

A Comprehensive Guide to Rubber Moulding Technique

In the field of rubber manufacturing, moulding techniques play a crucial role in shaping the final product. As rubber technologists, we look into the intricacies of these techniques, carefully considering their advantages and disadvantages, and exploring their practical applications.

1. Injection Moulding

Injection moulding is a highly automated process capable of producing intricate shapes with high precision. The rubber compound is heated until it becomes flowable, then it is injected into the mould under high pressure.

Advantages: High production rate, consistent quality, and reduced waste.

Challenges: High initial setup and tooling costs, and requires precise control of process parameters.

Applications: Predominantly used in the automotive industry for producing large volumes of parts like seals, gaskets, and wiper blades.

2. Compression Moulding

Compression moulding is one of the oldest and simplest rubber moulding processes. The rubber compound is placed into a mould cavity. The mould is then closed and heated, causing the rubber to flow and fill the mould.

Advantages: Low tooling costs, suitable for low-volume production, and can handle large, bulky parts.

Challenges: Slow production rate, labour-intensive, and not suitable for complex shapes.

Applications: Used in production of majority of rubber products including large parts like



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3. Transfer Moulding

Transfer moulding is a variation of compression moulding where the rubber compound is placed in a “pot” located between the top plate and the plunger. When the mould is closed, the rubber is compressed by the plunger and flows through sprues into the mould cavities.

Advantages: Suitable for intricate parts, less flash, and better dimensional control than compression moulding.

Disadvantages: Slower than injection moulding, and higher tooling costs.

4. Rubber-to-Substrate Bonding

Transfer moulding is a variation of compression moulding where the rubber Rubber-to-Substrate Bonding is a specialized process where rubber is bonded to a substrate (usually metal) during the moulding process. The substrate is prepared with a bonding agent before the rubber is applied.

Advantages: Creates a strong bond between the rubber and substrate, eliminating the need for secondary assembly operations.

Challenges: Requires careful preparation of the substrate, and not all rubbers are suitable for bonding.

Applications: Used for parts that require the strength of metal and the flexibility of rubber, such as vibration isolators and engine mounts.