



VULKOLLAN®

FOR ROLLERS AND WHEELS
THAT MAKE **LIGHT** OF
HEAVY LOADS!



BaySystems
customized polyurethanes

The pe

The properties of Vulkollan® materials are measured and recorded by appropriate test procedures.



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.



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



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



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

HIGHE
LOAD-BE

OPTIMU

FORM
DE

Optimum angle



Optimum covering thickness

Perfect profile – round solutions that offer ideal properties.

Specialists in industry looking for an optimum covering material for wheels and rollers know that high-performance rubber-elastic Vulkollan® is the material of choice. The facts speak for themselves: The exceptional load-bearing capacity of Vulkollan® makes it possible for modern industrial trucks and high-speed machinery to operate consistently at maximum efficiency.

Unrivalled performance with dynamic loads.

For a material to survive in the hardworking world of wheels and rollers, it has to consistently deliver a wide range of physical properties.

This is where Vulkollan® has the edge over other materials. It boasts a unique

A variety of methods are used to test and confirm the mechanical properties of the Vulkollan® grades.

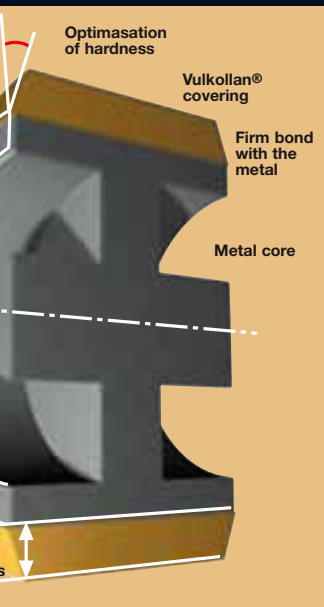


| Vulkollan® Eigenschaften in Abt | |
|---------------------------------|----------|
| Mechanische Eigenschaften | Prüfnorm |
| Dichte | 86 |
| Spannung bei 100% Dehnung | 111 |
| Spannung bei 300% Dehnung | 3 |
| Reißfestigkeit | 3 |
| Reißdehnung | 3 |
| Weiterreißwiderstand | 3 |
| Rückprallelastizität | 46 |
| Abrieb | 46 |
| Taber (S42/4,9 N) | 93 |
| Druckverformungsrest | 81 |

**ST MECHANICAL
LOAD-BEARING PROPERTIES**

**EXCELLENT DYNAMIC LOAD
CAPACITY**

**DERIVED FROM
DESMODUR® 15**

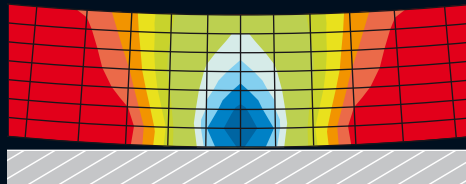


range of performance properties based on high-grade components such as Desmodur® 15 and highly specialized manufacturing processes that have been tuned to perfection. It has superior mechanical load-bearing properties due to its outstanding tensile strength and tear propagation resistance, extremely low abrasion even on rough surfaces, and highly impressive dimensional stability. What's more, it demonstrates outstanding dynamic load resistance thanks to its optimal shock-absorbing characteristics, excellent temperature resistance and an impressive ability to maintain the required material properties.

Specialized, licensed processors develop made-to-measure, application-specific solutions by varying the raw material combinations.

To “re-invent” the optimal wheel, all the right conditions have to be in place – including very strong bonding of the elastomer to the metal core.

Finite elements method



This energy-based view shows the load spectrum on a wheel tire (blue = compression load, green/yellow = tensile load).

The more dynamic the load on the wheel, the stronger the mutual tensile and compression loads.

Sharp increases or decreases in speed have a huge impact on the load spectrum.

Wheels and rollers usually come in two parts, the metal core – a sleeve with a bearing or a rim – and the elastic Vulkollan® covering. The wheels or rollers are mounted on either the vehicle or a mechanical assembly, and expected to provide the required surface contact when the vehicle is accelerating, decelerating, steering and absorbing shock. They have a wide range of applications, e.g. industrial trucks/warehousing equipment, rotor spinning frames, picking vehicles and transport wagons, as well as electronic suspension tracks, roller coasters or elevators.

quality – maximum load resistance over long distances.



Tested and confirmed as the best: Independent comparisons of different materials confirm that Vulkollan® is the best material for use in high load-bearing wheel or roller coverings. Forklift trucks and picking vehicles transport heavy loads at relatively high speeds of up to 20 kph across uneven, rough floors and curbs. Only wheels and rollers with unique performance properties can withstand that sort of heavy workload over a long period.



Vulkollan® earns top marks in all the major criteria: The high load-bearing capacity of Vulkollan® allows the transportation of loads that would require much larger tires if other elastomers were used. Vulkollan® also offers distinct advantages in terms of wear resistance, thus ensuring long-lasting tires and outstanding functional reliability. This leads to longer maintenance intervals and shorter downtimes.

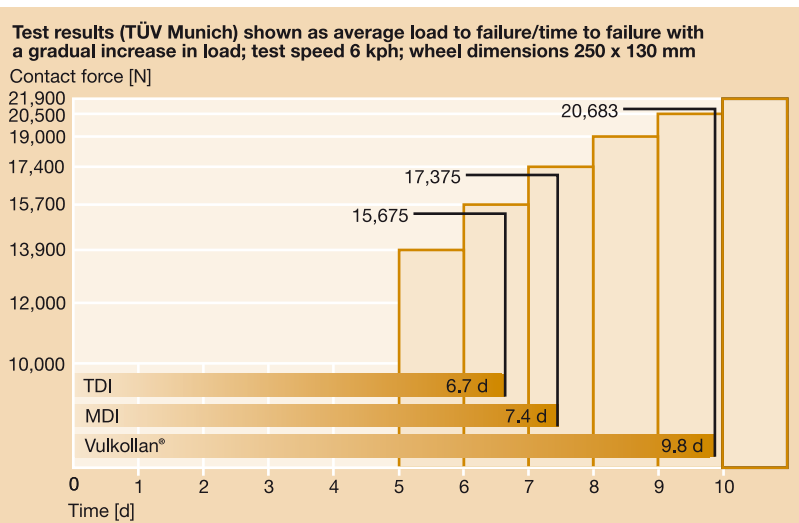


The outstanding dimensional stability ensures no deformation even after long idle periods, while the material's excellent thermal stability with low self-heating ensures optimal driving performance even at higher temperatures.



The excellent resistance of Vulkollan® to grease and oil, its low operational noise, and the protection it affords to the many types of surfaces it travels over complete its unique profile of properties.

The advantage of Vulkollan®: A wear comparison by the University of Dortmund shows the Vulkollan® wheel to be fully functional while the wheel on the left, which is coated with conventional polyurethane, has been destroyed, as indicated by the red marker*.



The advantage of Vulkollan®: A load comparison of TDI, MDI and Vulkollan® by TÜV Munich confirmed the long life, load-bearing capacity and reliability of the Desmodur®-15 based elastomer.





A mazin

Impressive load-bearing capacity for high-performance logistics: Achieve profitable handling speeds with Vulkollan® wheel coverings.



High functional reliability at varying temperatures. In the heat of summer and the cold of winter, cable cars with Vulkollan® wheel coverings travel up and down the mountains quickly and safely.



Small dimensions for narrow storage areas: Moving huge loads in confined spaces is no problem for tiny wheels with Vulkollan® coverings.



Reliability, comfort, speed: Vulkollan® wheels ensure safe and quiet travel from floor to floor in high-speed elevators. Again and again.

g versatility – Vulkollan® at the hub of many sectors.

Would you like more information about the fantastic potential and possible applications of solid and cellular Vulkollan®? Ask for our extensive brochure containing in-depth technical information, or go to www.vulkollan.com



A made-to-measure profile of properties for specific applications.

Vulkollan® is in high demand in the conveyor industry thanks to its special properties and capabilities for wheels and rollers. More and more often, Desmodur®-15 based Vulkollan® is being chosen over steel, rubber-based materials or other rubber alternatives consisting of polyurethane (MDI or TDI) – by automotive makers and many other manufacturers.

The decision to choose Vulkollan® is based both on the fact that companies have clear requirement profiles with specific logistical tasks and that its profile of properties is perfectly attuned to meet these individual requirements. There are different priorities for elevators, cable cars and roller coasters – in which the emphasis is on the elastic properties – than for heavy load-bearing wheels. The load-bearing capacity and load resistance of the wheel and roller coverings are a crucial factor to consider whenever companies want to handle heavy loads safely and quickly. Vulkollan® boasts properties that enable companies to quickly recover its somewhat higher initial investment. In comparison to standard elastomers, Vulkollan® is capable of bearing heavier loads at faster speeds, which significantly accelerates goods handling as well as transportation of goods within the company. Capacity is increased and warehousing costs are greatly reduced. This is facilitated by the long service life and the resulting minimal repair costs and replacement requirements.

Clear advantages across the board

Minimal wear and a high service life!

It pays to invest in high-grade Vulkollan®. It boasts a high service life that greatly reduces total costs.

High load resistance for heavier loads!

In comparison to standard elastomers, Vulkollan® wheel coverings are characterized by outstanding load-bearing capacity and faster load handling.

Fast wheels for high speeds!

Vulkollan® gives companies the edge. Vulkollan® wheel coverings can operate at far higher speeds than other materials – this increases the capacity of vehicles and plants and also saves time and money.

Greater capacity reserves mean greater safety!

Safety is one of the key criteria in the transportation of people and goods. Vulkollan® offers greater safety than other materials because of its extra capacity reserves – Vulkollan® wheel coverings are safer than competitive materials when carrying the same load at the same speed.

Smaller dimensions for greater design scope!

The outstanding performance of Vulkollan® is ideal for both engineers and designers. It enables the production of much smaller wheels and opens up greater scope in the design of vehicles, conveyors and assemblies.

The ideal requirements for a successful future!

Watch this space! Logistical requirements will only continue to increase in the future. The need for shorter handling times, faster movement of heavier loads and tighter safety standards is creating new challenges for industry. Vulkollan® offers outstanding solutions for meeting even the toughest of these challenges.

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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