

12th November 2009

Research Briefing

Nylon fibre recovery from carpets

The fibres which form the pile of a carpet are usually the most valuable elements for potential recovery. Since carpets are complex composites designed to perform an arduous task on the floor, deconstructing them is a challenge. Ongoing research is needed to find economic technologies to extract fibres from carpets.

Research work by Carpet Recycling UK has focused on two routes:

- Size reduction of the whole carpet followed by separation of components
- Separation of pile from backing using conventional sheet splitting techniques

Sheet splitting is particularly relevant for carpet tiles where the substrate is rigid and more importantly the pile fibres are predominantly nylon. Nylon has a potential recovery value which is around twice that of polypropylene which is the largest component of UK carpets.

Splitting trials using a modified machine from the leather industry have demonstrated that a typical loop pile nylon tile has a recovery potential of around 10% by weight of nylon which is believed pure enough to use in engineering plastic compounds.

Compounding trials with these fibres will take place to demonstrate the purity achievable and the value thus created can be measured against the cost of extraction.

The bitumen backing carcass can be further recovered into end-uses such as asphalt and roadstone where both the bitumen and backing fibres play a part in enhancing the performance as well as reducing the virgin raw material requirements.