

# Ensuring Quality in Recycled Plastic for Packaging: Challenges and Solutions

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Plastic packaging is widely used due to its affordability, and the increasing use of recycled plastics presents challenges in quality assurance. Unexpected issues can occur during the manufacturing process, impacting the final products. This article delves into what can be done to improve quality assurance, identifies responsible parties, and explores the complexity of the recycled plastics industry.

During this project it has been shown that there is a big challenge for plastic processing companies in the packaging industry to balance cost-, and quality trade-offs when handling recycled plastics. While there is a desire to embrace sustainable materials, recycled plastics can lack quality due to degradation from repeated heating and processing. This unpredictability makes it challenging to anticipate how recycled materials will behave, leading to unexpected deviations in the finished product's design. Moreover, the fact that it is often impossible to trace the recycled material's history does not make the situation any easier.

**It has been shown** that it is clearly difficult for the involved parties in the plastic packaging supply chain to take concrete actions for quality assurance. The absence of global standards complicates matters, leaving each stakeholder accountable for their part in the process. This ambiguity allows plastic processors to shift blame onto other involved parties, hindering progress. To overcome this challenge, plastic processing companies must carefully select suppliers, maintain transparent relationships, and foster open dialogues to contribute to quality assurance.

**Choosing appropriate testing procedures** is essential for quality assurance throughout the recycled plastic manufacturing process. Various tests can be performed to investigate different material properties, depending on the product's purpose, where these testing procedures are highly individualized. An appropriate testing procedure should be conceived by the customer, in agreement with



Plastic raw material. Image: Polykemi

the plastic processing company and the suppliers, to fulfill the customer's demands for the product. Collaboration among these stakeholders is crucial to ensure the testing process fulfills the customer's requirements.

**To verify the content and properties** of recycled plastics, a combination of tests should be conducted. Relying on a single test is insufficient; comparing results from multiple tests provides a comprehensive understanding of the material behavior. The test results should then be compared with the supplier's provided technical data sheets (TDS) for verification. If deviations arise, a dialogue with the supplier is essential for clarification and resolving any issues.

**The quality assurance** of recycled plastics for packaging presents various challenges that demand collective action. Collaboration, transparency, and tailored testing procedures are vital to navigate this complex landscape successfully. The plastic packaging industry must embrace responsibility, foster strong relationships across the supply chain, and promote sustainable practices. By doing so, high-quality recycled plastics can be ensured, paving the way for a more environmentally conscious and efficient packaging industry.

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