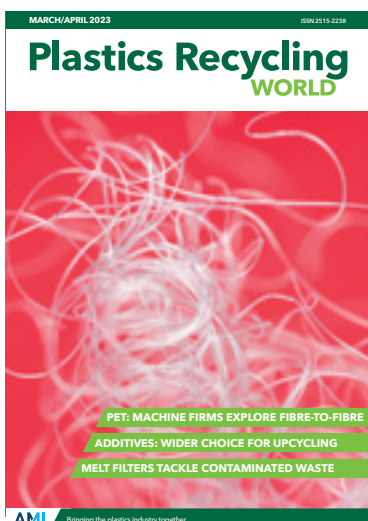


Wider choice of additives encourages upcycling

Main image: Völpker has developed products that are providing field-tested and ready-to-use solutions in plastics recycling

The development of new additives and masterbatches for improving the quality and stability of recycled plastics provides many new opportunities for upcycling, writes Mark Holmes.

This is an excerpt from the original article, prepared by VOELPKER®.
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The global magazine for the plastics recycling supply chain. Published bi-monthly, it covers developments in: recycling plant; compounding; size reduction; separation and sorting; melt filtration; additives; and key end-use markets..

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Based on its experience in the development of montan wax-based additives for engineering plastics, **Völpker Spezialprodukte** says that it has developed products that are providing field-tested and ready-to-use solutions in plastics recycling. "Völpker manufactures the Cevo products on a recently completed compacting plant," says Dr. Lutz Matthies, Head of Business Development. "Compacted pellets are suitable for the manufacturing of dryblends used by injection moulders, for example. Heat-bonded, dust-reduced powders from this plant can be handled and dosed easily and are appropriate for occupational safety. The fact that the ingredients of the individual Cevo formulations do not have to be melted also makes the new plant more energy-efficient and increases our production capacity to 500 kg/h."

He says: "Requirements for recycling additives and processes are particularly high. The polymers are thermally pre-stressed and partially degraded and therefore usually have poorer mechanical characteristics. There is often contamination with non-compatible foreign polymers, which must be handled. Therefore, the aim is to improve the properties of regenerates and compounds based on recycled plastics and adjust their quality in such a way that higher-quality end products can be manufactured. Our montan wax-based Cevo formulations combine the mechanisms of dispersion, stabilisation, compatibilisation and chemical intervention in the chemical structure of the polymer, depending on the application."

Cevo-process A-3110 is a one pack especially developed for thermally pre-stressed polyamide. In PA recycling, the repeated thermal stress on the polymer leads to chain degradation, which is reflected in a reduction in viscosity. This is accompanied by a loss of mechanical properties, particularly toughness. The formulation contains heat stabilisers which – in synergy with other ingredients – also promote a partial re-polymerisation of decomposed polymer chains. Further degradation of the polymer during the extrusion process is suppressed by the reduction of friction peaks, and the flow characteristics are enhanced. The one pack improves the homogeneity of filler distribution and leads to an increased surface quality. For example, it can be used in agglomerated material based on milled PA fibre waste. Applications

include automotive engine covers – glass fibre/mineral filled at a dosage of 0.5-0.8%.

Cevo-master D-2050 is a reactive modifier to improve the flowability of polycarbonates. The company says that it produces fast-flowing regenerates and compounds based on PC regrinds of higher viscous extrusion qualities. The use of this additive allows the production of easy-flowing PC re-compounds for injection moulding that have properties similar to those of virgin material, such as Lexan 121R.

Further investigations have shown that Cevo-master D-2050 is also well suited for converting high-viscosity PA6 (cast polyamide) into a low viscosity grade during the compounding process.

Cevo-master B-6000 is a masterbatch that promotes the processability and quality of a wide range of recycled polyolefins. In PCR and PIR materials, the additive reduces the processing problems caused by impurities of foreign polymers due to its compatibilising effect. The flow behaviour of the compounds/regenerates can also be increased in a targeted manner. In parallel, the use of Cevo-master B-6000 leads to a more stable process and basic stabilisation of the compound. The distribution of further additives, for example dyes, is also supported. Cevo-master B-6000 is also suitable as a toughness improver.

In addition, in PET recycling Cevo-process J-3400 and Waradur OPplus can reduce friction peaks during the extrusion process and help improve surface qualities and disperse fillers like talc, particularly when high filler loads apply.



Left: Völpker manufactures Cevo products on a recently completed compacting plant