TPU-3000-12/24 Specifications and Industrial Applications Analysis

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Material Profile and Technical Parameters

This high-performance thermoplastic polyurethane variant demonstrates 73 Shore D hardness with 20% glass fiber reinforcement, achieving tensile strength exceeding 40MPa. The TPU-3000 series exhibits:

- Impact resistance over 65kJ/m? at -30?
- Melt flow index (MFI) of 18g/10min (220?/10kg)
- Thermal deformation temperature of 85? (1.8MPa)

Dual Processing Compatibility

Why settle for single processing methods when you can have both? The "-12/24" designation indicates dual compatibility with:

- Injection molding (Barrel temperature: 190-210?)
- Extrusion processing (Screw L/D ratio >=24:1)

Cross-Industry Implementation Cases

Automotive Shock Absorber Components

In Dongguan automotive parts manufacturing trials, TPU-3000-12 demonstrated 200,000+ fatigue cycles without visible deformation. Compared to traditional rubber:

- Vibration damping efficiency improved 18%
- Service life extended 2.3x

Industrial Robotics End-Effectors

A Shenzhen automation equipment manufacturer reported 37% energy savings using TPU-3000-24 for robotic grippers. The material's dynamic response characteristics enable:

- 0.08mm positioning repeat accuracy
- 3ms deformation recovery speed

Technical Comparison Table

Property	TPU-3000-12	TPU-3000-24	Competitor A
Flexural Modulus	850MPa	920MPa	720MPa
Mold Shrinkage	0.8-1.2%	0.6-1.0%	1.5-2.0%

Surface Treatment Compatibility
The material's low surface energy (34mN/m) enables direct bonding with:

- UV-curable coatings (adhesion >=4B)
- Plasma-treated metal surfaces (peel strength 8N/cm)

Implementation Considerations
When implementing TPU-3000 series in production environments:

- Maintain drying temperature at 80-90? for 3-4 hours
- Use screw compression ratios between 2.8:1-3.2:1
- Optimize mold temperature at 30-50? for dimensional stability

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