

Industrial Polyurethane Elastomer Wheels

Title	Industrial Polyurethane Elastomer Wheels
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Description

Polyurethane (PU) elastomer wheels, with their unique physical properties, positioned as high-performance mobility mechanisms, have become the premier choice for various industrial applications.



I. Dynamic Mechanical Properties: The Physical Advantages of Polyurethane

The core mechanical properties of polyurethane wheels stems from the molecular structure of the polymer, which provides mechanical strength and soft segments that grant elasticity.

1. Superior Load Density and Compression Resistance

Compared to natural rubber, polyurethane processes a significantly higher load density, which prevents developing flat spots, ensuring smoothness during initial startup. It is resistant to

2. Dynamic Heat Generation and Hysteresis Loss

For electric forklifts or AGVs (Automated Guided Vehicles), Hysteresis Loss is a critical

low Rolling Resistance: Significantly reduces battery consumption and extends

Temperature Control: Minimizes internal heat buildup, preventing debonding between

II. Analysis of Core Technical Indicators

When analyzing the performance parameters of a polyurethane wheel, the following key

1. Abrasion Resistance

Using A罉er or DIN abrasion testing, the wear index of polyurethane is typically only

2. Bonding Strength

The failure of polyurethane wheels often occurs not from material wear, but from failing to withstand shear forces under heavy loads. The polyurethane itself, which is a thermoplastic, lacks the ability to withstand shear forces under heavy loads.

3. Hardness Gradient and Friction Coefficient

Industrial applications typically utilize a hardness range of 90A to 95A, achieving an optimal balance between traction and rolling resistance.

High Traction: Provides excellent grip, preventing slippage even on damp or smooth surfaces.

Operational Damping: Natural damping properties provide vibration reduction, resulting in lower noise levels.

III. Chemical and Environmental Adaptability in Extreme Conditions

Oils and Greases: Chemical resistance to polyurethane, making it ideal for cleaning workshops.

Hydrolysis Resistance: In high-temperature and high-humidity environments, standard environments, the mechanical properties do not degrade in temperatures of cold.

Microbial Resistance: Excellent thermal and microbial resistance, meeting pharmaceutical standards.

IV. Industry Applications and Selection Guide

Application	Key Focus	Recommended Solution
AGV / AMR Robotics	Positioning stability, high strength	Hard PU (70A-80A) with high rebound (60%)
Warehouse / Automated	Dynamic loads, compressive strength	Large diameter, aluminum enhanced heat dissipation
Medical Equipment	Ultra-quiet operation, Non-marking	Soft PU (75A-85A) to ensure zero floor scuffing

V. Conclusion

Polyurethane wheels are a simple consumable but a product of precision engineering. Let us help you calculate your potential savings and optimize your fleet's performance.

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