
Styrenics Circular Solutions demonstrates mechanically recycled polystyrene is suitable for food contact

- **Successful ‘challenge test’ of mechanical recycling technology for polystyrene in collaboration with Gneuss and Fraunhofer IVV**
- **High cleaning efficiency of mechanical recycling enables SCS to apply for food contact approval**

Styrenics Circular Solutions (SCS), the value chain initiative to increase the circularity of styrenic polymers, has successfully demonstrated that polystyrene is mechanically recyclable to food contact standards. In cooperation with the Fraunhofer-Institute für Verfahrenstechnik und Verpackung IVV, SCS performed so-called challenge tests, which confirmed the high cleaning efficiency of the mechanical recycling technology for polystyrene to remove impurities originating from waste streams. These results enable the first application for an opinion of the European Food Safety Authority (EFSA) on the use of recycled polystyrene (r-PS) as food contact material.

With the aim to consistently achieve the very high purity levels of the polystyrene recycle needed for food contact materials, the ‘supercleaning’ technology of machine manufacturer Gneuss was used during the mechanical recycling process. Its ability to handle post-consumer polystyrene waste from food contact packaging was ‘stress tested’ and challenged by adding impurities under worst-case assumptions. The challenge test revealed the very good cleaning efficiency of the technology used, leading to excellent purity levels of the r-PS. This result is supported by the intrinsic properties of polystyrene being a low diffusion polymer, which prevents that any waste impurities enter into or migrate through the polymer matrix.

The resulting quality of the r-PS provides producers of packaging for the food industry with utmost flexibility, as it can be used in their existing industrial production processes such as extrusion and thermoforming. Members of SCS delivered the proof of concept that mechanically recycled polystyrene can serve as a drop-in solution in form, fill and seal (FFS) production lines. Multiple variants for packaging are possible: single layer, co-extrusion of the r-PS with virgin polystyrene or use of the recycle as middle layer between virgin polystyrene (A-B-A).

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Frank Eisentraeger, Product Director PS EMEA, INEOS Styrolution and member of the SCS working group Waste Feedstock says: "The challenge test indicates that polystyrene is one of the best recyclable materials, including for food contact applications. The test results are of crucial importance as they give brand owners and packaging producers full confidence that the applied mechanical recycling technology delivers the required high purity levels for their business. Most importantly, the qualities of the polystyrene molecule remain stable and do not degrade in multiple mechanical recycling. We can recycle polystyrene over and over again."

Jens Kathmann, Secretary General SCS, comments, "This is a huge milestone in styrenics' contribution to the circular economy. Recycled polystyrene of food grade quality combines all the well-known application, processing and environmental advantages of polystyrene, with the added value of being a fully circular polymer. This is a great attraction and value for the market. We are delighted to take the next step by filing our application with EFSA for food contact acceptance."

About Styrenics Circular Solutions

Styrenics Circular Solutions is the value chain initiative to increase the circularity of styrenics. The initiative engages the entire value chain in the development and industrialisation of new recycling technologies and solutions. It aims to strengthen the sustainability of styrenic products while improving resource efficiency within the Circular Economy.

For more information visit www.styrenics-circular-solutions.com

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