



Bayer MaterialScience



VULKOLLAN[®]

**THE MATERIAL
FOR
WINNERS!**



BaySystems

customized polyurethanes



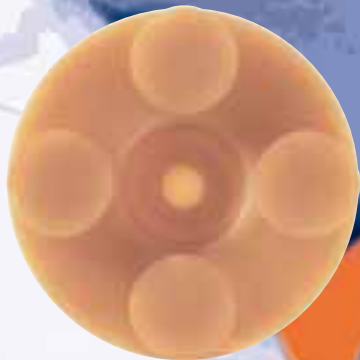
Let **Vulkollan®** boost your performance!

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HIGHEST MECHANICAL LOAD-BEARING PROPERTIES
OPTIMUM DYNAMIC LOAD CAPACITY
FORMULATED FROM DESMODUR® 15



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Enjoy the benefits of one of the world's top-performing design materials with Vulkollan®!

A rubber-elastic material, Vulkollan® is a polyurethane elastomer based on naphthylene-1,5-diisocyanate (Desmodur® 15), polyester polyol, and special chain extenders.

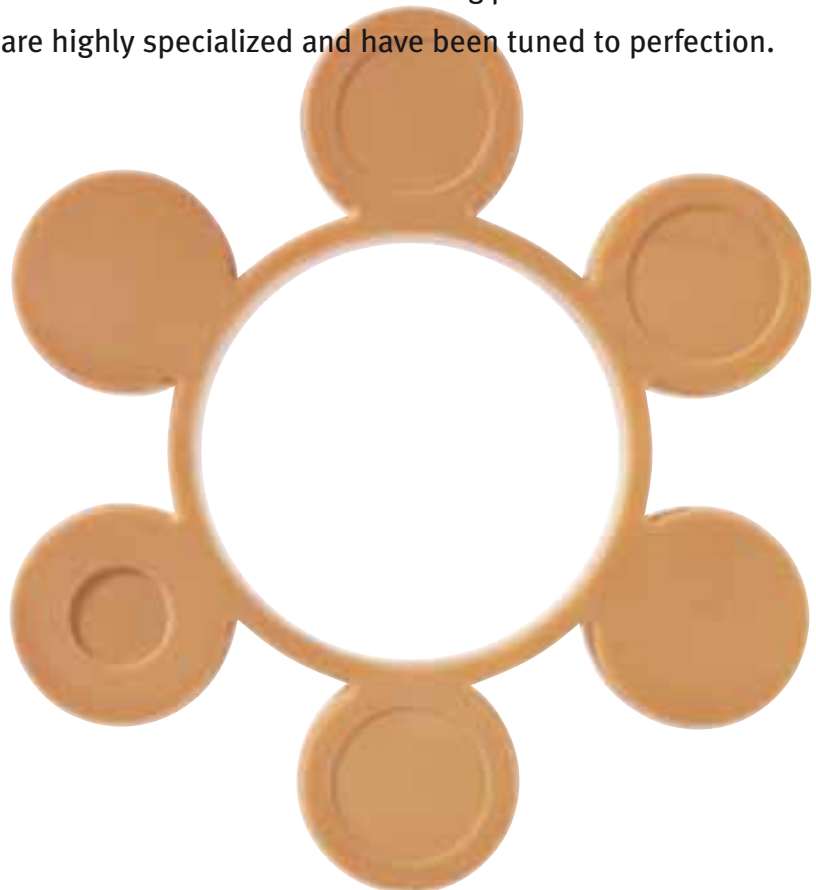
Vulkollan® is both a true classic and one of the most innovative plastics in the world. First developed in the 1950s from polyurethane, which Otto Bayer invented in 1937, the hot-cast elastomer Vulkollan® quickly won industry over.

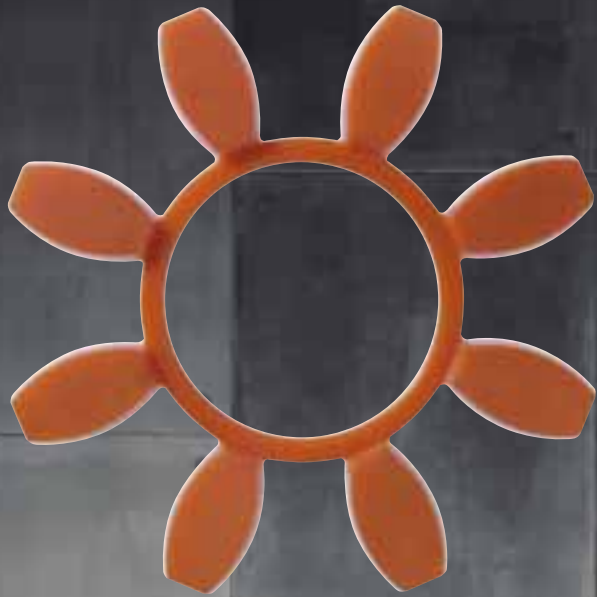
Today's users can benefit from a wealth of experience in the application of Vulkollan® and take full advantage of the unique properties which this Desmodur® 15-based product offers.

Exceptional performance properties make Vulkollan® the material of choice whenever other candidates fail to make the grade. Even steel and rubber are increasingly being replaced by Vulkollan®.

The formulations and manufacturing processes for Vulkollan® are highly specialized and have been tuned to perfection.

A success in many areas, Vulkollan® is often the best solution.







olid Vulkollan® makes light work of heavy-duty tasks.

Solid Vulkollan® really shows its strengths when it comes to heavy-duty tasks with load peaks. Whenever exceptionally high wear resistance and excellent mechanical strength are the order of the day, Vulkollan® is the material of choice for many users.



Loop-the-loops at maximum G-force. As they climb and fall, make sharp turns and fly round dizzying loop-the-loops, the wheels on roller-coasters are subjected to immense amounts of force and need to be made of a material that can withstand serious strain. Vulkollan® wheel coverings deliver high dynamic load resistance to ensure long-lasting functional reliability. Their high elasticity allows quiet, smooth running.



Fully-automatic transfer from high-bay shelving to pallet. Reliability is crucial for electrical suspension tracks and other conveyor systems. After all, unexpected or extended periods of downtime and repair work can wreak havoc with a company's logistics plans. Vulkollan® helps ensure smooth, reliable operation.

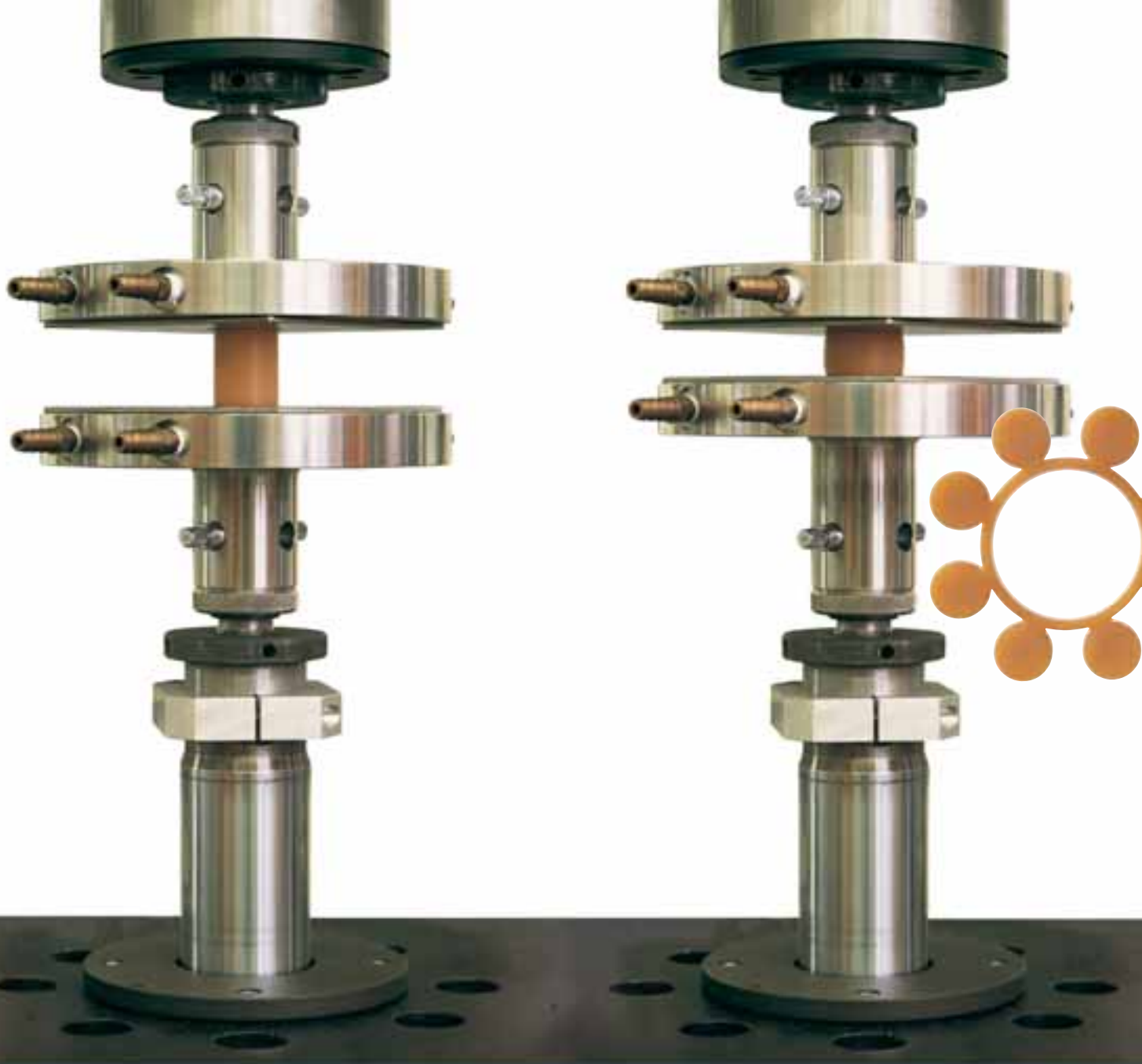


Quiet wheels for the heaviest loads. Cutting-edge goods supply systems call for increasingly efficient logistics centers. These require forklifts and order-picking vehicles which can move heavy weights around quickly and reliably. Vulkollan® wheel coverings boast excellent mechanical and dynamic load-resistance properties, and also offer high processing speeds, long service-life, and outstanding elastic recovery.



From the basement to the top floor. And down again. Elevators are always on the move – some of them run almost constantly, day and night. Vulkollan® guide rollers guarantee passengers a high standard of safety and the reassurance of a quiet ride. For elevator manufacturers and building owners, Vulkollan® provides a high level of reliability in a cost-effective manner.





Vulkollan® properties depending on hardness

Mechanical properties	ISO test	Unit	Shore hardness A/D			
			83/29	89/35	92/36	95/40
Density	868					
	1183	Mg/m ³	1.26	1.26	1.26	1.26
Tension at 100 % stretch	37	MPa	4.3	5.9	8.0	10.6
Tension at 300 % stretch	37	MPa	7.8	10.4	12.8	15.8
Tear resistance	37	MPa	50	5.4	53	42
Elongation at break	37	%	660	700	740	692
Tear propagation resistance	34	kN/m	31	38	54	67
Rebound resilience	4662	%	65	64	62	61
Abrasion	4649	mm ³	37	32	28	26
Taber (S42/4.9 N)	9352	mg	3.5	4.0	6.1	7.5
Compression set	815					
70h/23 °C		%	8	9	10	14
24h/70 °C		%	18	19	19	20



Optimum mechanical properties: Top marks in all disciplines!

Shore hardness:

This is a measure of indentation resistance, and involves a sprung needle and a scale of 1 to 100.



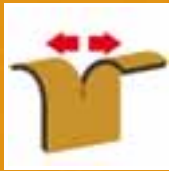
Tensile strength:

Vulkollan® has very high strength values. Test pieces can be stretched to over 7 times their original length before they tear.



Tear propagation resistance:

High tear propagation resistance ensures reliable material function, even when components are damaged.



Abrasion:

Abrasion is measured using a variety of methods. Low abrasion values mean high wear resistance.



Compression set:

The degree of deformation and recovery is assessed. Low values mean low permanent deformation.



Rebound resilience:

The higher the rebound, the less energy is absorbed in the elastomer and converted into heat.

Vulkollan® boasts outstanding mechanical properties. These include low values for abrasion loss, high tear resistance, and impressive tear propagation resistance, as well as excellent compressive deformation and rebound resilience.

All in all, this makes for a high mechanical load-bearing capacity, a particularly valuable property for roller covers, doctor blades and vacuum grippers on industrial robots. Companies everywhere take advantage of the outstanding properties of Vulkollan®, its long service-life and its low-maintenance costs.

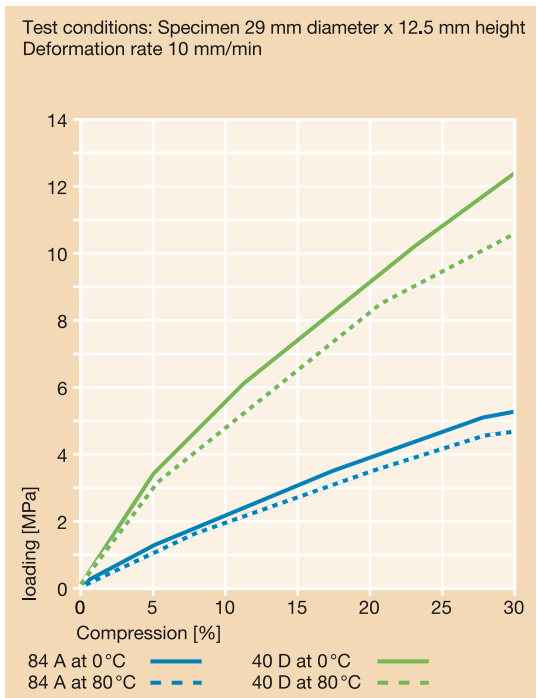
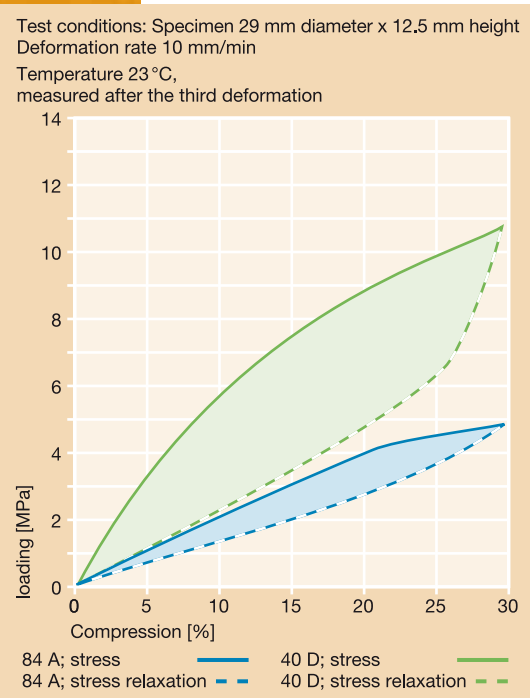
In order to provide customers with key data for planning purposes, we use different measuring techniques to test and document the mechanical properties of the various grades of Vulkollan® we offer. Some of the results are shown in the adjacent table.



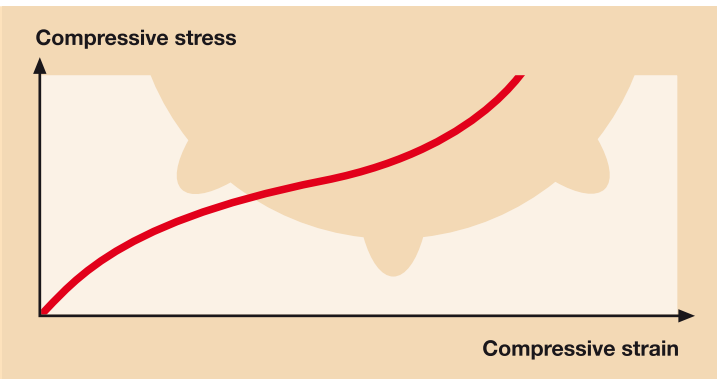
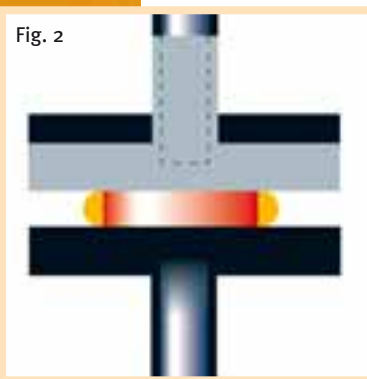
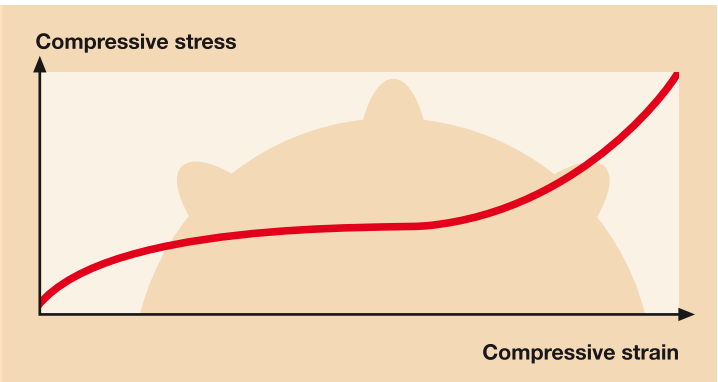
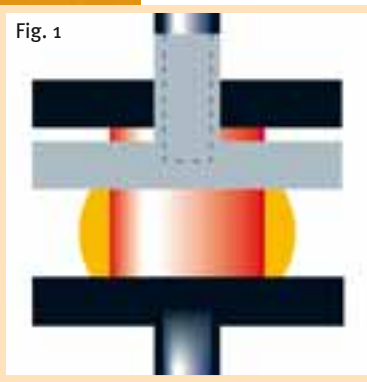


Excellent performance: Low energy loss and impressive set behavior.

Low energy losses with high thermal stability. The stress application and removal curves for Vulkollan® lie extremely close together and demonstrate the low energy losses of the product. This is particularly advantageous with repetitive and sustained dynamic loading. The compressive deformation curves show the extraordinary thermal stability of Vulkollan®. Deformation is calculable and almost constant across a wide temperature range. This is an important factor in reliable, safe material function.



When assessing how materials behave under compressive stress, the geometry of the test piece is a very important factor. Fig. 1 shows how the material demonstrates a much “softer” load deflection curve when tall, thin test pieces and low deformation speeds are used. Testing identical material using short, broad test pieces and high deformation speeds produces much “harder” curves (see Fig. 2). Polymeric plastics only show near-linear deformation behavior at the lower end of the deformation scale, i. e. < 5 percent. Their spring characteristics change at greater deformation levels.



es, high thermal stability



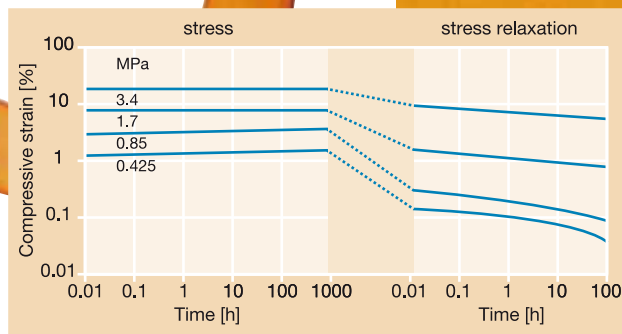
Suitable for any application and consistently, dimensionally stable. At higher deformation levels, it is important to look at the material's set behavior as well as its spring characteristics. The compressive deformation performance of Vulkollan® subjected to sustained loading can be demonstrated using the tensile creep test based on DIN 53444. At constant load, the level of deformation increases slightly over time.

When the load is released, the deformation corrects itself and the elastomer "recovers". The higher the temperature and the greater the load, the more pronounced the permanent deformation.

At low load levels and temperatures below 20°C, the deformation disappears almost completely.

This advantage of Vulkollan® is beneficial to users of rollers and wheels, as it ensures smooth functionality despite long periods without movement.

These properties are also useful in sealing applications.

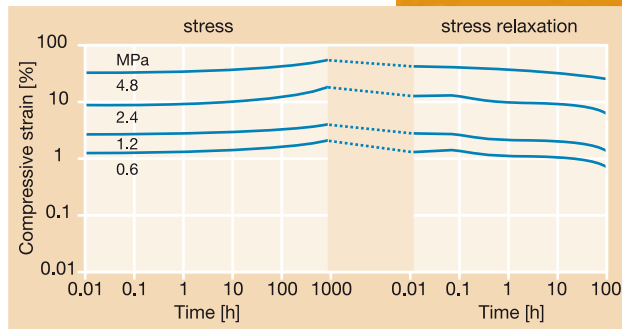


Product:
Vulkollan® 18
(about 84 Shore A)

Specimen:
20 mm Ø x
20 mm height

Pre-stressing:
0.04 MPa

Test atmosphere:
23 °C/50 %
relative humidity

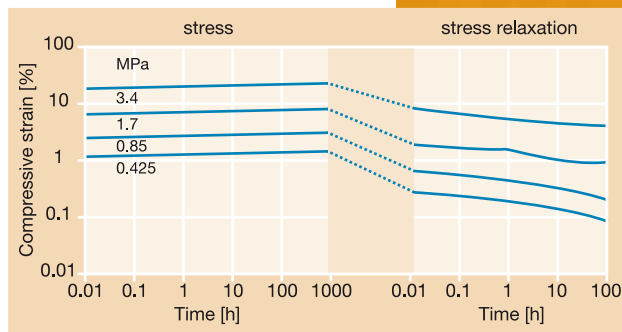


Product:
Vulkollan® 21
(about 90 Shore A)

Specimen:
20 mm Ø x 20 mm height

Pre-stressing:
0.04 MPa

Test atmosphere:
23 °C/50 %
relative humidity

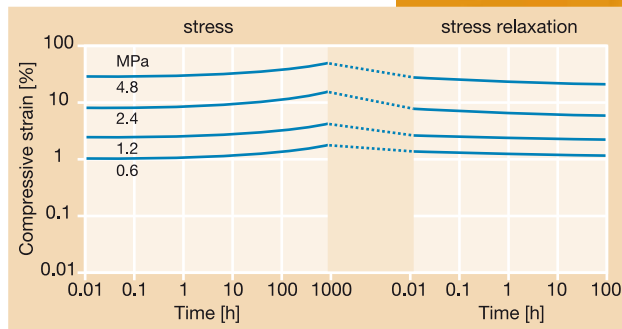


Product:
Vulkollan® 18
(about 84 Shore A)

Specimen:
20 mm Ø x 20 mm height

Pre-stressing:
0.04 MPa

Test atmosphere:
80 °C



Product:
Vulkollan® 21
(about 90 Shore A)

Specimen:
20 mm Ø x 20 mm height

Pre-stressing:
0.04 MPa

Test atmosphere:
80 °C

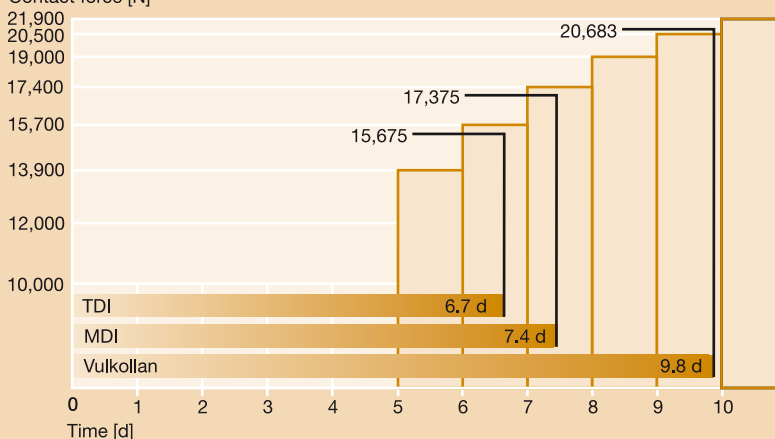
Impre

Manufacturing heavy-duty rollers in Vulkollan® isn't just about using an outstanding material. If rollers and wheels are to run correctly for a long time, their coverings need to be the right size and shape in order to withstand high dynamic loads, and the elastomer needs to form a very strong bond with the metal core.

The roller test bench ascertains whether or not these requirements have been met. The advantage of this method over other dynamic tests lies in the fact that, instead of having to use laboratory test pieces, finished wheels can be tested under realistic and practical conditions.

The unique combination of Vulkollan® properties has impressed a variety of institutions in numerous studies. These include the TÜV Technische Überwachungsverein (Technical Inspection Authorities) in Munich, the Institute for Conveyor Technology of the Technical University of Berlin, and many automotive manufacturers. Numerous big-name producers have confirmed the superior load resistance of Vulkollan® rollers.

Test results (TÜV Munich) shown as average load to failure/time to failure with a gradual increase in load; test speed 6 kph; wheel dimensions 250 x 130 mm

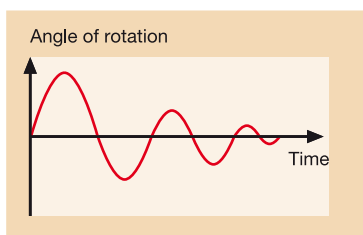
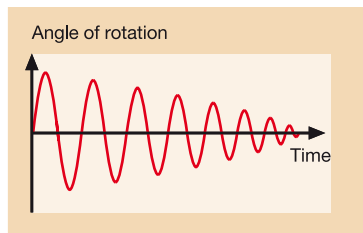
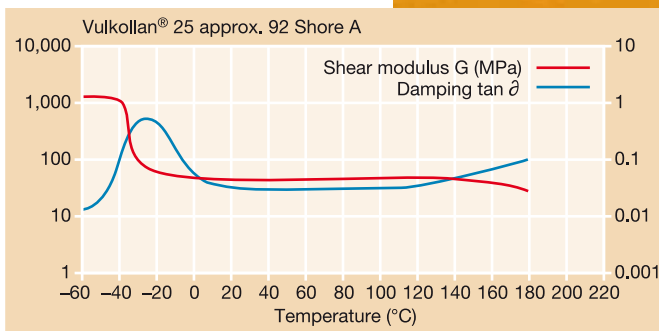
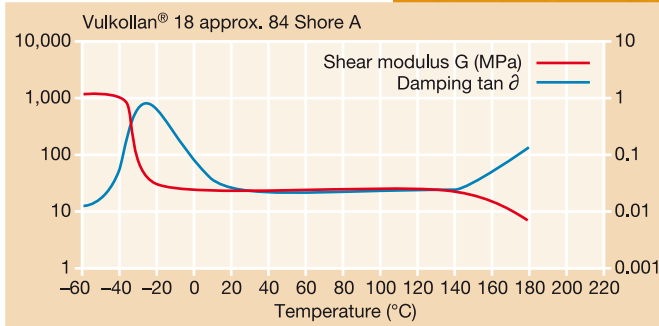


Roller test bench experiments allow quality testing of heavy-duty rollers and also provide a wealth of other important data. The quality of the elastomer itself, as well as the strength of the bond between the material and the metal core, is carefully assessed. Additionally, possible line loads can be evaluated at different speeds and cross-section geometries.



Stiffness increases as the temperature falls (below -10 °C). However, embrittlement does not occur until extremely low temperatures are reached. The glass transition temperature is approx. -40 °C. The shear modulus is almost constant over a temperature range from approx. -10 °C to +120 °C. In other words, consistent deformation behavior is seen across a very wide temperature range. As a result, Vulkollan® exhibits very low damping. The material only warms up slightly under dynamic load, which is a decisive advantage for roller coverings.

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An example of how vibration amplitude falls over time:
1. Low damping:
 Slow reduction in vibration:
 Conversion of kinetic energy into heat energy is low.

2. High damping:
 Rapid reduction in vibration:
 Rapid build-up of heat under dynamic load.

Viscoelastic performance at different temperatures is measured using the ISO 6721 torsional pendulum test.

This involves twisting a strip of Vulkollan® with a torsional pendulum and measuring the shear modulus over a temperature range from -60 °C to +220 °C.

When the torsion is relaxed, the damping is determined and expressed as $\tan \delta$.

Dynamic tests can be used to demonstrate whether and how the properties of Vulkollan® vary with repeated loads.

Torsional vibration tests, hydraulic pulse tests and roller test bench experiments provide information about the heat build-up that can be expected and the effects this can have on material properties.

The heat build-up inside the elastomer is of particular importance here.





Highly predictable chemical and electrical properties.

Technical components made of Vulkollan® often come into contact with liquid chemicals. For example, doctor blades for screen printing come into contact with printing inks and cleaning agents, while wheels and couplings come into contact with lubricants. So it is important to bear in mind the chemical properties. Polyester-based Vulkollan® is attacked by hot water, acids and bases. Organic solvents cause swelling which affects the

mechanical properties. These solvents can be removed by drying.

NB: Vulkollan® is free of the plasticizers that are widely used in other elastomers. These plasticizers can be dissolved out by solvents or may be released naturally over a long period of time, eventually leading to changes in the properties of the plastic. They become harder, which is very detrimental. In contrast, Vulkollan®, which contains no plasticizers, retains its elastic properties. Its material properties, therefore, remain predictable.

Electrical properties: When used in electronic components, Vulkollan® primarily acts as an insulator. Its electrical resistance can be reduced and its conductivity increased by the addition of commercially-available products.

Chemical properties

	Swelling in % by weight	Evaluation of stability
Water	< 2	+
ASTM OIL I	< 2	++
ASTM OIL II	< 2	++
ASTM OIL III	< 10	0
Light fuel oil	< 5	+
Transformer oil	< 2	++
Dry-cleaning fluid	< 10	0
Benzene	< 100	--
Toluene	< 100	--
Methanol	< 10	0
Ethanol	< 10	0
Ethyl acetate	< 50	-
Acetone	< 50	-

++ very good; + good;
0 satisfactory;
- moderate; -- not suitable

Electrical properties

	Units	Specification	Test specimen	Shore hardness		
				84 A	89 A	45 D
Surface resistance R ₀	Ω	IEC 93,167	standard bar			
dry				2·10 ¹⁰	3·10 ¹⁰	4·10 ¹⁰
4 days at 80 % r. h.				1·10 ⁹	4·10 ⁹	5·10 ⁹
24 h in water				5·10 ⁸	4·10 ⁹	5·10 ⁹
Insulation resistance between plug electrodes RS	Ω	IEC 93,167	standard bar			
dry				7·10 ¹⁰	7·10 ¹⁰	1·10 ¹¹
4 days at 80 % r. h.				6·10 ⁹	7·10 ⁹	2·10 ¹⁰
24 h in water				4·10 ⁹	5·10 ⁹	1·10 ¹⁰
Volume resistivity	Ω · cm	IEC 93,167	95 mm Ø			
dry				6·10 ¹⁰	3·10 ¹¹	4·10 ¹¹
4 days at 80 % r. h.				2·10 ⁹	8·10 ⁹	1·10 ¹⁰
24 h in water				2·10 ⁹	8·10 ⁹	1·10 ¹⁰
	mg after 7 days; 100 cm ² surface		80 mm Ø	53	59	40



ntelligent solutions with tailor-made Vulkollan® special properties.



Whether its pump diaphragms for the oil industry or vacuum grippers for industrial robots, Vulkollan® properties work to meet specialized needs.

The rapid pace of technology is continually placing complex demands on engineering materials, which have to meet specialized requirements for higher machine speeds, more compact designs, and extreme environmental conditions. With the Desmodur® 15-based Vulkollan® product system, Bayer MaterialScience is constantly developing innovative processes and new raw material combinations to provide technical solutions for new applications.

Alternative polyols for specific requirements.

The use of alternative polyols allows Vulkollan® to be customized for specialized applications. For example, it can be modified to meet specific aging requirements or for use in hydrolytic environments. Specialized polycarbonate diols with Desmodur® 15 deliver a product with high resistance to hydrolysis and excellent dynamic properties for use in extreme climatic conditions, such as those encountered in the tropics.

A good example: Vulkollan® 18W (W = water-crosslinked)

This special grade of Vulkollan® boasts high rebound resilience and very low abrasion loss, an extremely low compression set, high thermal stability and lasting flexibility.

Properties of Vulkollan® 18W

	Test standard	Units	Vulkollan 18W
Shore A hardness	ISO 868	Mg/m ³	72
Density	ISO 1183	MPa	1.24
Stress at 100 % strain	ISO 37	MPa	6
Stress at bei 300 % strain	ISO 37	MPa	11
Ultimate tensile strength	ISO 37	%	52
Elongation at break	ISO 37	%	800
Rebound resilience	ISO 4662	mm ³	75
Abrasion resistance	ISO 4649	%	11
Compression set 23 °C/70h	ISO 815	%	5.5
Compression set 70 °C/24h	ISO 815	%	12
Compression set 100 °C/24h	ISO 815	%	36



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Vulkollan® has got versatility down to a fine art!

- 1** Screen printers know exactly what features their doctor blades need to possess – high resistance to solvent-induced swelling and finer dimensional stability for consistently superior printing results, even when handling long print runs. They should also be long-lasting with minimum secondary finishing. Vulkollan® has just the right properties for screen printing doctor blades. It is free from fillers and plasticizers, has a high shear modulus, and boasts minimal permanent deformation.
- 2** If they are to reliably transfer engine power, elastic couplings must meet a specific set of requirements. They should be able to withstand high torques and acceleration, and be capable of balancing out axle angles and displacement. Vulkollan® has just the right properties to act as a cushioning element or coupling disc here. It has a high modulus of elasticity for optimum power transmission and the right degree of damping, plus high abrasion resistance. Vulkollan® also features high resistance to grease and lubricants.
- 3** The twin-disk bearings in rotary spinning machines are subjected to extreme centrifugal forces from spindle speeds of over 130,000 rev/min and ambient temperatures that can reach 70 °C. Vulkollan® has just the right properties for use in disk covers. It boasts impressive thermal stability with minimal heat build-up, and is free of plasticizers and fillers to ensure even friction and high abrasion resistance.
- 4** When forklifts are carrying heavy loads, all the weight is transferred through to the tires, so they need to be able to withstand high surface pressures over long periods. Vulkollan® has just the right properties for use in tires. It boasts outstanding mechanical load-bearing properties and dynamic load resistance, combined with impressive wear resistance and high tear resistance. Its excellent resilience prevents tires from flattening out, even after long periods of inactivity.
- 5** As a result of heavy loads, the wheels of low-loader trucks used in the wood processing industry are subjected to extreme wear and tear. Vulkollan® offers just the right properties for these wheels and their tires. It boasts high abrasion resistance and mechanical load-bearing properties, even when using thin tires to keep wheel size down. It also bonds very strongly to the metal core.



U irtual



With its impressive performance, Vulkollan® offers a broader scope for design and engineering than other materials.



State-of-the-art calculation methods ensure optimum design and economical use of materials.

ly unlimited scope for engineering and design!

For successful and practical applications, elastomer components have to be carefully designed.

Vulkollan® can be tailored to suit a wide range of needs through hardness modification and design variation, offering virtually unlimited scope for engineering and design.

Design

The casting process allows almost unlimited design options, delivering corners, rounded edges, smooth transitions, raised surfaces, recesses, openings, and thick or thin walls.

Engineering

Techniques such as undercuts, variations in cross-section, material accumulations, rounded edges, variations in wall thickness, composites with metal, wood and plastic, and reinforcement to enhance stability all take full advantage of the material's properties.

Joining technology

As part of an overall construction, Vulkollan® offers a whole range of combination options, including bonding to metal, wood and plastic, riveting, snap connections, and other essential techniques.

Machining

Naturally, Vulkollan® can also be machined into almost any shape by turning, milling, drilling, splitting, water jet cutting, sawing, grinding, punching and contouring with laser beam technology – without any loss of quality.

Turning:

The harder grades of Vulkollan® can be machined on a lathe by using a lathe chisel or cutting stylus.



Milling:

Head-, face- and groove-cutting using specially ground cutters.



Drilling:

Precise holes and slots can be created using suitable tools.



Sawing:

Band saws and circular saws commonly employed in the wood processing industry can be used to cut Vulkollan®.



Splitting:

Films of varying thickness can be produced by cleaving.



Grinding:

Hard and soft grades of Vulkollan® can be surface finished by working them using fused aluminum oxide discs or diamond-encrusted grinding tools.



Parting:

Parting tools can be used to cut out rotationally symmetrical parts.



Cutting:

Applying oil to the cutting surface makes it easier to cut the material.



Punching:

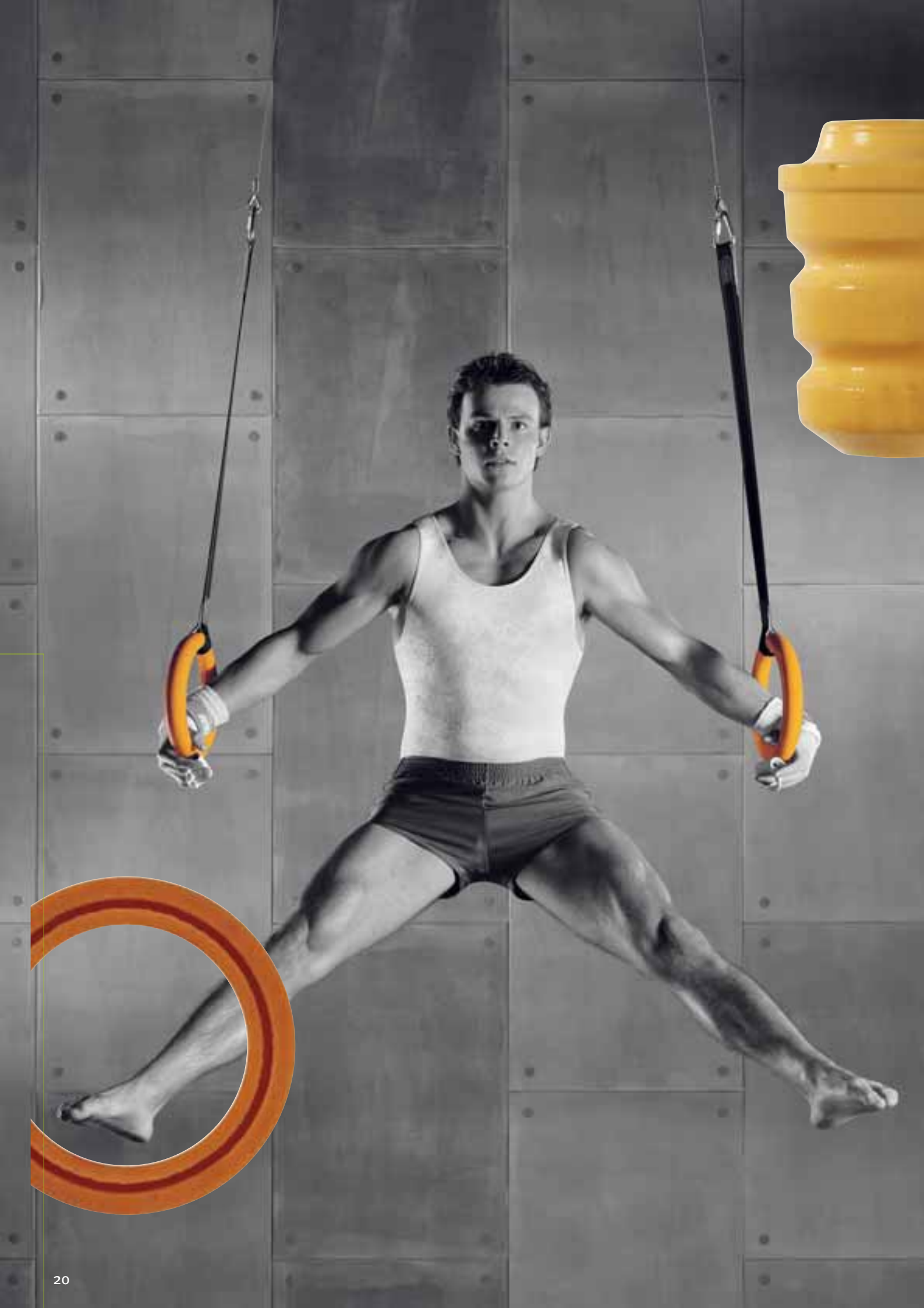
Punching tools suited to the material thickness can be used to produce shaped parts.



Water jet cutting:

This technique is ideal for producing complex geometric shapes and small-series parts.







ellular Vulkollan® provides outstanding damping and shock-absorption!

For greater comfort and safety!



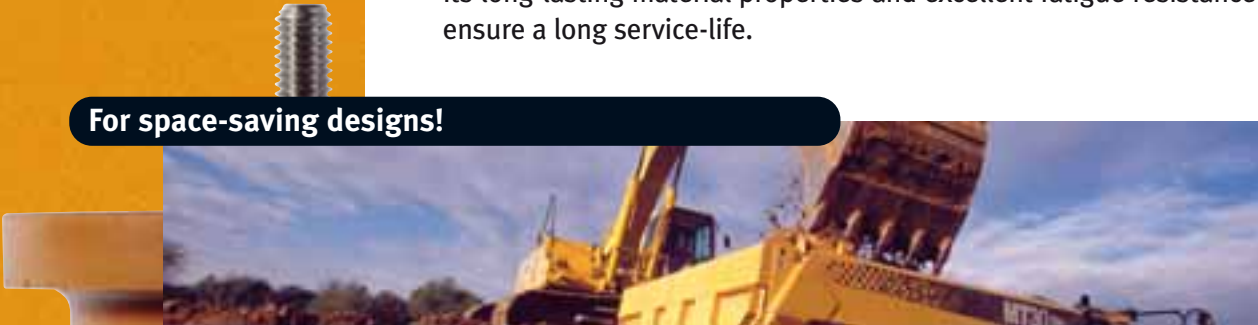
Companies manufacturing vehicles, plant equipment, agricultural machinery and bicycles are faced with greater comfort and safety requirements. Forward-thinking designs call for innovative engineering solutions combining high levels of quality with cost-effectiveness.

For greater cost-effectiveness and longer service-life!

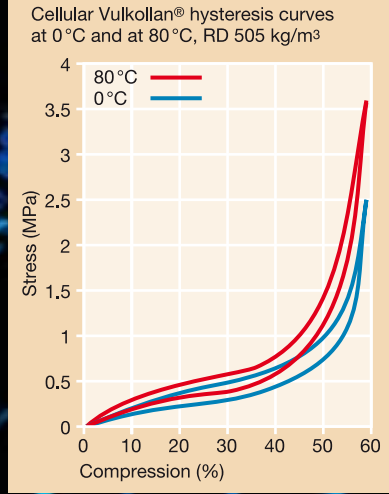
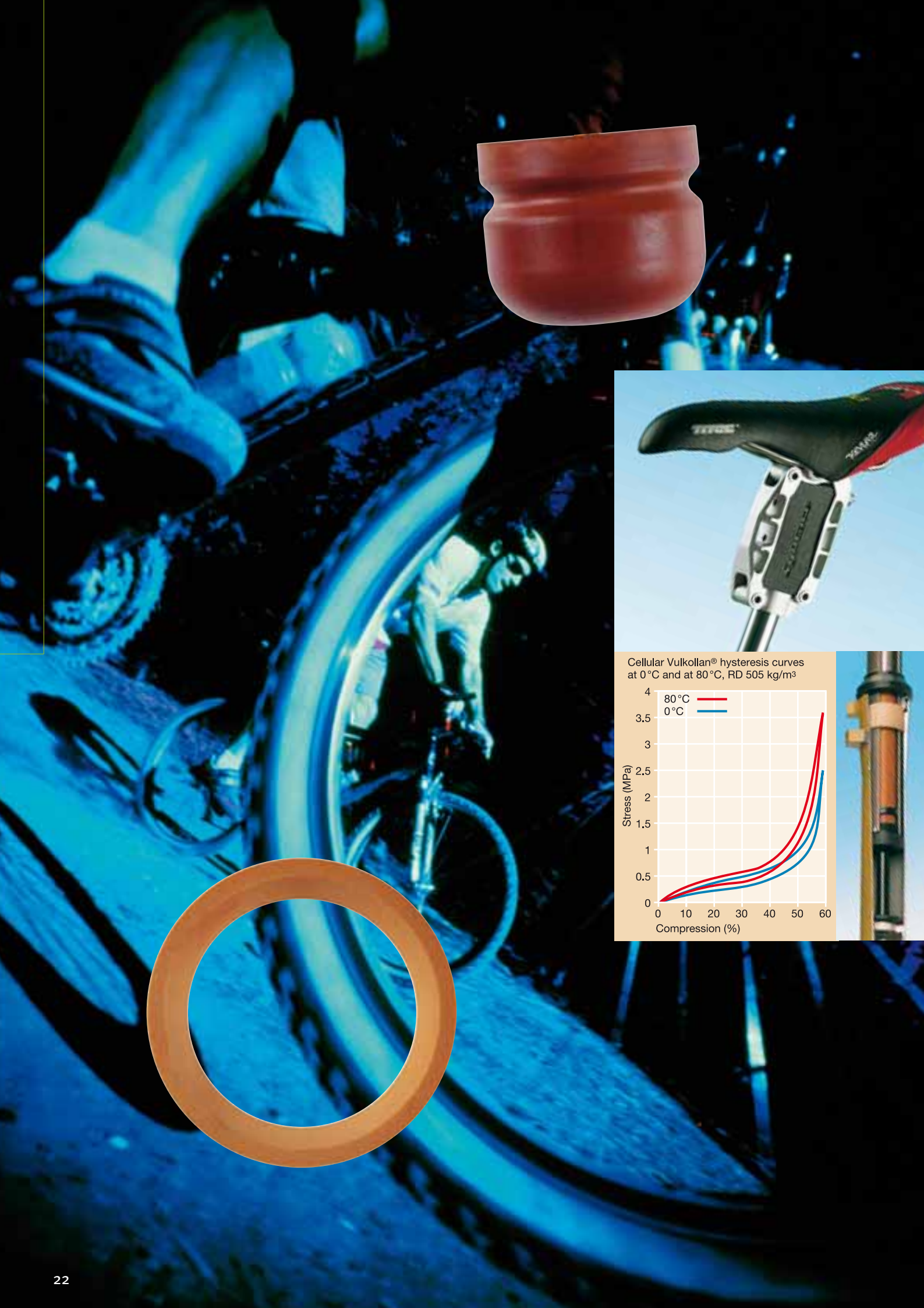


The manufacturing industry needs high-quality materials to help it rise to the challenge. With cellular Vulkollan®, Bayer MaterialScience offers a high-performance elastomer boasting an impressive combination of outstanding dynamic properties and high-quality characteristics. Spring components, support bearings, and decouplers made of cellular Vulkollan® offers a whole new avenue in chassis engineering while enhancing comfort and safety. Vulkollan® also features cost-effective alternatives to progressive steel springs and is a viable option when space is limited. Its long-lasting material properties and excellent fatigue resistance ensure a long service-life.

For space-saving designs!



Gaskets and stripper rings made of cellular Vulkollan® are beneficial to manufacturers of agricultural and construction machinery and companies producing plant equipment. With low-set behavior, excellent resistance to lubricants, and high mechanical strength cellular Vulkollan® ensures a lasting seal that can handle the extreme dynamic loads associated with rocker bearings.





ellular Vulkollan® boasts impressive dimensional stability.

Cyclists enjoy a particularly comfortable ride when telescopic forks and saddles are damped with compressible cellular Vulkollan®. The smoothness of the ride is confirmed by the spring characteristic curves measured in tests of the material's behavior at various temperatures in the upward and downward deflection phases. The area described by the curve is measured by the energy loss occurring during deformation. In suspension elements made of cellular Vulkollan®, the amount of heat built-up over repeated load cycles remains very low. Cellular Vulkollan® shows very consistent performance at temperatures ranging from 0 °C to 80 °C.

Cellular Vulkollan® is preferred over the solid version in applications which require higher levels of deformability and lower compression hardness. In day-to-day operations, it is the compressive deformation properties that are of relevance.

These advantages make cellular Vulkollan® particularly well-suited to use in the automotive industry where this versatile elastomer is used to optimize auxiliary springs with successful results.

Mechanical properties

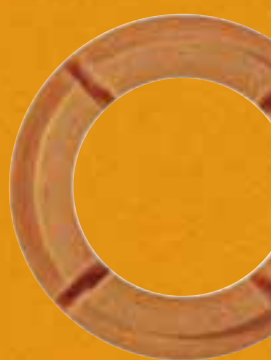
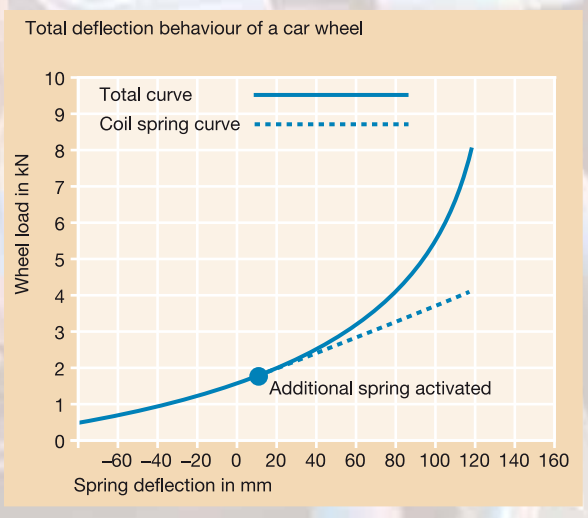
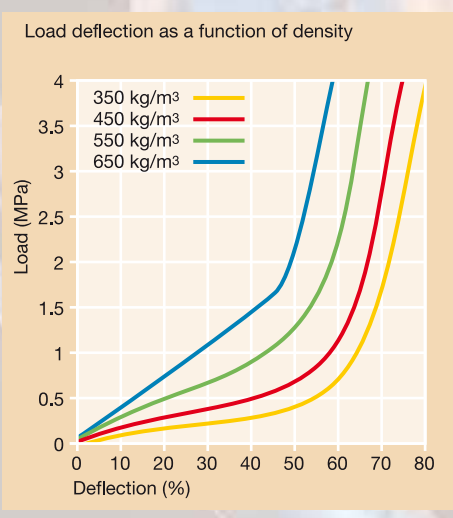
		Test standard	Vulkollan® grade			
			350	450	550	650
Density	kg/m ³	ISO 845	350	450	550	650
Ultimate tensile strength	MPa	ISO 37	3.0	4.0	5.5	7.0
Elongation at break	%	ISO 37	400	400	400	400
Tear propagation resistance	kN/m	ISO 34	8	12	16	20
Rebound resilience	%	ISO 4662	60	60	60	60
Compression set		ISO 815				
70 h/23 °C	%		3.0	3.0	3.0	3.0
24 h/70 °C	%		10.0	7.5	8.0	9.0

As well as being an excellent solution to suspension-related problems, cellular Vulkollan® is increasingly popular in many other areas, such as sound insulation, where Vulkollan® is proving to be very effective in decoupling vibrating components while vastly improving vibration damping.





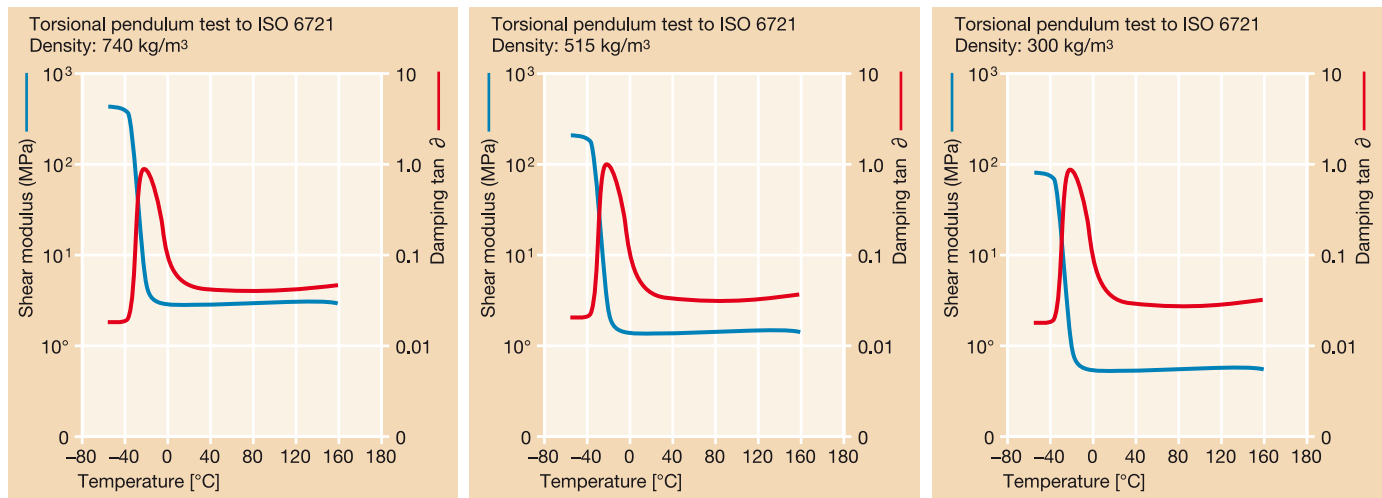
Winning combinations. The compressive deformation curves for cellular Vulkollan® demonstrate its typical progressive spring characteristics. “Spreading” is minimal. Cellular Vulkollan® combines the high mechanical strength of solid elastomers with the compressibility of foamed materials. The progressive pattern of the curves permits assembly with inexpensive steel coil springs. This construction offers countless alternatives for the automotive industry.



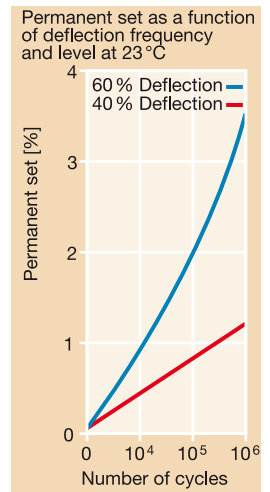
advantages – Space-saving and lightweight.

The impressive advantages of cellular Vulkollan® have already proven their worth in numerous vehicles around the world. A primary application is spring struts, which consist of shock absorbers, steel springs and auxiliary springs – all made of cellular Vulkollan®. The limited space where wheel suspension components have to fit and the constant need to save weight requires stringent design specifications. Cellular Vulkollan® opens up a whole new range of options for designers, as its spring characteristics can be altered by varying the density of the material and its geometry.

Designers also face growing demands for greater vehicle comfort and noise damping. One way of tackling this challenge is to adopt designs with decoupled bodywork using damper bearings made of cellular Vulkollan®. The result is exceptionally well-insulated elastic resonance and a considerable reduction in the transmission of structure-borne noise.



The shear modulus of cellular Vulkollan® is almost constant from -10 °C to +120 °C, which means that its deformation behavior is consistent over a wide range of temperatures – a decisive criterion when it comes to material selection. Cellular Vulkollan® also boasts exceptional low-temperature flexibility, and only begins hardening when the temperature drops below -40 °C. Its maximum permissible working temperature is +80 °C, but it can withstand temperatures of over +120 °C for short periods. The properties of cellular Vulkollan® change only gradually under sustained dynamic load. Whether at room temperature or at +80 °C, the spring characteristic curve is always of the same order of magnitude, which means it is predictable. Even after 1 million compressions to 60 percent, the permanent deformation is still only 3.5 percent!





Vulkollan® – Some useful terms.

Conductivity:

Like all polyurethane elastomers, Vulkollan® has a surface resistance of 10^{10} – 10^{11} ohm and is not an electrical conductor. The manufacturer can reduce the surface resistance to a certain extent by using various additives.

Definition:

Vulkollan® is a registered trademark of Bayer AG. It is a high-performance polyurethane elastomer based on Vulkollan® polyols and Desmodur® 15.

Desmodur® 15:

One of the components used to produce Vulkollan®, Desmodur® 15 creates a characteristic hard segment in the elastomer, which gives Vulkollan® its exceptional dynamic properties.

Environment:

Recognized for its high wear resistance, Vulkollan® is being used to replace materials which are more prone to wear and therefore create more waste. Vulkollan® helps significantly to reduce waste volumes. No ozone-depleting substances, lead- or mercury-containing catalysts, or plasticizers are used in the production process. The formulations are MBOCA-free. Environmentally-sound disposal and recycling processes are available for used or worn Vulkollan® elastomers.

Manufacturing:

Vulkollan® elastomers are produced using a multi-stage process developed by Bayer AG. To achieve the desired shape, a hot liquid reaction mixture is poured into open, heated molds. After curing, the blank can be removed from the mold. The fresh material is then tempered to give it its finished properties.

Quality:

All the processes used to produce the raw materials employed in the manufacture of Vulkollan® are ISO 9001-certified. Consistent high quality of the elastomer is assured by careful control of the subsequent reaction steps.

Service temperature:

The material properties of Vulkollan® are largely consistent over a temperature range of approx. -20°C to over 100°C . Nevertheless, the maximum permissible working temperature of 80°C should not be exceeded for any length of time, although the elastomers can withstand temperatures of up to 120°C for short periods.

Shore hardness:

An indication of elastomer hardness. Softer elastomers are measured on the Shore A scale. Above 90 Shore, the D scale is generally used. The excellent mechanical properties of Vulkollan® give it an impressive hardness rating from approx. 80 Shore A to 40 Shore D.



Tempering:

Freshly manufactured Vulkollan® components require immediate tempering. Depending on the size of the component, this process may take one to several weeks. The product does not achieve its outstanding, final properties until this maturation process is complete. Care should be taken to avoid delivering products too soon. Proper stock management should also enable short delivery deadlines to be met.

Vulkollan® color:

Vulkollan® elastomer components have particular color properties, ranging from light brown through amber to mahogany. The colors change with age. Fresh Vulkollan® is light yellow, and progressively darkens due to the effects of light and time. NB: The change in color does not affect the material properties.

Wear resistance:

When subjected to loading, elastic plastics may tear or be abraded, causing damage. This phenomenon is generally referred to as wear. Vulkollan® boasts very high tear resistance and very low abrasion, making it suitable for extreme load applications. Components produced using Vulkollan® suffer only minimal wear and have a long service-life.

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Vulkollan® – The ultimate elastomer
HIGHEST MECHANICAL LOAD-BEARING PROPERTIES
OPTIMUM DYNAMIC LOAD CAPACITY
FORMULATED FROM DESMODUR® 15

With Vulkollan®, you get our expertise too!

The marketing team at Bayer MaterialScience consists of highly-qualified commercial professionals, technical experts and chemists, who will be delighted to provide you with any expert advice or practical information you may require. You can contact us at our headquarters in Leverkusen, Germany, and in many countries around the world. We look forward to hearing from you!

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