

# RÄDER-VOGEL®

FOR BETTER WHEELS AND BETTER SERVICE



## AMUSEMENT RIDES TECHNOLOGY

REFERENCES MANUFACTURERS



REFERENCES USERS



**REDISCOVER THE WHEEL**

All wheels have one thing in common – they are round. Looking beyond this, however, every area of application has its own specific requirements in terms of size, materials and load capacity. Therefore, since 1946, we have been developing wheels and castors to meet the constantly increasing demands of the market: from individual customised items to standardised large batches.

Our high standards, quality and innovative strength have made us one of the world's leading manufacturers of wheels, pallet rollers and press-on tyres. Our wheels are used at various fairground facilities around the world as load, under-friction and guiding wheels. We adapt existing products to your needs or build new specific solutions according to the requirements and area of application.

We are a member of:

International Association of Amusement Parks and Attractions & Verband der deutschen Vergnügungsanlagenhersteller e.V.




## High-quality wheel materials for your applications

The more diverse and challenging the areas of application of our wheels and castors, the broader the range of wheel-tread materials we offer. One area of focus is our VULKOLLAN®\* and polyurethane elastomers, all of which are produced by a hot-casting process. These are non-marking and they stand out for their low starting and rolling resistance, high dynamic load capacity, and good abrasion and tear resistance.

We also offer a wide range of wheel-treads made of thermoplastic polyurethane, polyamide and rubber. These are specially designed for applications with medium speeds and widely used in fairground facilities technology.

\*VULKOLLAN® is a registered trademark of the Covestro Group.



### VULKODYN® 94 Shore A

VULKODYN® 94 Shore A is a highly elastic polyurethane elastomer developed by us for extremely dynamic applications. The material has outstanding properties such as approx. 20% lower rolling resistance, higher load capacity at the same speed, better ride comfort thanks to good damping, less risk of flat spots when stationary, hydrolysis resistance and better traction. VULKODYN® 94 Shore A is therefore particularly suitable for high speeds.

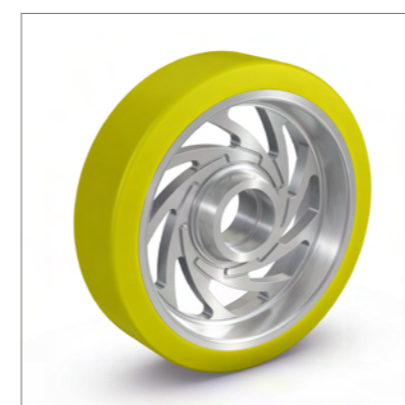
- Long service life
- Higher load capacity
- Extremely high speeds
- High resistance to wearing
- Minimal rolling resistance
- Hydrolysis stable
- Temperature-resistant
- Low self-heating
- Minimal driving noise



### VULKODYN® 97 Shore A

VULKODYN® 97 Shore A is a highly elastic polyurethane elastomer developed by us for extremely dynamic applications. The material has outstanding properties such as approx. 20% lower rolling resistance, very high load capacity at the same speed and better ride comfort thanks to good damping. Furthermore, VULKODYN® 97 Shore A offers less risk of flat spots at standstill and better traction. The material is therefore ideal for use at high speeds.

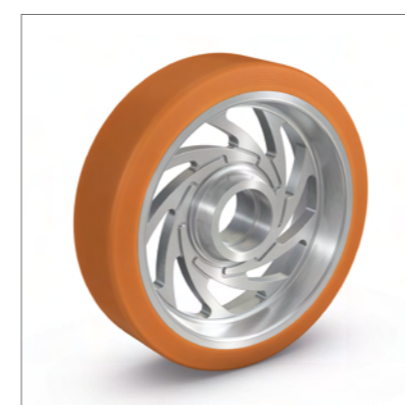
In addition to the properties of VULKODYN® 94 Shore A, VULKODYN® 97 Shore A offers a very high load capacity.



### PEVOTEC® 97 Shore A

PEVOTEC® A97M1 is a highly elastic polyurethane elastomer developed by us for extremely dynamic applications. The material has outstanding properties such as approx. 20% lower rolling resistance, very high load capacity at the same speed, better ride comfort, less risk of flat spots when stationary as well as hydrolysis resistance. PEVOTEC® 97 Shore A is therefore particularly suitable for high speeds.

- Extremely high speeds
- Very high load capacity
- High resistance to wearing
- Minimal rolling resistance
- Hydrolysis stable
- Temperature-resistant
- High running stability



### PEVOTEC® 60 Shore D

PEVOTEC® D60M6 is a high-quality polyurethane elastomer which we have developed for extremely dynamic areas of application. The material offers outstanding properties such as minimal starting and rolling resistance, maximum dynamic load capacity, extremely less risk of flat spots when stationary and hydrolysis resistance. Compared to polyamides, PEVOTEC® 60 Shore D offers much higher noise and vibration damping. PEVOTEC® 60 Shore D is therefore particularly

well suited to borderline areas where the best properties of polyamides and polyurethanes are needed.

- Extremely high speeds
- Highest load capacity
- High resistance to wearing
- Minimal rolling resistance
- Hydrolysis stable
- Temperature-resistant

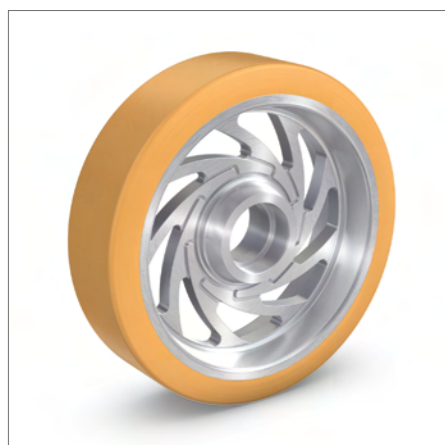
## High-quality wheel materials for your applications



### PEVODYN® Soft

PEVODYN® Soft 78 Shore A is a high quality polyurethane elastomer that we have developed with high dynamic load capacity and significantly reduced starting and rolling resistance. The excellent mechanical properties of the material include high cutting, tearing and abrasion resistance. Thanks to its good noise reduction and vibration damping, PEVODYN® Soft is particularly suitable for use on surfaces where care is needed. And with its hydrolysis resistance, the material is ideally suited for use in tropical climates.

- Medium load capacities
- High speeds
- High energy efficiency
- Good noise reduction and vibration damping
- Floor preserving



### VULKOLLAN® 93 Shore A

VULKOLLAN® 93 Shore A is a highly elastic, cross linked polyurethane elastomer based on DESMODUR® 15\* with excellent mechanical properties. This includes high dynamic load capacity, high abrasion resistance and tear-propagation resistance, the highest modulus of elasticity of all elastomers, high mechanical-wear resistance as well as high impact resilience and a low compression set. For applications in tropical environments, we recommend hydrolysis-stabilised VULKOLLAN®.

- Long service life
- High load capacity
- High speeds
- High impact resilience



### VULKOLLAN® 95 Shore A

VULKOLLAN® 95 Shore A is a highly elastic polyurethane elastomer based on DESMODUR® 15\* for demanding and dynamic areas of application. The excellent mechanical properties of the material include a higher dynamic load capacity, very high abrasion resistance and tear growth resistance, very high mechanical wear resistance and very low compression set. For applications in tropical environments,

we recommend hydrolysis-stabilised VULKOLLAN®.

- Long service life
- Higher load capacity
- Very high speeds
- Minimal flat spots

\*DESMODUR® is a registered trademark of the Covestro Group.



### PAG

Cast polyamide (PAG) has essentially the same outstanding physical properties as PEVOLON® and offers extremely high load capacity, good chemical resistance, high elasticity, good abrasion resistance, ease of processing, low moisture absorption and a long service life

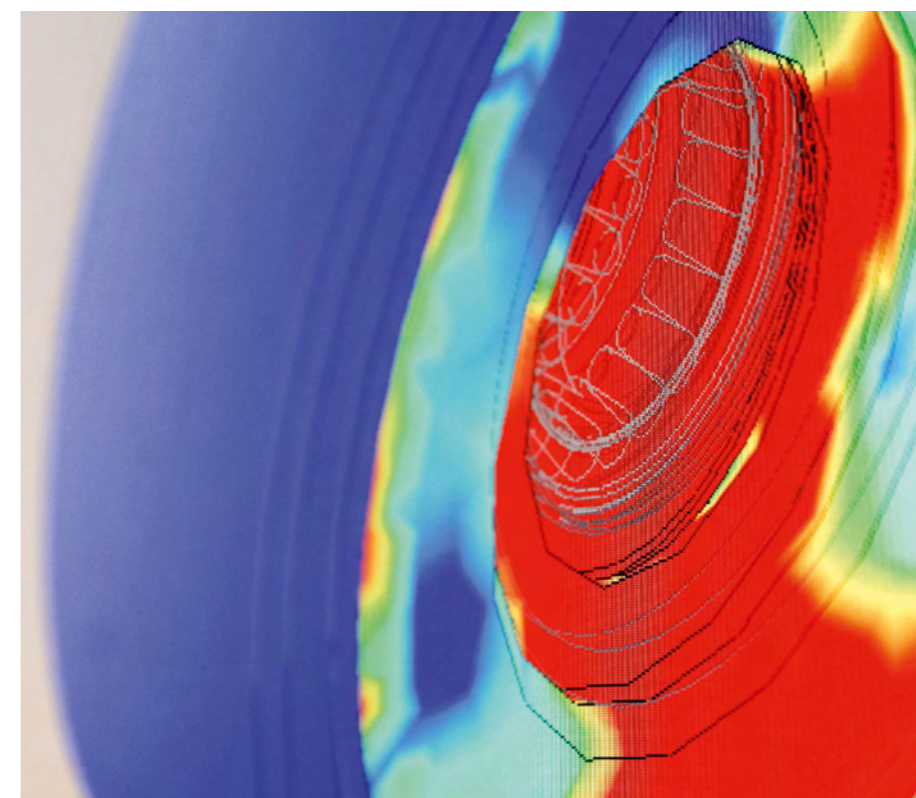
- Medium speeds
- Extremely high load capacity



### Rubber

In comparison with polyamides and polyurethane, rubber has a higher rolling resistance and is particularly floor preserving. Thanks to the variety of attributes and wheel body materials, rubber wheels can be used for a wide range of applications in in-plant transportation. We can offer you solid rubber and ELASTIC solid rubber wheels, thermoplastic rubber wheels and wheels with SUPER-ELASTIC tyres and pneumatic tyres.

- Good noise and vibration damping
- Low speeds
- Medium load capacity



### PEVOTEC®

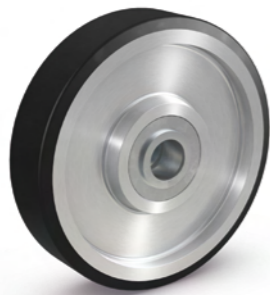
Behind the name PEVOTEC® is an extensive range of special polyurethane elastomers that can be used under extreme operating conditions. Depending on the task at hand, we develop the ideal wheel material for you on this basis by adapting the chemical and physical properties to your requirements.

## Dynamic at every turn

### Wheels for rollercoasters



VULKODYN® load wheel



VULKODYN® load wheel

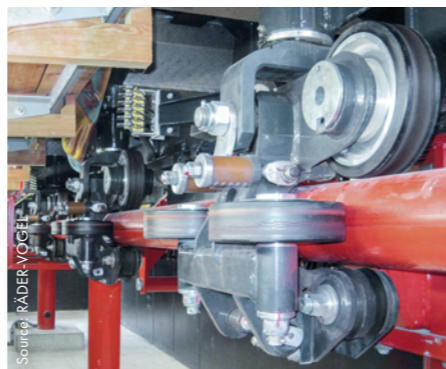
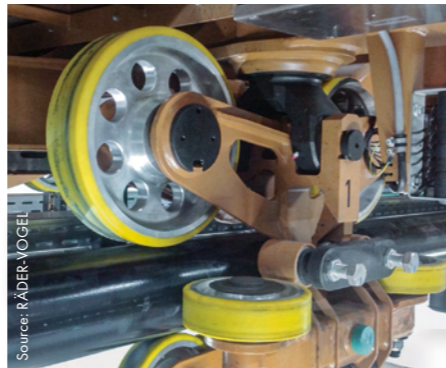


VULKODYN® load wheel



PEVOTEC® load wheel

Our wheels for rollercoasters prove themselves in practice every day at a wide variety of amusement parks all over the world. When it comes to driving, bearing loads, lateral-guidance and up-stop or under-friction technology, we offer a comprehensive range of high-quality, high-performance products. From small mobile coasters at fairgrounds to high-speed tracks in amusement parks – our wheels make sure that everything runs smoothly.

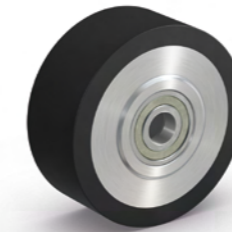


## Speed securely through the loops

### Wheels for rollercoasters



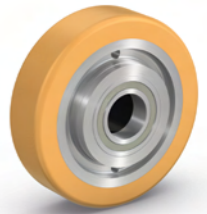
PEVOTEC® load wheel



VULKODYN® under-friction wheel



VULKODYN® lateral guide wheel



VULKOLLAN® lateral guide wheel



## Reliable in water

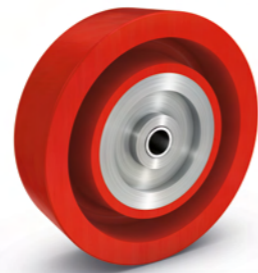
### Wheels for water rides



Solid-rubber press-on tyre



Transport wheel with SE tyre



PEVODYN® Soft lateral guide wheel



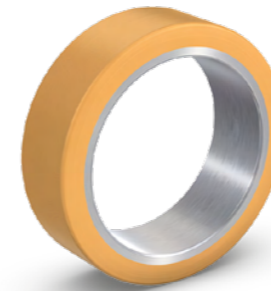
PEVOLASTIC® wheel

Water rides are a special attraction in any amusement park, but place extremely high demands on load and lateral guide wheels. In addition to the outstanding dynamic properties of the wheel materials, all components – in particular the bearings – must be designed to operate in and under water. The excellent quality of our wheels means that they ensure smooth and reliable operation in these conditions.



## Safely exploring new worlds

### Wheels for entertainment rides



VULKOLLAN® press-on tyre



VULKOLLAN® drive wheel



VULKOLLAN® load wheel



VULKODYN® load wheel

Whether a haunted castle, traditional ghost train or interactive 5D experience – you can be sure of maximum safety and unadulterated fun with our wheels which are specifically designed for the relevant application. We offer the perfect wheel for the wide variety of challenges with our broad range of wheel materials and wheel designs.



## A fun ride to the next adventure

### Wheels for monorails and light railways



Drive wheel made of C45 with VULKOLLAN® tread



Single-flanged wheel made of grey iron



Heavy-duty solid rubber wheel



Double-flanged wheel made of PEVOLON®

Monorails and light railways – from historical to state-of-the-art systems – are used to transport people around amusement parks all over the world and offer a special ride experience for young and old alike. We either supply the appropriate drive, load and guiding wheels from our broad standard range or manufacture them individually according to your requirements. And you can always depend on a reliable spare parts supply.



## Additional applications



## Your requirements set the benchmark

Whether for individual pieces or large batches, we are specialists and the market leader in custom-made products in Germany. Working closely with you, we develop high-quality solutions for a diverse range of requirements. You can count on our years of experience and expertise in almost every industry.

### EVERYTHING IS POSSIBLE

Forty employees in our construction and development department strive to make your wishes a reality every day. Our range of services includes the entire production development cycle – from the initial idea and construction to testing, all the way through to production. Depending on the requirements and area of application, we can either draw on existing products and adapt them to fit your needs or we can construct new, innovative solutions in collaboration with you.

Based on 3D construction data, we carry out strength calculations and simulations of load cases using specialised FEM modules. This allows us to check all key parameters of your wheel by computer.

### INNOVATIVE WHEEL TREAD MATERIALS

In addition to the construction of custom-made products, we constantly work to further develop our existing product range and to implement market requirements into new products. We are the most innovative company in the development of wheel tread materials in the world and we cooperate closely in this respect with a number of colleges and with our partners. Over the past few decades, we have developed and patented several materials, such as PEVODYN®, VULKODYN® and TRACTOTHAN®.

### TRUST IN OUR PRODUCTS

Our wheels have to prove themselves every day in the most demanding operating conditions. Excellent quality and a long service life are therefore an absolute necessity for us. Our quality assurance system is certified according to DIN EN ISO 9001:2015, DIN EN ISO 3834-2, DIN EN ISO 14001:2015 and other standards. We have also implemented our own advance warning system within our processes. We carry out dynamic testing of wheels in accordance with DIN EN 12527–12533 on our own specially developed roller drum test rig, which allows us to simulate a large number of different usage situations. This means that when you choose us, you can always be sure that you will receive the best-possible product.



Source: Eric Kemnitz/BELANTIS

## Throughout the world



### GLOBAL SALES

You can get our wheels and castors exclusively from independent retail partners in more than 50 countries throughout the world. We have built up close and trusting relationships with many of them – relationships that stretch back over decades. Our partners offer you optimal service on-site, as well as high product availability thanks to their own storage facilities. We also offer them regular support through intensive product

training, technical consultation and joint customer visits. We ship our products across the whole world from Hamburg. Thanks to the excellent infrastructure connections all goods arrive quickly at their destinations.





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