Director Achim Raab confidently. It will take a while for the investment of around 750,000 euros in energy system renovation to pay off. However, the environment benefits immediately from every kilowatt hour of energy that is saved, in line with our motto of "hand in hand with nature".

INNOVATIVE:

Patent for processing of innovative, climate-neutral rubber

As you will see more than once in this edition of **insight.** Dr Peine and his team have quite a knack of developing new qualities and processes. With their extensive experience, expertise, and persistence, they go the extra mile for perfect results. The Institute of Plastics Processing (IKV) Aachen approached Dr Andreas Peine with a special requirement: processing a recently developed, CO_2-containing rubber under the working name of PECU.

Rubber as a CO_2-killer: it can work

PECU is nothing less than a revolution in climate neutrality for the manufacturing of rubber products. Covestro, also part of Bayer, is strongly focused on production of innovative, sustainable, and multi-faceted high-tech polymer materials. The development of a polyether carbonate polyurethane, PECU for short, has been a particularly notable success for them. This is because CO_2 is chemically integrated in PECU, and then it is not released. To put it another way: CO_2 that is released by processes of industrial chemistry can be captured, "locked into" PECU, and rendered harmless. "The effect that this process has on the climate increases when you consider the CO_2 backpack that rubber production carries with it," explains Dr Andreas Peine. "For example, look at the life cycle of a rubber product. It starts with production of the raw materials for the rubber, then processing to block form, further processing, perhaps to a stamped part, transportation to a car manufacturer, then it is used as a sealing element. Up to its disposal, the product goes through several phases, leaving a CO_2 footprint everywhere. But nowhere is its CO_2 footprint as high as for the production of raw material for rubber. This is because this initial stage accounts for 50% of the total CO_2 generated. There is a clear conclusion to be drawn from this knowledge: If you want to cut CO_2, then production of raw material for rubber is the best and most important lever." With PECU, reduced-CO_2 production has been achieved. However, this leads us to the next challenge. How do you then process the block of raw material? There were no processes available until now. Spoiler alert: This is where KÖPP comes into play!

Challenge accepted! Mission completed?

PECU as an output product is a fully reacted, rubberlike, highly elastic block. Transforming this into a foamed product posed various challenges for the development team. How should it be crushed? How should it be mixed in? How should it be handled? What works? What doesn't work? "And of course, we had a requirement that the processing should be designed to be as climate-friendly as possible. The only option for a softener was an oil in bio quality. The fact that all this was ultimately only possible with a single bio oil that was available on the world market illustrates our constant search for the metaphorical needle in a haystack," adds Dr Peine, explaining the painstaking work carried out in the laboratory. "In the end we managed to realise the technical design in the laboratory. So serial production could start. Now, it should just be a case of the markets following." The product also matches the material qualities of a traditional EPDM. So the compression set of PECU processed into sponge rubber seals is identical – with a 20% lower component weight, which is achieved through a further CO_2 reduction within the life cycle. The pricing for PECU products will develop based on the demand. First of all, the product must be on the market, and it is not there yet.

KÖPP has already secured the patent for the process to foam the innovative raw material. When PECU starts, we will be ready. Travelling light, towards climate neutrality.

Development headed by Dr Andreas Peine

"Travelling light, towards climate neutrality."

NOW IT'S GREEN –

PE now also available in Bio qualities

MANUFACTURER • PROCESSOR • DISTRIBUTOR • KOEPPCell® PE MADE BY KÖPP

"The same, but better." If this is the evaluation at the end of a development chain, it has certainly been a success. Market requirements are at the start and the end of every successful development chain. Our task this time: To produce EPDM and polyethylene in the usual KÖPP quality, but to make it 100% sustainable.

> "Getting the best from our working materials and raw materials is part of our philosophy."

After the first Bio EPDM was presented in 2021, we followed up with a Bio PE. The basis for the Bio label is the ISCC-certified raw material, which makes up a large proportion of the formula for PE. The rest comes from our own production surplus, which is fed back into the production chain as liquid and solid recyclate. As the production surplus comes from processing of raw materials that are ISCC-certified in any case, the circle is closed 100%.

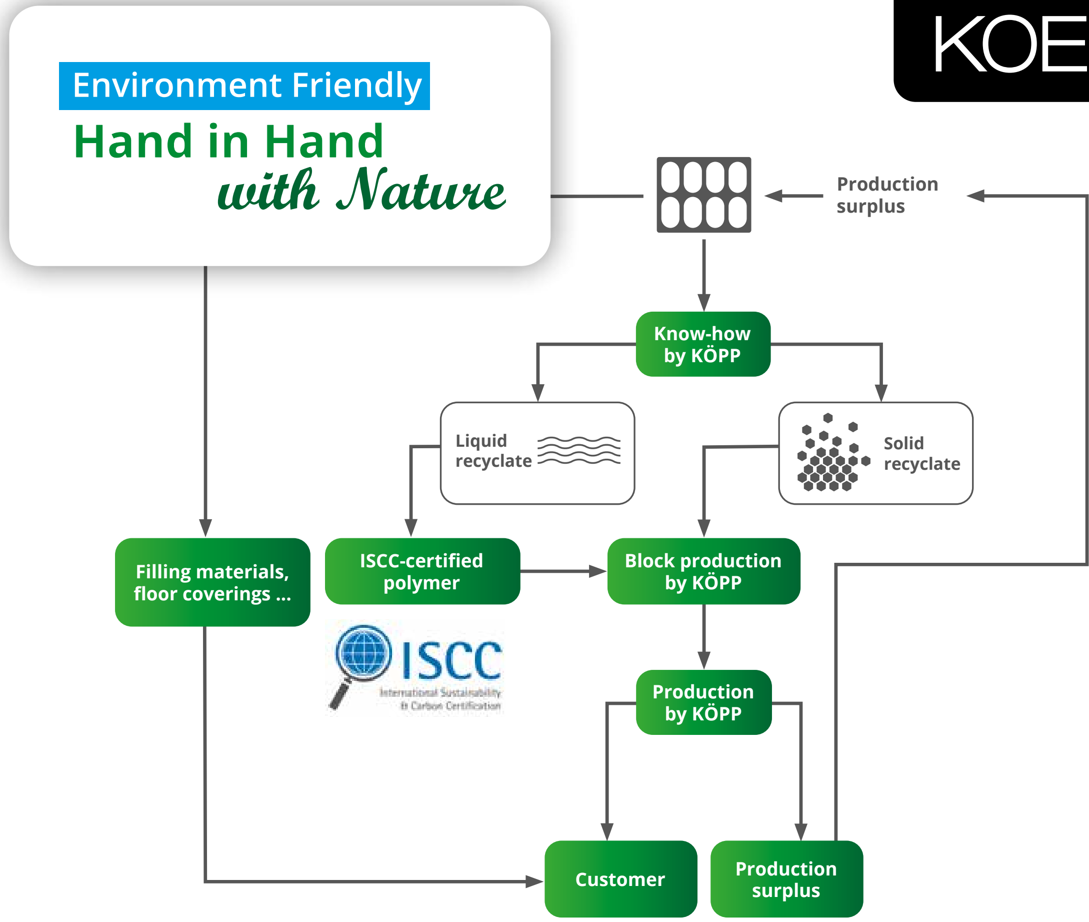
Between the individual production steps there is a wealth of expertise in development and processing comes in. At KÖPP, as always, we do as much as we can in-house, to be a one-stop-shop. Transforming production waste into solid and liquid recyclate, with help from a partner, remain in house, as does the processing of surplus into filling material. This helps us lower the CO_2 footprint compared to the conventional manufacturing process.

As good as ever: Consistent quality

The bio qualities have the same look, feel, and properties, such as compression set and elasticity, as the tried and tested KÖPP standard products. These enable the KOEPPCell® formulas. "The key is that we introduce the recyclate not just in solid form, but also in liquid form. In industry, it is more common to only add solid recyclate. In this way you can reduce manufacturing costs, but you have to accept considerably worse mechanical characteristics. Furthermore, only introducing solid recyclate is merely an exercise in "greenwashing". If you don't use sustainable raw materials, which are ISCC-certified in our case, you will never produce a green product at the end of it. This does not fit our philosophy, which states that we should get the best out of our working materials and raw materials," explains Dr Andreas Peine. Of course, bio products come at a price. But there is an adage that applies here: Demand determines price. "We have already successfully managed to position our bio qualities, e.g. in the packaging industry. This has already had a noticeable downward effect on price. There is still room for further reduction," observes Head of Sales and Marketing, Axel Wynands. Up until now, the customer had to pay around 20% more for the ecological alternative. However, Wynands is sure that this will change, as he has observed an increased interest among his customers in sustainable and climate-neutral products. The overall ecological footprint plays an increasingly important role for industry and for consumers. We certainly welcome this development!

100% sustainable

KOEPPCell®



Positive all round: 50 years of partnership with Porvair Filtration Group

For more than five decades we have been selling high-quality filter materials from the established English company, Porvair. **VYON®** has been in our range for many years and it excellently complements our **GURON®**. This is because the material is perfectly suited to filtration, ventilation or gassing, sound insulation, or as protection. We have recently been supplying many pipette filters for the medical equipment market. Demand shot up due to coronavirus testing. Apart from the pandemic and related increases in sales of filter materials, our collaboration with Porvair has also grown over recent years.

We celebrated our "golden jubilee" face-to-face, in any case. Porvair invited a group from KÖPP to visit them at their headquarters in the south of England: Filtering Technology Key Account Manager Victor Asselberghs, Head of Filtering Technology Laure Walter, Key Account Manager Julian Scherrers, and Head of Sales, Axel Wynands. After a site visit, including new clean room facilities, we enjoyed a meal together. Maybe a few useful ideas for collaboration came out of the meeting as well. There's a lot to look forward to. There is no limit to our successful and lasting partnership.

porvair

"PE filling foams reliable protection and they are environmentally friendly"

KEEPING THINGS CLEAN –

sustainable packaging chips for sensitive goods

Polyethylene is always a first choice for packaging material, for especially fragile and valuable exhibits or for goods that are subject to strict hygiene standards. This is because it has optimal cushioning properties, it is low in emissions, and it hardly absorbs any water. During production of closed-cell polyethylene foam and processing of stamped, moulded, and milled parts, there are, of course, production residues of high-value materials; from now on we will be reusing up to 100% of these in our production cycle. This is in the form of polyethylene chips, for packaging the goods described above, among other applications.

Since the start of the year, we have been selling PE chips, e.g. for packaging high-value machine components or lenses to be shipped abroad. The chips are used as consistently elastic air cushions, to cushion impacts and vibrations, to prevent them causing damage to the goods. The closed-cell structure prevents absorption of water and thus reduces possible corrosion.

There is no release of vapours that are harmful to health, no odours, and no abrasion. The list of positive product properties goes on. "However, one particular property is especially important to us for this product: the sustainability," stresses Managing Director Achim Raab. With PE chips we are not just closing our production cycle: they can be reused endlessly.

Indeed, there is nothing preventing further processing of the chips. As ever, production surplus made of polyethylene or cellular rubber is also used for manufacturing building protection mats or a soft surface for playgrounds and sports facilities.

MADE IN EUROPE

Great value, reliable, available quickly

EPDM-i: FOAM FOR INDUSTRIAL APPLICATIONS

"Attractive prices" and "Made in Europe": these two qualities are no longer necessarily in contradiction. Our EPDM-i now offers industry a closed-cell, soft elastic foam, which is consistently attractive to customers old and new, in terms of price, quality, and availability.

Short transport distances don't just make sense for the climate. Attacks on container ships, container ships that run aground, conflicts such as the Taiwan conflict, wars, and resulting extreme increases in transport costs – the list of recent difficulties affecting long supply chains from Asia is growing. "Made in Europe" does not just mean higher transparent quality, but also increasingly it stands for reliable delivery. This is because every production process must inevitably grind to a halt if important components are missing. This has been the painful experience of processors who have to wait for goods that were not produced in the EU, with increasing frequency over recent years.

It is all the better if products from Europe are also "absolutely within striking distance of qualities from the Far East in terms of price," stresses Head of Marketing and Sales, Axel Wynands. A good price is achieved by making better use of material in blocks. With a thickness of 75mm, there is very little waste. Low freight costs and other key factors come into play as well. However, the high quality standard of EPDM-i is clear to see, for example in terms of its high temperature resistance. "At Köpp, we don't mix in low-cost plastic," assures Dr Andreas Peine. No wonder, that the EPDM-i has already become one of Köpp's top sellers since it was brought to market last December. TOP quality – TOP price!

KEY MATERIAL PARAMETERS:

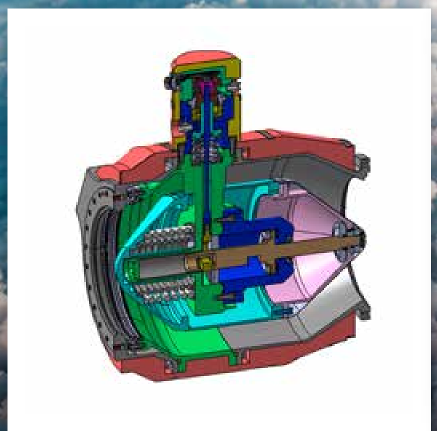
- Bulk density: 100 ± 20 kg/m³
- Hardness: 40 Shore 00
- Compression set:
  23°C, 50%: ≤ 65% (after 0.5 h), ≤ 30% (after 24 h)
  40°C, 50%: ≤ 80% (after 0.5 h), ≤ 50% (after 24 h)
- Block dimensions:
  2,000 x 1,000 x 75 mm, 2x Skin

For detailed information about our EPDM qualities, see the data sheets on our website.

READY FOR LIFT OFF –

The Ariane 6 also flies into space with our PU moulded parts

"Each individual component must meet the highest requirements."



Control valves of the Vulcain.2.1 rocket engine (left) and the Vinci® rocket engine – both with an insulation element (red) manufactured by KÖPP

KÖPP experts in foam

Absolutely reliable, high-quality materials, precise processing, proven quality. Aerospace engineering in particular sets great store by these characteristics. We felt it was a great vote of confidence in our quality policy that we have been commissioned once more to cast PU moulded parts for the "Ariane" booster rocket. "Cast PU is not really part of our range," explains Operations Manager Michael Decker. However, rejecting the order was not an option. The expertise and equipment are in place, as well as the desire to master this prestige project.

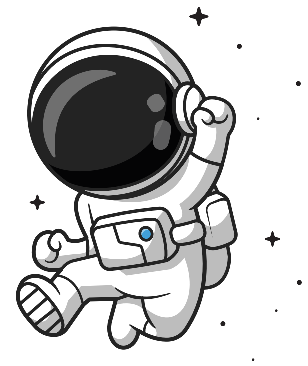
The special PU components are high security parts, which are used as insulation pieces for rocket engine valves in the main booster and the thrusters. This means that they must withstand extremely hot and also extremely cold temperatures and offer reliable protection against mechanical influences. The initially liquid polyurethane is therefore provided with additives, including glass fibres. Apart from this: Isocyanate, which finally foams the compound, presents certain problems during processing. To eliminate any risk for our staff, we have made a separate room, equipped with a powerful extractor system and climate control. When handling isocyanate, our staff also use appropriate protective equipment. When the isocyanate has fully reacted, the product no longer represents a risk to health.

From foam to component: Expertise from development to manufacture

Of course, manufacturing a foam is nothing new for KÖPP. The challenges with this special PU foam lay in the specific requirements of the Ariane Group regarding the insulating properties of the foam. To cut a long story short: Our development team quickly achieved the perfect mixture for the foam system. This was possible thanks to decades of experience. This also applies for the corresponding tools: Aluminium 3D-moulds into which the liquid PU foam is cast, and hardened using heat, without air influence of course, while offering the option of casting structures with complicated undercuts. The moulded parts get their final material properties from the surface treatment and the manual finishing.

At each step of this development and manufacture process, there is a lot of expertise and attention to detail. This makes us especially proud, and we feel we are a small integral part of the large "Ariane 6" mission.

KÖPP in space ... how about that!



On a mission to meet demand:

NEW SPLITTING MACHINE FOR INDIA

Hardly any economies are growing as fast as India at the moment. We are noticing a steadily increasing demand for sheet products and EPDM foam in general at our joint venture in New Delhi. We have been producing all common EPDM qualities there for the Indian market for more than 10 years. We now have an automatic splitting machine at our joint venture to increase production and ensure safety. The H24A splitting machine, which we painstakingly improved through a retrofit, has now been handed over to our partners. The controller and the switch cabinet were replaced, as well as all important mechanical components. It is now "as good as new", and it is the first automatic band knife splitting machine in India. It has a great advantage in addition to high surface quality and precision: It only requires one operator to cut blocks and sheets made of different materials precisely into layers with very low tolerances.

Production has started. We are well-equipped and focused on the future.

ANNIVERSARIES 2024

10 YEARS	START DATE
Jansen, Reiner	01/02/2014
Öczan, Metin	01/02/2014
Grüttner, Dirk	17/02/2014

25 YEARS	START DATE
Rosenzweig, Gabriele	01/02/1999
Guel, Ibrahim	09/02/1999
Frankort, Nikole	04/03/1999
Hirsch, Manfred	26/05/1999

40 YEARS	START DATE
Schwarzer, Rolf	16/07/1984

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