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# Industrial Polyurethane Elastomer Wheels

Title	Industrial Polyurethane Elastomer Wheels
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## Description

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



## I. Dynamic Mechanical Properties: The Physical Advantages of Polyurethane

The superior mechanical properties of polyurethane wheels stem from the molecular structure of polyurethane, which provides a combination of high strength and soft segments that grant elasticity.

### 1. Superior Load Density and Compression Resistance

Compared to natural rubber, polyurethane possesses a significantly higher Young's Modulus, allowing it to maintain its shape under heavy loads without developing flat spots, ensuring smoothness during initial startup.

### 2. Dynamic Heat Generation and Hysteresis Loss

For electric lifts or AGVs (Automated Guided Vehicles), hysteresis loss, which translates to energy dissipation during compression, is a critical factor.

**Low Rolling Resistance:** Significantly reduces battery consumption and extends operational life.

**Temperature Control:** Minimizes internal heat buildup, preventing debonding between the polyurethane and the wheel core caused by thermal accumulation.

## II. Analysis of Core Technical Indicators

When evaluating a professional-grade polyurethane wheel, the following key performance parameters must be scrutinized:

### 1. Abrasion Resistance

Using Akron or DIN abrasion testing, the wear index of polyurethane is typically only 1/3 that of natural rubber. This equates to longer replacement cycles and lower maintenance costs.

### 2. Bonding Strength

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The failure of a polyurethane wheel is not from material wear, but from allowing it to wear under high shear forces under heavy loads. The polyurethane itself,

### 3. Hardness Gradient and Friction Coefficient

Industrial applications typically utilize a hardness range of 90A to 95A, achieving an

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

**Operational Noise:** Natural lower modulus provides vibration reduction, resulting in

### III. Chemical and Environmental Adaptability in Extreme Conditions

**Oils and Greases, and Most Non-poly solvents,** making it excellent for machine work shops and

**Hydrolysis Resistance:** In high temperature and high humidity environments, standard

**Microbial Resistance:** In the food and medical industries, polyurethane meets all

### IV. Industry Applications and Selection Guide

Application	Key Focus	Recommended Solution
AGV / AMR Robotics	Positioning accuracy, high	High rebound PU with
Warehouse Automated	Strength loads, compressive	Large diameter aluminum
Medical Equipment	Whispering operation, Non-	Soft PU (75A-85A) to ensure

### V. Conclusion

By choosing the right polyurethane wheel, you can significantly reduce downtime and improve productivity. Let us help you calculate your potential savings and optimize your fleet's performance.

[Request a Quote]