



# NEWS

NOV 2018

## Envisioning Tomorrow

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### PLASTICS & RUBBER GOES GLOBAL

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**Material with  
added value**

*Circular Economy - Part 1*

**Focus on  
contemporary issues**

**Medical  
progress**

**Perfect  
protection**

**Well positioned  
in the global market**



# Focus on contemporary issues

Humankind is facing serious global challenges, from climate change to digitisation, and these are the result of human activities. It is our responsibility to control this development with sustainable, pioneering solutions in order to ensure that our planet will remain a hospitable and habitable place for generations to come. The international plastics and rubber industry that will meet at Messe Düsseldorf's exhibition centre for K 2019 in October next year is well aware of its responsibility and will address the issues with the seriousness they deserve.

**Polymer performers**  
Climate and environmental protection, food and a

supply of clean water are among the most important and challenging issues faced by humankind. Tackling them will require vigour and sustainable strategies that also take a critical look at consumer behaviour. Scientists have found that in 2018, we had completely used up the estimated annual share of the earth's available resources by 1 August of that year, and that we reach the so-called "earth overshoot day" sooner every year. In order to avoid restrictive measures that would infringe on individual freedom and the right for self-expression, we must find an increasing number of sustainable solutions that can improve the future. More than ever, low-emission, energy-

efficient methods and technologies are in high demand, as are smart, high-performance materials that are perfectly adaptable to the application in hand without placing a burden on the environment. In this context, polymer materials make a valuable, pioneering contribution. Already, they have proved their worth in virtually all areas of application, from packaging and food conservation to environmentally friendly electricity generation and traffic-emission reduction. Plastics and rubber are prerequisite for many modern applications.

## Tackling challenges

Yet, polymer materials also present us with major challenges – and not simply because of the problem of their disposal after use. Plastics and rubber are valuable materials, which can be produced in a sustainable way and, ideally, should be reintroduced into the production cycle, i.e. be reused to make high-quality products. This requires a certain type of material design, which guarantees a high

recycling quota and a maximum recovery of high-quality recyclable constituents. The plastics and rubber industry are addressing these aspects and are offering interesting solutions. This is also shown by a current survey on the material stream situation for plastics in German: "Stoffstrombild Kunststoffe in Deutschland 2018", conducted by the plastics associations PlasticsEurope and its partners, which proves that recyclable polymer materials are becoming an increasingly popular alternative and have emerged as an important starter material for new plastics products. The K 2019, which will take place from 16 until 23 October, will show the potential, opportunities and what the industry is currently working on in cooperation with a variety of institutes. Become a witness, take part in this event and see for yourself how the industry is writing history.



Science or fiction?  
Do plastic hearts beat?

# Medical progress

Lizards shed their tail in order to distract predators and it regrows later. When a tarantula loses its legs, it is genetically equipped to grow a new one. Compared to these animals, the regenerative capacity of humans is quite limited. Broken bones, skin and tissue damage may heal, but when it comes to losing whole body parts and functions, the human organism cannot heal itself. When organs fail, the patient invariably requires a donor transplant in order to ensure survival. However, what happens when a suitable donor organ is not available? Researchers all

over the world are working on the development of artificial organs and prosthetics that will improve the patients' quality of life. Their development relies on high-performance functional materials that are not rejected by the human organism. Many polymer materials have the perfect properties for medical purposes.

## Versatility in application

Plastics have been established as medical materials for a long time, not only in the production of dentures. Lenses made from acrylic glass revolutionised ophthalmology and artificial corneas

are now made from plastic. The use of plastic cannulae, infusion and blood bags or disposable syringes has minimised the risk of infection. Artificial heart valves, artificial joints and blood vessels, as well as many other implants, are also made from plastics. The ultimate challenge is to manufacture a plastic heart that is virtually identical to the real organ in size, form and function. Outstanding achievements have already been presented in the field of orthopaedics. Plastics support the abdominal wall, correct deformities such as calcalear spur and improve or even partially replace the

function of mobile body parts such as hip or knee joints. Plastic prosthetics and orthoses take over or replace the body parts' main functions. Experts are currently discussing the potential advantages of athletes with carbon fibre prosthetics over those without disabilities. K 2019 will also present top polymer achievements.

# Perfect protection

When it comes to protection from head impact or shock injuries, as well as protecting car passengers from impact injuries during accidents or even to safely seal off liquid-based systems hence preventing leaks, plastic and rubber materials have the best protective properties. In their role as protectors, polymers are simply unbeatable, and offer an incredibly diverse application spectrum.

## Materials work and warn

With their polymer armour below the football shirt, American footballers often look like modern knights. Police officers protect themselves from injury by wearing bullet-proof vests made from a special polymer fibre and material mesh, laboratory workers wear rubber gloves for protection from dangerous chemicals. Motorbike riders, construction workers, parachute jumpers, mountain climbers – they all wear protective helmets made mostly from plastics. One thing is crystal clear: suitable protection gear can save lives and protect those who wear it from injuries. Their usefulness is increased when they not



only offer perfect protection, but also enhance comfort. No natural material can deliver both, protective properties and comfort, but polymer materials can. No wonder that they are the dominant ingredient of any personal protection gear: plastics are lightweight and they can be designed to withstand extreme pressure, high impact and chemical effects. Several polymers can be combined to achieve high-tech products that

offer many required properties. Take film used for food packaging as an example: wafer-thin, they are extremely impact-resistant and sometimes even downright smart. Sophisticated bonding technology combines several polymer layers. Together they protect flavours and allow vapours to dissipate while still protecting the food from germs. Some film will even send warning signs when the product is spoiled.

## Better hygiene thanks to plastics

When they are dealing with epidemics, medical staff will wear protective polymer-based suits. The fact that they are disposable prevents accidental pathogen contamination.

Circular Economy.  
Read  
Part 1 of 3  
on this pioneering  
topic within the  
plastics and rubber  
industry.

# Material with added value

## Circular Economy – Part 1

**M**oney doesn't grow on trees, as they say, but often it lies right in front of us: every carelessly discarded PET bottle is a loss of valuable resources. That said, however, collecting these PET bottles and reintroducing them into the material cycle is well worth the effort. Purified polyethylene terephthalate (PET) is the perfect starter material for high-quality products such as bottles, film or fibres.

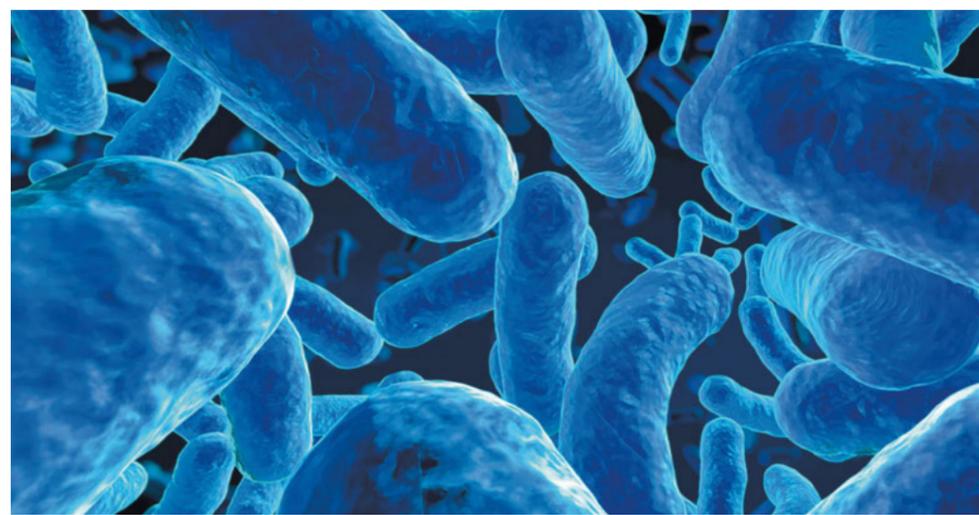
**Collect and recycle**  
Despite the rising proportion of regenerative resources in polymer material, it is still predominantly made from crude oil. Thermal recovery of PET after its life cycle is a

tried-and-tested approach, but it releases emissions that are harmful to the environment – as is the case with conventional combustion processes. This method also wastes valuable material that could be put to much better use by the industry. In contrast to other plastics, which are copolymers, PET is a monopolymer with high-quality properties and is, as such, almost unique in its perfect suitability for recycling. The German population's passion for collecting PET bottles was triggered by the introduction of a deposit return system, which led to a highly successful return rate of up to 98%, according to a publication by Forum PET. About one third of

the returned bottles is reused to make new PET bottles, another third is used for industrial film and about one fifth goes into the production of textile fibres. The use and deployment of recycled PET products obviously inspires new ideas among companies, namely to reuse PET bottles for the production of school bags, jumpers and trainers, as well as film for furniture and car parts.

**Preparing the ground**  
The thriving business with disposable PET bottles is supported by the introduction of central collection hubs, where manually introduced bottles are crushed and compressed by a compactor. At the

recycling plant, the material is sorted and cleansed, then shredded into fingernail-sized pieces, which can be plasticised and turned into pellets – the starter material for the production of new, high-quality plastic products. Other industrially endorsed collection systems are also in place for recycling plastic window profiles and used agricultural film. Scientists are already working on the biotechnological optimisation of the plastics recycling process. They are conducting tests with bacteria and enzymes that digest and break down polymers into their basic constituents. This interdisciplinary approach holds potential for new jobs, which is likely to be put into practice. Plastics are materials with added value, which, when collected and segregated, can easily be reintroduced into the material cycle. Efficient recycling will become increasingly important – and will be a major issue at K 2019.



# Well positioned in the global market

One World. One Gate.



YOUR GLOBAL GATE  
FOR PLASTICS AND RUBBER



**M**odern logistics and international trading have become relatively easy thanks to our globalised world, that turns even faraway countries into neighbouring markets. The success of global businesses however, does not depend on bridging long distances, but on good contact and interaction with customers – it is important to stay in touch and to remain present in the market. Messe Düsseldorf and the K trade show's Global Gate is a perfect communication platform for interested companies.

**Global Gate**  
Entrepreneurial success relies heavily on direct interaction with customers. Meeting and greeting these customers at trade shows has proved to be a central cornerstone of every corporate communication strategy. While domestic trade show activities are easy to organise and relatively low-maintenance, planning and organising a company stand in Moscow, Algiers, Dubai, New Delhi, Bangkok, Shanghai, Jakarta, Ho Chi Minh City or at other events in future markets can quickly become a Herculean task. This is why

Messe Düsseldorf and the K trade fair have decided to open a "gateway to the world" for global players in the plastics and rubber industry. Based on many years of professional experience and backed up by a competent network of 7 subsidiaries and 71 foreign representations in 132 countries, the Messe Düsseldorf Group is perfectly equipped for supporting customers with its comprehensive, worldwide service portfolio that ranges from trade fair planning right through to logistics consultancy.

**Perfect network**  
Locating the perfect place, setting up the stand, recruiting suitable service personnel as well as logistics, travel and itinerary services – the "Global Gate" ([www.k-globalgate.com](http://www.k-globalgate.com)) offers companies from the plastics and rubber industry an all-round service. Our experienced, organic Global Gate team will assist them, having gathered extensive experience during decades of service. We know what makes trade fairs successful: the K is the global flagship fair for the plastics and rubber industry – for a good reason.

