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Member Case Study: Reflex Polymers

Summary

Reflex Polymers processes post-industrial polypropylene carpet waste into an agglomerate for use in the plastics moulding industry. Recent trials demonstrated that post-consumer polypropylene carpet waste sourced from a carpet retailer behaves in a similar manner to the post-industrial wastes, and that there is a market for the resultant agglomerate when blended with other materials. There is now an opportunity to scale up these trials to a commercial footing through milk-round collections from carpet retailers, and for plastics reproducers in other regions to invest in carpet densifiers.

Background

Reflex Polymers is a plastics reprocessing company based in Hartlepool. The company has agglomerated post-industrial polypropylene carpet wastes for many years. With a decline in availability of post-industrial streams, other feedstock materials were sought.

Half a million tonnes of carpet waste goes to landfill each year in the UK. Of this total, about 160,000 tonnes is polypropylene carpet. To determine whether post-consumer carpet could be agglomerated into an acceptable product, Carpet Recycling UK organised a post-consumer carpet trial with Reflex Polymers.

Trial Aims

To determine whether equipment used to process post-industrial pp carpet waste could handle post-consumer material and produce an acceptable crumb output.

Trial Outline

Pieces of post-consumer carpet waste and offcuts collected by Flooring UK, a carpet retailer based in Southport, were sorted using a handheld Near-Infrared (NIR) spectrometer [please see retailer sorting trial report for further details]. The pp material was baled and shipped to Reflex Polymers.

At Reflex Polymers, the pieces of carpet were pre-shredded and passed through a carpet

densifier (see below) to produce an agglomerated output with particle size ranging from 4mm-10mm. The flowable output is fed into bulk bags for onwards sale.

RPL 1200 PP Carpet Densifier

Drum Dia.: 1200mm Motor : 200Kw
Throughput : Max. 500 - 800kg/hr dependant upon
moisture content of the material
No of Rotor Blades 2 No of Set Blades 10
Control Console for single operator processing inc
stop/start, cooling fan, water activation switch and
discharge door control (air operated) and
emergency stop button, ammeter, controls for fan,
auger and ancillaries.



There is a market for the crumb from post-consumer carpets but it requires blending with higher impact materials to better the performance and maximize returns.

Next Steps

Reflex Polymers seeks further supply of post-consumer polypropylene carpets. There is an opportunity for carpet retailers who can identify their polypropylene offcuts or take-back to bale the material for supply to Reflex Polymers. Since few retailers have facilities to store bales of waste until a full-load has been generated, a milk-round collection system should be trialled in a geographic area.

Transport costs will determine a catchment area within which polypropylene waste arisings should be channelled to Reflex Polymers. In other regions, plastics reprocessors should be made aware of the opportunities through agglomerating post-consumer carpets and producing crumb.