Cellasto® Components Complete Industrial Products
Perfect products are either ...

When they reach their mechanical end stop, crane buffers made of Cellasto are compressed by up to 75% of their original length. This large spring excursion ensures the desired short delay and thus safe operation of the crane.

Contact discs coated with Cellasto are employed for roughing and grinding work carried out by automatic grinding machines. Cellasto is highly resistant to abrasion and so its durability is several times greater than that of rubber.
... purely natural or naturally out of PUre Cellasto

Modelled on nature

Why is an egg oval shaped and not round or square? Why do certain kinds of animals have their eyes on the sides of their heads and others at the front? Why is the coat of the Polar bear white and that of the Grizzly a greyish-brown?

Nature has adapted each detail perfectly to suit the ‘specific requirements’ of life. Only the best solutions survive. The ‘Survival of the Fittest’ principle has successfully established itself over millions of years of evolution.

We at BASF work on the basis of a similar principle. We want to improve technical products, to perfect them and to prepare them well for the ‘battle of life’. This is what we are well armed to do:

• with the multi-talented material Cellasto, a special microcellular elastomer made by BASF and
• with the know-how of our engineers which has grown over decades

This brochure aims to give you an overview of the extensive variety of applications in nearly all areas of industry.

BASF and Cellasto: since good is just not good enough

We only develop solutions which are both state-of-the-art and economical. The units responsible for development, construction, production and sales of semi-finished products and components ensure that this motto is observed at all times through:

• products which meet the requirements of the market
• rigorous product testing in accordance with the application and utilization of the finished products
• employment of state-of-the-art tools such as CAD and FEM MKS
• the competence of BASF, one of the world’s leading companies in the field of special microcellular elastomers

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All Cellasto components from one source: from development and production through to sales and distribution

Dirty bearings increase wear and destroy the precision-finished sliding surfaces. Remedy: seals made out of Cellasto.

Conveyor belts coated with Cellasto excel due to their excellent grip and high tear propagation resistance thus rendering them extremely safe, particularly for the transportation of flat glass.

Fillers made of Cellasto level out rail grooves at level crossings thus enabling cyclists to cross tracks safely. Railway vehicles press down the fillers with their wheel flanges when driving over them.

Impact energy absorption and peak load damping combined with supreme reliability: applications for Cellasto.
Noise and vibrations can get on your nerves ...

Anti-vibration and end stop elements made of Cellasto have stood the test even under the most difficult operating conditions.

Moulded Cellasto components are fitted into friction dampers for vibration absorption. Even when used under permanent high pre-stress the durability of these damping systems matches the durability of a washing machine.
The chain saw roars, the washing machine hums, the razor buzzes … Noise and vibration everywhere: both at home and at work. Our environment is increasingly ‘polluted’ with acoustic ‘rubbish’. Both acoustic and impact vibrations have a negative effect on our well-being.

| Environmental pollution caused by vibrations can be avoided. |

Generally it is impossible to eliminate all vibrations, yet it is definitely possible to reduce their negative impact: through sophisticated design of the damping elements and through the use of the vibration-absorbing material Cellasto.

| Cellasto absorbs the vibrations |

Enhanced acoustic isolation has been demanded for many applications in the field of Noise, Vibration and Harshness (NVH). The goal: on the one hand to achieve low damping at low amplitudes and high frequencies and on the other to achieve rapid damping for strong movement of large masses. Cellasto meets the challenge of these seemingly contrasting requirements.

| Good vibrations with Cellasto |

In the field of vibration and noise isolation, Cellasto support elements dampen impact noise. Cellasto makes its mark due to its extremely low dynamic stiffening even at high frequencies.

… Cellasto can soothe them

With moulded Cellasto components, vibrations in tumble driers can be dampened directly at the point of origin.

Reliable engine bearing in confined structural space. Noticeable benefits for the user: the razor is much quieter and its vibrations are reduced.

Fatigue-free work with the vibration compactor: damping elements made out of Cellasto reduce unpleasant vibrations to hands and arms.

Vibrations caused by load change of engines are efficiently reduced through torque supports made of Cellasto.

| Amplitude Selective Damping |

Clearly visible: the steep rise in loss angle with increasing amplitude for all material densities.
Maintenance-free suspension systems for industrial trucks: the Cellasto suspension elements absorb severe impacts, reduce vibration and noise whilst maintaining driving dynamics.

Optimal tuning of driving comfort in high-performance shock absorbers of mobile homes through progressive Cellasto spring aids.
When powerful energies bump into one another

When Sumo wrestlers bump into each other colossal impact forces are released. Weighing 180 to 200kg the wrestlers try to bounce off the bulk of their opponents whilst putting more force into their own attack. What these flesh and blood giants can do by occupying a lot of space, a little lump of delightful roly-poly made of Cellasto can do much better and in a much smaller space.

The trump card is volume compressibility

Due to its cellular structure Cellasto can be compressed so much that the cells virtually disappear and a homogeneous-elastic structure is achieved. This property allows for a spring deflection of 80% of their original height for Cellasto components whilst hardly changing its transverse dimension. This volume compressibility gains importance against the background of a confined surrounding structural space, such as inside a spring strut. Both volume compression and energy absorption of the material can be adjusted through the density of the Cellasto springs. Remember: compact materials such as rubber are not compressible and therefore show extreme transverse expansion when under pressure. Even steel coil springs attain well below the values achieved by Cellasto.

Second to none

Apart from its volume compressibility the polyurethane elastomer Cellasto also stands out with a number of further properties:

- high tensile strength and breaking strain
- excellent impact strength
- high abrasion resistance
- maintenance of elasticity at low temperatures and resistance against oils, grease, petrol, ozone and ageing
- high impact resilience
- high reset force – even under long-term loads
- low compression set
- no coagulation of cell walls

Cellasto is extremely well suited for spring and damping elements in road and rail vehicles.

A double link axle with Cellasto springs: good damping effect with both full and empty tanks. Leveling is not necessary as the spring travel difference between full and empty load is minimal.

It limits the axle mechanisms and dampens the starting impact. Cellasto in aircraft towing tractors.

More comfort and safety on two wheels: this suspension fork dampens the effects of uneven road surfaces through Cellasto spring elements.

Cellasto as a multifunctional spring system to adjust the position of both seat and backrest, as end stop and in height-adjustable gas pressure springs.
Extremely high resilience at minimal setting behaviour renders Cellasto ejectors suitable even for high-speed punching machines.

Cellasto conveying rolls have a long operating life and fold even wafer-thin paper quickly and without creasing.
... Cellasto components with feeling ...

<table>
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<tr>
<th>... for sensitive machines</th>
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<tbody>
<tr>
<td>There are machines with a sensitive touch, cash dispensers, for instance. The sensitive ›fingers‹ inside them never make a mistake and always hand out the correct sum.</td>
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<th>Good grip, absolute reliability and good durability are the demanding specifications</th>
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<td>Cellasto transport and counting rolls meet, e.g. in cash dispensers.</td>
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<th>Even under pressure: soft and elastic</th>
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<tr>
<td>Even during deformation, caused by compression, for instance, the hardness and thus the grip of Cellasto remains nearly unchanged, an advantage for the transportation of paper on conveyor belts with Cellasto coating.</td>
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<th>Ejectors at the service of die cutters</th>
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<td>When packaging material has been punched out of cardboard it needs to be pushed out of the die cutting tool. The material which is designed for the job on the die cutter is Cellasto. Cellasto shows the lowest dynamic load-related creep of all elastomers. The low increase in deformation means that Cellasto parts return to their original position as soon as the compression phase is terminated; and this for over a million cycles without any loss of performance.</td>
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<th>When Cellasto starts rotating</th>
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| When Cellasto coatings rotate, for instance on fast moving rolls in the printing industry, Cellasto never loses its shape. Being both abrasion-proof and lightweight, Cellasto simply runs and runs and runs.

Good grip, absolute reliability and good durability are the demanding specifications Cellasto transport and counting rolls meet, e.g. in cash dispensers.

Mortice dead lock with a multi-functional Cellasto spring element for soft stops and silent spring deflection.

Printing rolls need compressible coatings out of Cellasto for a consistent and high reset force.

Cushioning comfort for Nordic walking sticks through a linear coil spring combined with a progressive Cellasto spring.
Foils which are up to 10mm thick and 400mm wide are sliced out of cylinders. The basis for a great number of technical items: Cellasto blocks and slabs. The parts and plates are formed by punching as well as water jet and conventional cutting.
It does not matter whether you are tall or short, big or slim: many fashion houses provide first class garments directly off the peg in the ›standard‹ sizes men and women wear. The advantage is obvious: the clothes fit as if they were tailor-made, whilst being much less expensive and prêt-à-porter.

| If it is good enough for fashion houses, it is good enough for Cellasto |

Our ›ready-to-wear‹ range comprises 1,500 different products which were originally developed and produced for the automotive industry world-wide, 90% of which has opted for Cellasto damping elements in their undercarriages.

We can draw from this pool of 1,500 geometries of moulded parts and spring characteristics to develop a solution for any task you ask us to accomplish.

And this is how we work: in close co-operation with you we develop the specifications to get a ›blueprint‹ for your product. Then we check if we already have a product with similar features in our pool. If necessary we can modify it to meet your requirements.

Special requests from customers are turned into reality without delay. For custom-made products our team of designers is at your service.

| Tailor-made products off the shelf |

Small quantities of rotation-symmetric parts are manufactured at low cost from Cellasto tubes and bars through cutting, milling and turning.

Plane-surface parts are shaped by water-jet and conventional cutting as well as punching. For special applications Cellasto is also available as sliced foil up to 10mm thick.

Both spring elements and standard springs with foamed-in mounts, which can be used for a wider range of applications, are available from stock. This also applies to our complete range of mounts for lifts and crane buffers.

- Cellasto cylinders are used for finished parts which are given their final shape by cutting, turning and milling.
- Cellasto tubes are the preferred material to punch or turn tubes and seals.
- The Cellasto product portfolio for lifts: overrun and cable buffers, guide shoes and guide shoe housings tested and approved by the German Technical Inspection Authority (TÜV).
- Pre-fabricated spring elements made of Cellasto for applications which are utilised to cushion impact gently and to absorb high energies.
Trivia helps to hit the bulls eye ...
... yet hitting the target is not a trivial matter

| The whole is only as good as the sum of the parts |

The finished product is only as good as its individual components. For this reason you can obtain our products from one source only: from development and construction to component optimisation and production to sales and distribution all steps are both executed and closely monitored in-house.

| The quality of the components |

As an active participant in the automotive industry BASF meets strict guidelines and specifications. This means in turn that we operate at a level of quality which goes far beyond what is demanded of other industries.

To accomplish such demanding tasks BASF draws on a long tradition of expertise and experience in both engineering and chemistry. State-of-the-Art calculation and testing equipment supports our engineers during their work.

The facts:
- acoustics laboratory
- FEM (Finite Elements Method)
- FFT (Fast Fourier Transformation) analyser
- hydropulser
- shaker
- Adams simulation software
- test vehicles
- specific technology for component testing

| Perfection plus innovation |

Striving for perfect solutions and products: our heart beats faster when it comes to innovative products. Our goal is to make the seemingly impossible a reality with our customers. Our offer: you explain your problem. We make your task ours and together we devise an innovative solution.

Physical testing of Cellasto components with the drop tester or hydropulser. Depending on specifications up to several million cycles.

Static load-related creep

Time [h]

Compression [%]

The chemical development is key to success of Cellasto components.
Leader in its Field

BASF is the leading supplier of polyurethane basic products, systems and specialties. With its global network of 36 polyurethane System Houses and its comprehensive product and service portfolio, BASF is the preferred partner of its customers in many industries. With its world-scale plants BASF secures its leading market position in the manufacture of polyurethane basic products in all regions of the world.

In the European Economic Area BASF Polyurethanes GmbH is running the BASF polyurethane business via its 14 System Houses. In Europe, BASF is both the market and technology leader of polyurethane systems and polyurethane specialty elastomers.

Individual Innovations

No matter which PU application is involved – BASF turns the apparently impossible into an innovative reality. In close project-related co-operation with the customer our specialist teams of chemists, physicists, engineers and sales experts develop tailor-made, creative and economic solutions. We create a solid and reliable base with our customers through both active dialogue and combined experience. Our sectoral applications technology which stretches throughout Europe is strictly focused on value added benefit.

Working hand in hand with our customers

In the highly service-oriented polyurethane systems and specialties business, experience and expertise are what customers require. With its network of System Houses, BASF offers fast local support in the development of individual solutions, including technical service, sales and marketing. BASF ensures reliable supply of basic polyurethane products like MDI, TDI and polyols on a global scale from the company’s world-scale plants.
Quality Management

Customer satisfaction is the basis for sustained business success. Therefore, we want to meet the customers’ requirements for our products and services now and for the long term futures.

To ensure success in a reliable way, we introduced a quality management system several years ago including all divisions. Each business process is regularly assessed and further developed based on informative performance indicators. The target is to reach optimum efficiency and almost perfect coordination of all activities and operations. Each employee is asked to make a contribution to quality assurance and continuous improvement with its capabilities and ideas at its workplace.

Our quality management system is based on the international standard ISO 9001, supplemented by the additional requirements of the automotive industry ISO/TS 16949.

Responsible Care®

BASF supports Responsible Care, the worldwide initiative of the chemical industry, and thus commits itself to continual safety, health and environmental protection.

For us Responsible Care is an issue for safety, health and environmental protection, which – for the sake of environmental sustainability – is considered as being a corporate value as important as economic criteria for boosting the company’s success.

The whole process of development, production and storage of our products as well as their transport, application and finally also their disposal or recycling is evaluated and continually further developed with respect to the reduction of possible environmental impact.

This includes, in particular, the protection of resources as well as prevention of emissions and waste. We appropriately inform customers, partners and neighbours about environmental aspects of products and processes. Our environmental management system is geared to the guidelines of Responsible Care and meets the requirements of the international standard ISO 14001.

Recycling

Methods for recycling polyurethanes are as diverse as their use. In order to find the right method, it is necessary to clarify their specific origin and use.

Alongside thermal re-utilisation of PU products, the recycling of production waste also plays an important role. The following processes are already being introduced on a practical scale:

- Flock-bond
- Particle-bond
- Chemical recycling
- Raw material processes

It is generally not possible to state whether such processes are more ecologically beneficial than thermal re-utilisation.

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