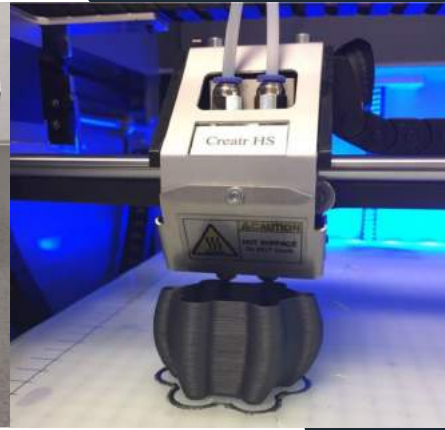
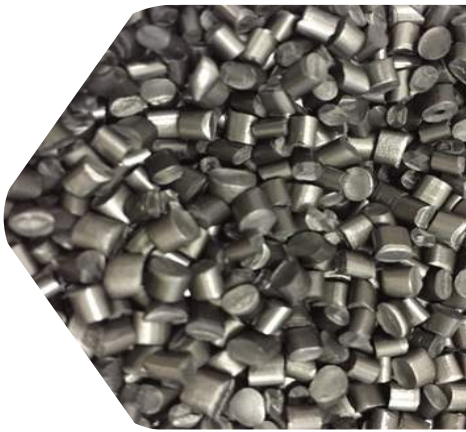


GRAPHENE ENHANCED 3D PRINTER FILAMENT



HAYDALE—MAKING THE DIFFERENCE

Utilising Haydale's patented HDPlas[®] Graphene nanoplatelets (GNPs) to improve dispersion and bonding within the PLA polymer. This is the first of a family of graphene enhanced PLA filaments, developed in conjunction with Amphilogic Ltd, receiving excellent feedback, in particular thermal stability, print quality, first layer adhesion and improved Z-axis adhesion.

> Faster & Better Print Quality

The HDPlas[®] GNP filaments exhibit improved surface finish and print quality. A range of components have been successfully 3D printed with metallic finish.

> Improved Dimensional Stability

Measurements from printed articles from a number of sources show reduced shrinkage and warpage, leading to increased part accuracy.

> First Layer and Z-axis Adhesion

This HDPlas[®] GNP filament demonstrates excellent first and inter-layer adhesion necessary for the production of industrial products. Under optimum processing conditions, it was not possible to break the layers by hand and industrial partners have praised the ruggedness of their parts.

> Thermal Stability

HDPlas[®] GNP filament out-performed standard PLA, ABS and PETG and was still stable under a 100g load at temperatures above 90°C, enhancing industrial applicability.

> Product Description

Filaments available in 400g reels with 1.75mm diameter & 750g reels with 2.85mm diameter.



 info@haydalecs.com

GRAPHENE ENHANCED PLA



3D PRINTING COMPETITION

Haydale have developed the first of a family of graphene enhanced thermoplastic 3D filaments. The first products are graphene enhanced PLA in 1.75mm and 2.85mm diameter filaments.

The company are offering 10m sample reels to customers and there is a prize for feedback, publicity and examples of 3D printed models which are considered innovative.

The prize to be awarded will be 4 off 400g reels with a 1.75mm diameter filament or 1 off 750g reel with a 2.85mm diameter filament.

The prize will be awarded on a monthly basis and the judging panel will be made up from representatives of Haydale Composite Solutions Ltd, Fullerex Ltd, Amphilogic Ltd and 3D Filaprint.

COMPANY DETAILS

If you wish to receive a 10m sample of a 1.75mm diameter graphene enhanced filament then please attach your business card below or complete the form.

Name	
Company	
Address	
E-Mail	
Telephone	

✉ info@haydalecs.com

☎ +44 1509 210027

haydale
Composite Solutions

GRAPHENE ENHANCED THERMOPLASTICS



'GRAPHENE' NANO MATERIALS ARE AVAILABLE IN A VARIETY OF FORMS INCLUDING SINGLE LAYER GRAPHENE, FEW LAYERED GRAPHENE, MULTI-LAYERED GRAPHENE, GRAPHENE NANO-PLATELETS, SINGLE AND MULTI-WALL NANOTUBES. USING NANO MATERIALS HAYDALE COMPOSITE SOLUTIONS CAN ENHANCE THE THERMAL, ELECTRICAL, PHYSICAL AND MECHANICAL PROPERTIES OF YOUR THERMOPLASTIC MATERIALS.

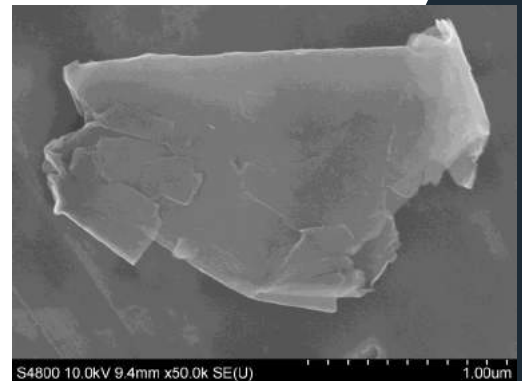
HAYDALE—MAKING THE DIFFERENCE

Haydale have developed and patented a low temperature plasma process to functionalise these graphene nano materials to aid their dispersion and bonding into the host material in order to improvements in the mechanical, thermal, electrical and physical properties of thermoplastic materials.

Haydale have then been compounding the various graphene nano materials

into a range of thermoplastic polymers such as Polypropylene, Nylon, ABS and PLA to produce a range of materials with varying mechanical, electrical, thermal and physical properties.

The graphene enhanced thermoplastics have then been injection moulded into test samples and evaluated internally and at a variety of universities and test houses.



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POLYPROPYLENE (PP)

Mechanical properties of graphene nano platelets in polypropylene.

Up to 51% increase in tensile modulus

Over 30% increase in tensile strength

NYLON 6 (PA6)

Electrical conductivity of few layer graphene in nylon 6. Anti-static at 0.5% Loading and conductive at 1% loading

57% increase in tensile modulus and 73% increase in tensile strength

POLYLACTIC ACID (PLA)

Thermal Stability:

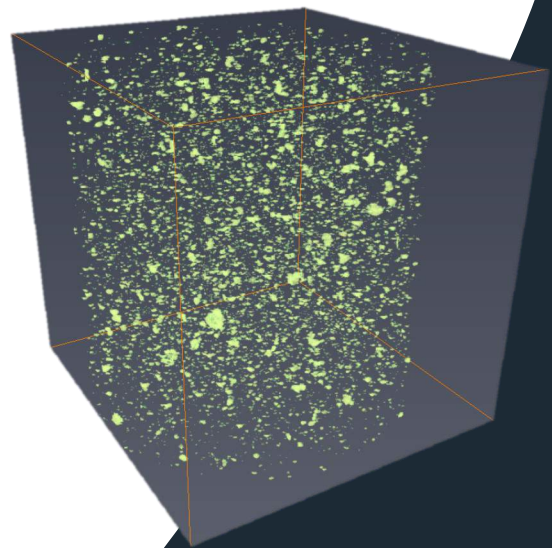
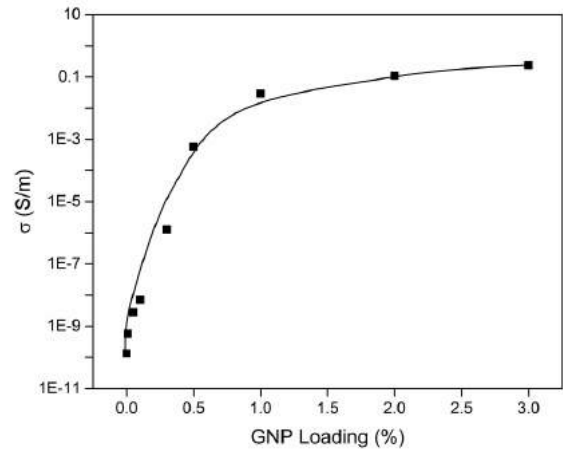
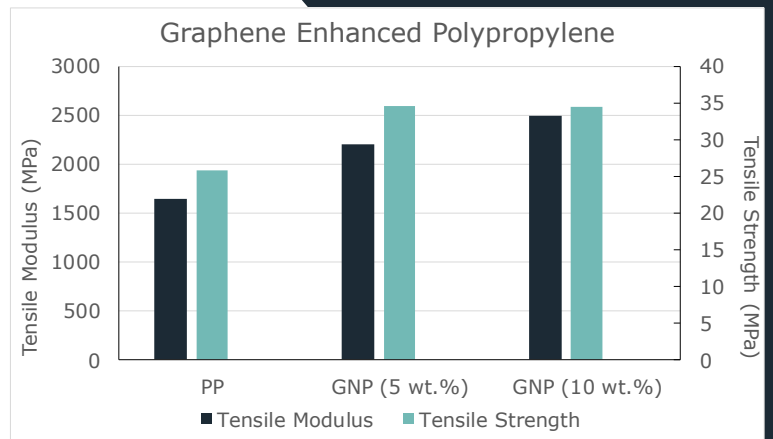
HDPlas® GNP filament out-performed standard PLA, ABS and PETG and was still stable under a 100g load at temperatures above 90°C, enhancing industrial applicability.

IMAGING

TEM and 3D X-Ray trials have shown an excellent level of dispersion within the polymer matrix.

OUR SERVICES

Haydale have access to vast range of graphene materials which can be used to enhance the mechanical, thermal, electrical and physical properties of thermoplastic materials. In addition multi-functionality can be achieved by selecting a combination of graphene materials. Companies interested in products tailored to specific applications should contact the company.



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