

Leadership in Polyurethanes



MADE
Italy
in

88

61

POLYURETHANE COMPOUNDS

	TR	TR-Roll	TR-PowerHigh	Vulkollan®	TR ESD	TR-ROLL ESD
Key strengths	Reliability and duration over time	Comfort and ergonomics	High performance, low maintenance	Elasticity and resistance	Resistance and reliability in ESD compatible environments ($R < 10^9$ Ohm)	Comfort and ergonomics in ESD compatible environments ($R < 10^9$ Ohm)
Dynamic carrying capacity	●●●●○○	●●●●○○	●●●●●●	●●●●○○○	●●●●○○	●●●●○○○
Rolling resistance	●●●●○○	●●●●●●	●●●●●●	●●●●○○	●●●●○○	●●●●●●○
Resistance at high speed	●●●●○○○	●●●●●●	●●●●●●	●●●●○○○	●●●●○○	●●●●●●○
Resistance to wear and tear	●●●●○○	●●●●○○	●●●●●●	●●●●○○○	●●●●●●○	●●●●●●○○
Handling comfort	●●●●○○	●●●●●●	●●●●●●○	●●●●○○○	●●●●●●○	●●●●●●○○
Capacity to overcome obstacles	●●●●○○○	●●●●●●	●●●●●●○	●●●●○○○	●●●●○○○	●●●●●●●●
Resistance to oils	●●●●○○○	●●●●○○○	●●●●●●○	●●●●○○○	●●●●○○○	●●●●●●○○
Resistance to alcohol	●●●●○○○	●●●●○○○	●●●●●●○	●●●●○○○	●●●●○○○	●●●●●●○○
Resistance to hydrolysis	●●○○○○○	●●●○○○○	●●●●●●○	●●●○○○○	●●●○○○○	●●●○○○○
Hardness (Shore A)	92 +/-3	78 +/-3	92 +/-3	92 +/-3	90 +/-3	75 +/-3
Resilience	56%	70%	58%	59%	56%	70%
Abrasion loss (mm³)	38 mm³	56 mm³	35 mm³	39 mm³	41 mm³	59 mm³
Tearing resistance (kN/m)	55 kN/m	28.5 kN/m	65 kN/m	65 kN/m	50 kN/m	28.5 kN/m
Coefficient of friction on a smooth steel surface	0.20	0.30	0.25	0.25	0.20	0.30
Temperature range	-20/+80 °C	-20/+70 °C	-20/+80 °C	-20/+80 °C	-20/+80 °C	-20/+70 °C

“TR” Polyurethane

Reliability and Duration

The excellent physical-mechanical features of the **“TR” polyurethane** guarantee a **high resistance to wear, to tearing and to abrasion**.

It is particularly recommended for **heavy-duty applications**.

The high-thickness variant enables the use on floors with obstacles too.

Dynamic carrying capacity



Rolling resistance



Resistance at high speed



Resistance to wear and tear



Handling comfort



Capacity to overcome obstacles



Resistance to oils



Resistance to alcohol



Resistance to hydrolysis



Information

Value

Standards

Hardness (Shore A)

92 +/- 3 Shore A

ISO7619_1

Resilience (%)

56%

ISO 4662

Abrasion loss (mm³)

38 mm³

ISO 4649 Method A

Tear resistance (kN/m)

55 kN/m

ISO 34_1 (Met B, Proc B)

“TR-Roll” Polyurethane

Comfort and Ergonomy

TR-Roll combines the load capacity and the peculiar resistance to wear and tearing of the “TR Polyurethane” with the typical characteristics of the elastic rubber, such as an **easy overcoming of obstacles, vibration and shock absorption and noise reduction**. Its excellent performance on **rolling resistance** enables a smoother handling and a reduced effort made by the operators. It is also recommended for towing applications.



Dynamic carrying capacity

● ● ● ○ ○

Rolling resistance

● ● ● ● ●

Resistance at high speed

● ● ● ● ●

Resistance to wear and tear

● ● ● ○ ○

Handling comfort

● ● ● ● ●

Capacity to overcome obstacles

● ● ● ● ●

Resistance to oils

● ● ● ○ ○

Resistance to alcohol

● ● ● ○ ○

Resistance to hydrolysis

● ● ○ ○ ○

Information

Value

Standards

Hardness (Shore A)	78 +/- 3 Shore A	ISO7619_1
Resilience (%)	70%	ISO 4662
Abrasion loss (mm³)	56 mm ³	ISO 4649 Method A
Tear resistance (kN/m)	28.5 kN/m	ISO 34_1 (Met B, Proc B)

“TR-PowerHigh” Polyurethane

High Performance and Low Maintenance

TR-PowerHigh is the most suitable solution in case of applications with **very high loads, speed up to 12-16 km/h**, heavy duty cycle even in environments requiring resistance to hydrolysis. It is characterised by excellent rolling resistance and elasticity, **very good resistance to wear and to tear**.

Dynamic carrying capacity



Rolling resistance



Resistance at high speed



Resistance to wear and tear



Handling comfort



Capacity to overcome obstacles



Resistance to oils



Resistance to alcohol



Resistance to hydrolysis



Information

Value

Standards

Hardness (Shore A)	92 +/- 3 Shore A	ISO7619_1
Resilience (%)	58%	ISO 4662
Abrasion loss (mm³)	35 mm ³	ISO 4649 Method A
Tear resistance (kN/m)	65 kN/m	ISO 34_1 (Met B, Proc B)

Vulkollan®

Elasticity and Resistance

Vulkollan®, produced under Covestro licence, has excellent features of elasticity as well as of resistance to tearing, to wear and to abrasion; therefore it is suitable for heavy loads and **heavy duty cycle applications**.



Dynamic carrying capacity



Rolling resistance



Resistance at high speed



Resistance to wear and tear



Handling comfort



Capacity to overcome obstacles



Resistance to oils



Resistance to alcohol



Resistance to hydrolysis



Information

Value

Standards

Hardness (Shore A)	92 +/- 3 Shore A	ISO7619_1
Resilience (%)	59%	ISO 4662
Abrasion loss (mm³)	39 mm ³	ISO 4649 Method A
Tear resistance (kN/m)	65 kN/m	ISO 34_1 (Met B, Proc B)

“TR ESD“ Polyurethane



Resistance and Reliability

ESD-compatible environments (R <10⁹ Ohm)

TR-ESD polyurethane allows the **dispersion of the accumulation of electrostatic charges**, and is therefore **suitable in ESD-sensitive environments** and in potentially explosive areas. It maintains the main features of “TR” polyurethane, and is recommended for use for **handling heavy loads**, also with towing applications.

Good resistance to wear and to tear.

Dynamic carrying capacity

● ● ● ○ ○

Rolling resistance

● ● ● ○ ○

Resistance at high speed

● ● ● ○ ○

Resistance to wear and tear

● ● ● ● ○

Handling comfort

● ● ● ● ○

Capacity to overcome obstacles

● ● ● ○ ○

Resistance to oils

● ● ● ○ ○

Resistance to alcohol

● ● ● ○ ○

Resistance to hydrolysis

● ● ○ ○ ○



Information

Value

Standards

Hardness (Shore A)	90 +/- 3 Shore A	ISO7619_1
Resilience (%)	56%	ISO 4662
Abrasion loss (mm³)	41 mm ³	ISO 4649 Method A
Tear resistance (kN/m)	50 kN/m	ISO 34_1 (Met B, Proc B)

“TR-ROLL ESD“ Polyurethane

Comfort and Ergonomy

ESD-compatible environments (R <10⁹ Ohm)



TR-Roll ESD polyurethane has been developed for **dispersing the accumulation of electrostatic charges**, in environments where these can cause problems to equipment, materials or put at risk the safety of the place, **whilst maintaining the excellent physical/chemical features of “TR-Roll” elastic polyurethane**. The good rolling resistance allows an **easy handling of high loads**; suitable for damping shocks and vibrations and for easy overcoming obstacles.



Dynamic carrying capacity	● ● ● ○ ○
Rolling resistance	● ● ● ● ○
Resistance at high speed	● ● ● ● ○
Resistance to wear and tear	● ● ● ○ ○
Handling comfort	● ● ● ○ ○
Capacity to overcome obstacles	● ● ● ● ●
Resistance to oils	● ● ● ○ ○
Resistance to alcohol	● ● ● ○ ○
Resistance to hydrolysis	● ● ○ ○ ○

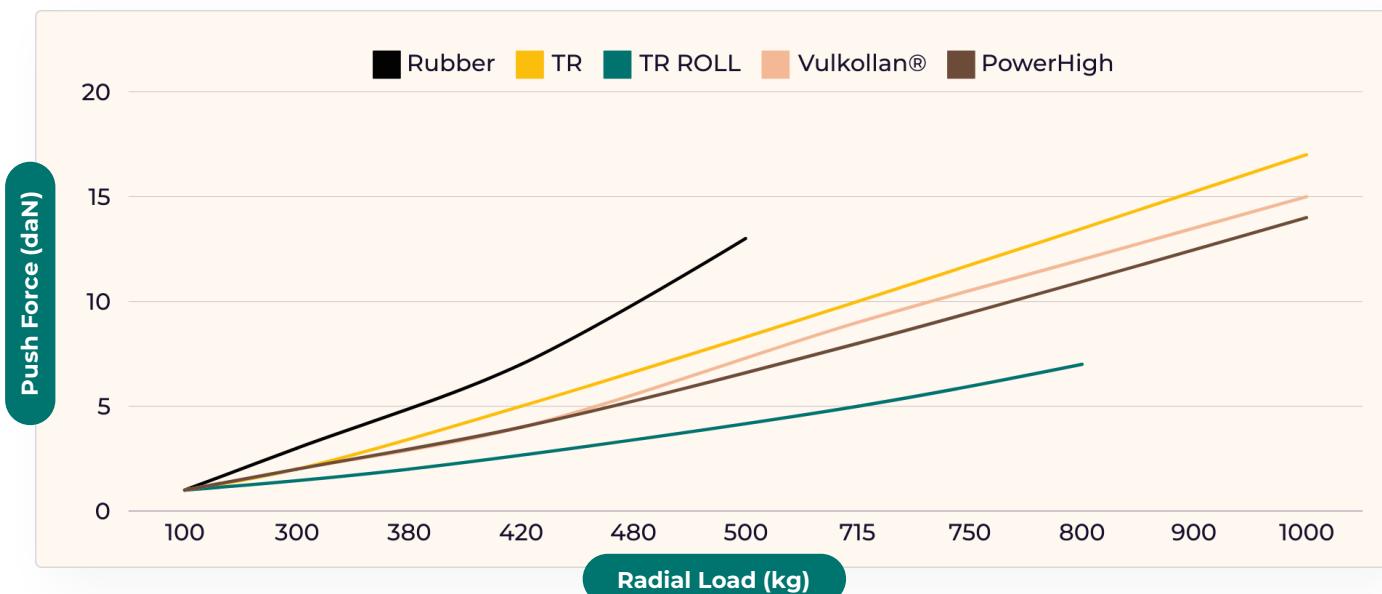
Information	Value	Standards
Hardness (Shore A)	90 +/- 3 Shore A	ISO7619_1
Resilience (%)	56%	ISO 4662
Abrasion loss (mm³)	41 mm ³	ISO 4649 Method A
Tear resistance (kN/m)	50 kN/m	ISO 34_1 (Met B, Proc B)

COMPOUNDS

Rolling resistance comparison

This chart shows on the y-axis the force needed to push or tow a single wheel with the application of the load indicated on the x-axis.

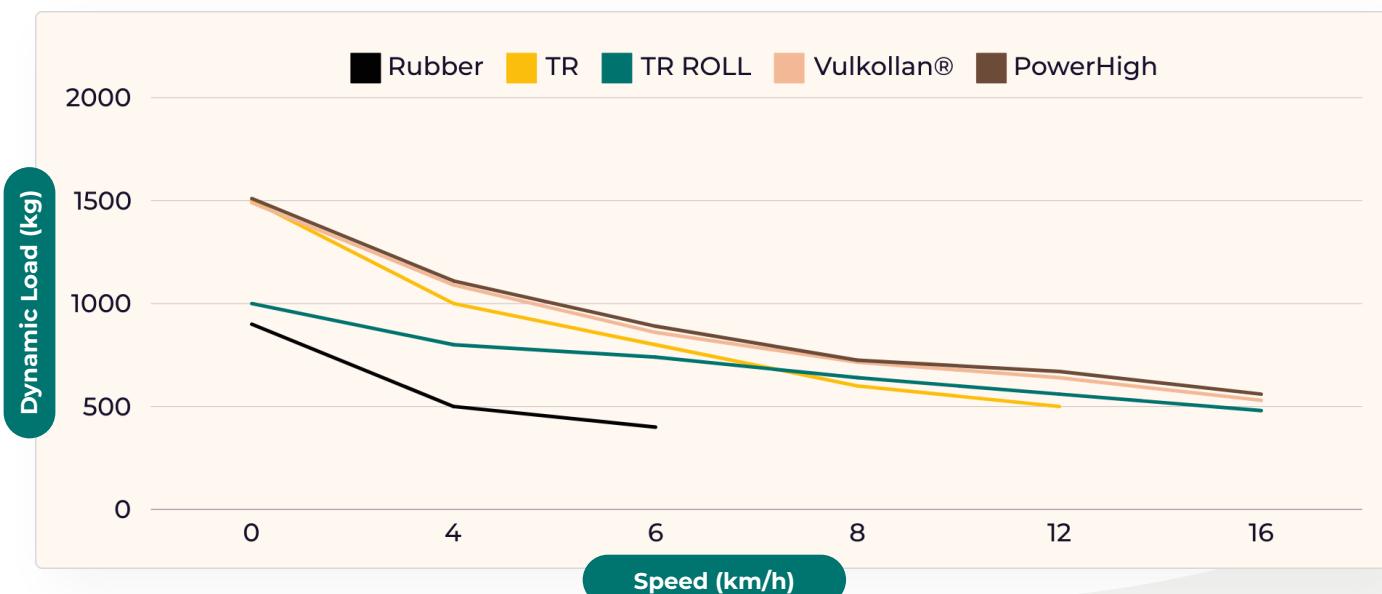
The model chosen for testing is a 200x50 mm wheel with cast iron centre; tests are performed at the constant speed of 4 km/h on smooth steel flooring.



Dynamic load performance related to speed

This chart shows on the y-axis the carrying capacity depending on the speed of use (shown on the x-axis).

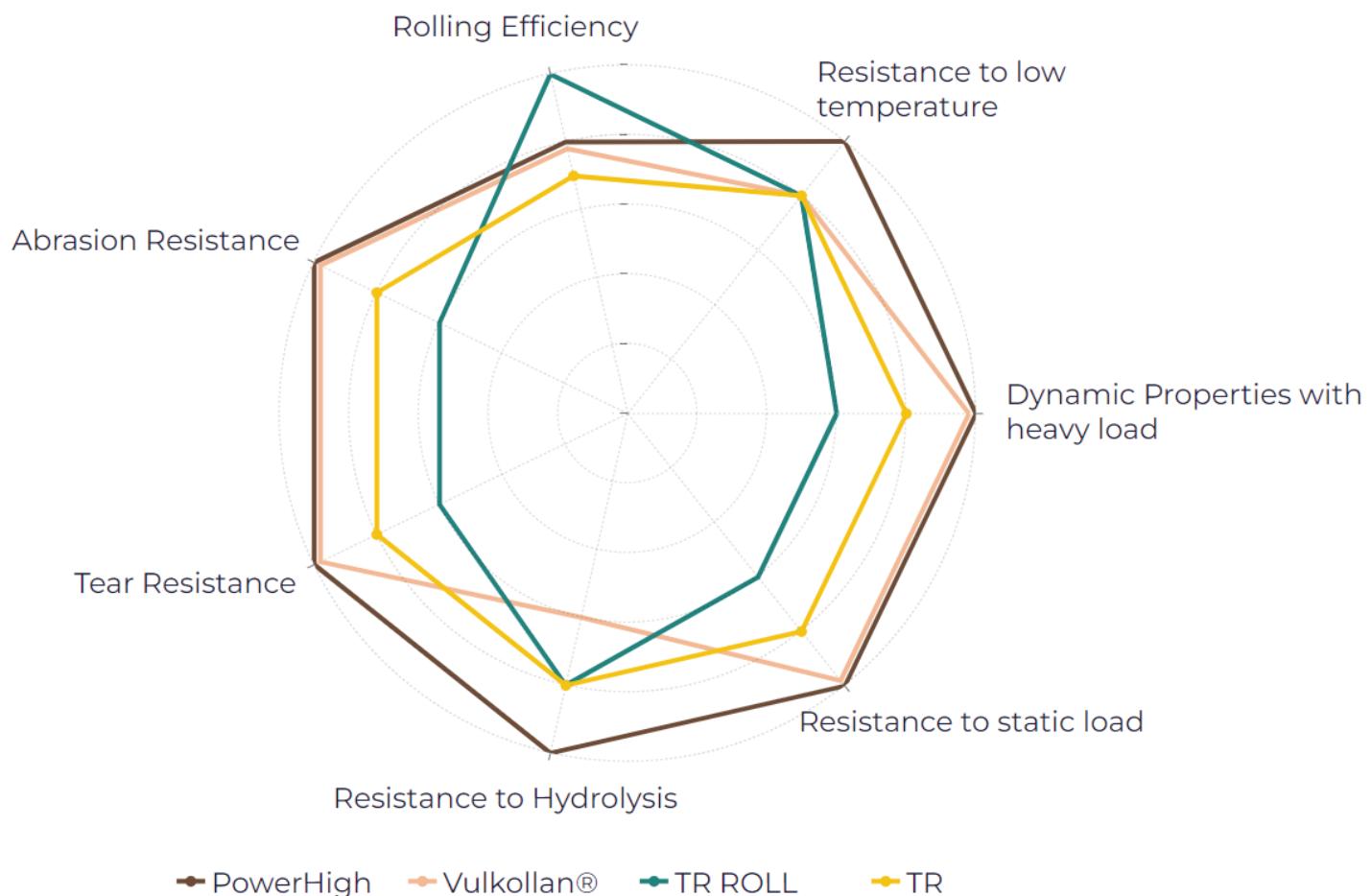
The model chosen for testing is a 200x50 mm wheel with cast iron centre.



COMPARISON

Tellure Rôta polyurethanes features comparison

This chart shows an overview of Tellure Rôta polyurethanes performance on different specific features.



Tellure Rôta Polyurethane Production

The automatic production process, designed by Tellure Rôta, ensures complete control over all production stages: preparation of the wheel and roller cores, preparation of the compounds, casting and curing. **Highly automated production lines** that employs the latest technology guarantee consistently **high quality standards** and the **maximum flexibility** in terms of volumes and lead times.

Customized wheels (non-standard dimensions or blends) are produced on semi-automatic lines where skilled operators ensure exact compliance with each detail requested by customers..

Tellure Rôta polyurethane compounds are developed and tested at **TRLab - Test & Research Laboratory**.



Why choosing Tellure Rôta?



Advice and **support** in developing the best solution for the customer and meeting specific needs.



The **production of polyurethane wheels** is the company's **core business**.



Automated processes guarantee consistent **quality** and product **traceability**.



Flexible production (big and small batches).



The production, development and testing of polyurethane compounds have been carried out in the **in-house laboratory** for many years. The laboratory collaborates with **prestigious universities** on a regular basis.



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POLYURETHANE



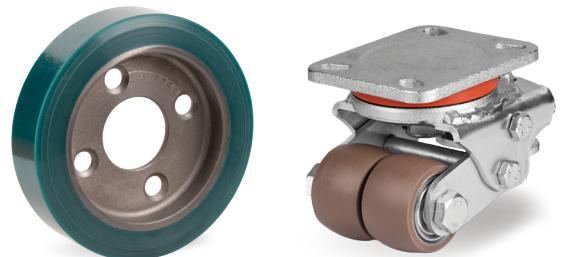
Forklift



Transpallet

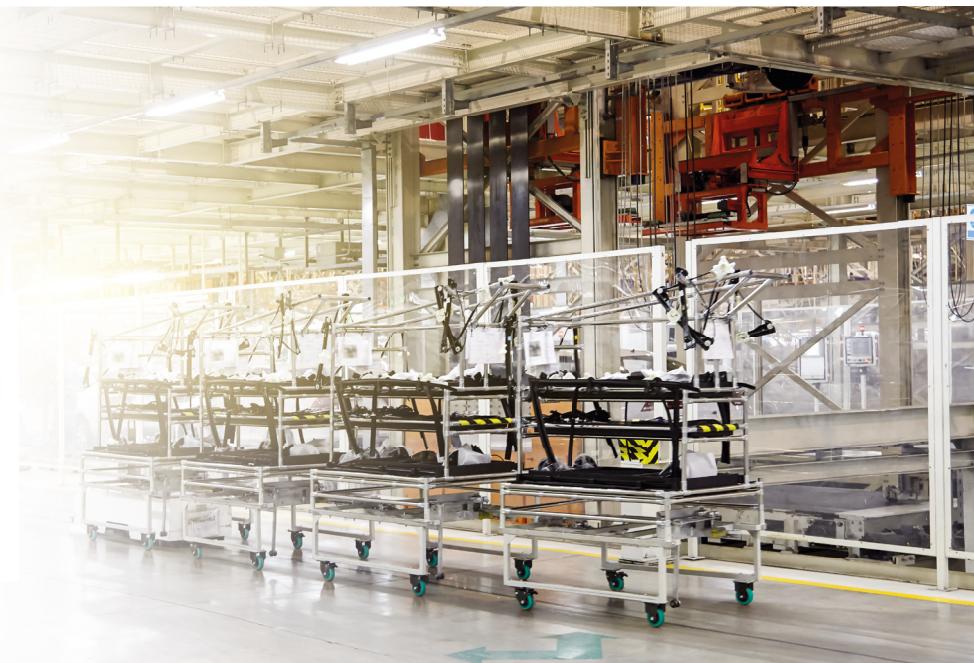


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APPLICATIONS

Automotive



ESD Environments



Trolleys



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