
Haydale Supplies Graphene to NeoEnpla for Use in Food Packaging

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Haydale has started to supply South Korean plastics developer NeoEnpla with functionalized graphene nano-platelets (GNPs) for use in food packaging. Functionalized using Haydale's patented HDPlas® technology, the GNP-enhanced thermoplastic has been used to manufacture an initial sample range of food storage zipper bags and biodegradable plastic bags.

LLDPE and LDPE (low density polyethylene) are widely used in food packaging and are ideal for food storage due to their high resistance to moisture, tearing and chemicals. The graphene-enhanced zipper bags have reportedly shown an increase in tensile strength of 31% compared to non-graphene LLDPE (linear low-density polyethylene) zipper bags. In addition, the increased mechanical strength of the graphene zipper bags allows light weighting of the plastic, reducing the film thickness from 90µm to 60µm per bag.

Since food packaging primarily acts as a barrier to moisture and gases (including contaminants) that ordinarily lead to a reduction in the shelf-life of food, the new graphene-enhanced food storage bags can keep the food fresher for longer thanks to the anti-bacterial, UV and barrier properties of functionalized graphene. The graphene-composites polymer bags demonstrated their own oxygen blocking effect keeping food such as bread, cake and rice containing carbohydrates fresher for longer compared to non-graphene bags.

Plastic packaging is necessary to maintain the shelf life of fresh food items, reducing food waste by spoilage before use. By ensuring barrier performance is delivered in products that can be recycled or composted, there is the potential for a more sustainable approach to the challenges often faced by producing recyclable materials.

With the increasing demand to reduce single use plastics and increase recycling rates, getting the performance characteristics demanded by the industry is a challenge. To address this, [Haydale](#) reported that both recyclable LLDPE and LDPE were evaluated in addition to

PBAT (Polybutylene Adipate Terephthalate), a biodegradable polymer that is already seeing increasing demand for its biodegradable properties.

The new biodegradable bags contain a blend of PLA (Polylactic Acid) and PBAT, and enhanced with GNPs, offer increased strength without affecting the compostability of the films.

Haydale believes to be at the forefront of graphene and other nanomaterials being used in food packaging through the HiBarFilm2 project, which aims to develop the next generation of high barrier films for food packaging using plasma functionalization.

The project, which started earlier this year, aims to redesign multilayer films into 100% recyclable and compostable mono-material solutions for the food industry. The funded project focusses on using HDPlas® functionalized barrier additives including graphene, to maximize barrier performance and improve dispersion of the additives within the chosen matrix. Key project deliverables are intended to reduce the environmental impact of packaging plastics and offer more sustainable barrier solutions to combat food waste.

Read the [original article](#) on Graphene Info.