

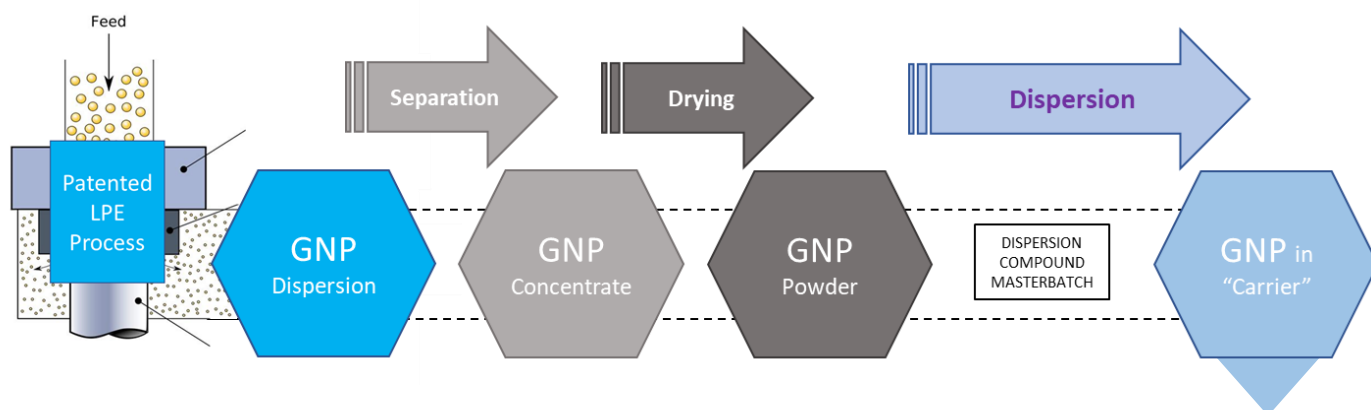
# Technical Data Sheet

Product Name	<b>GEM S27M</b>
Product Code	<b>GMH1627-S27M</b>
Description	GraphCore™ 01 GEM 10% in HDPE (S27M)
Form	MB—10% in HDPE
Issue Date	V1—July 01, 2024

Black Swan Graphene Inc. (“Black Swan”) (TSX-V: SWAN) (OTCQB: BSWGF) (Frankfurt: R96), is focused on the large-scale production and commercialisation of patented high-performance and low-cost graphene products aimed at several industrial sectors, including concrete and polymers. Black Swan is a global leader in the development and supply of graphene nanoplatelets (GNP) for use in new and emerging technologies.

**GEM S27M(GMH 1627-S27M)** is a member of the **GraphCore™ 01** Family of graphene nanoplatelets. It is supplied in masterbatch form as 10% loaded in high density polyethylene (HDPE). The product is manufactured using patented liquid phase exfoliation process incorporating ~3%wt non-ionic surface agent, and compounded using twin-screw extrusion.

The ISO-standard manufacturing process uses a carefully selected graphite being dispersed in a liquid medium (typically water) using our surface chemistry know-how. Our manufacturing process yields reliable quality GNPs in dispersion, powder or masterbatch forms.



MASTERBATCH	
Product Code	GMH1627-S27M
Surface agent	Non-ionic on GNP
Form	MB—10% in HDPE
Colour	Black

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**Nominal Composition: Graphene Enhanced Masterbatch**

Graphene Content:	10%
Polymer Carrier:	HDPE
Additives:	None

**General**

GMH1627-S27M is a concentrate of Graphene nano platelets (10%) designed to be dosed at 5-20% in the final product.

Designed for use in moulding and extrusion, based on a general-purpose high density polyethylene (HDPE)

Possible to increase in some mechanical properties of HDPE articles by up to 55%.

It is recommended to conduct a ladder study in order to evaluate the end user performance requirement.

Typical processing temperatures are x – y °C.

**Specification**

Properties	Test Method	Units	Limits
Loading	TGA Under Nitrogen	%	9 - 11
Filter Dispersion	Internal method	---	Max 30
Melt flow index	BS2782:720A 5kg at 190°C	g/10 min	TBC
Moisture Content	Weight loss at 105°C at time of packing	%	Max 0.2

**Packaging**

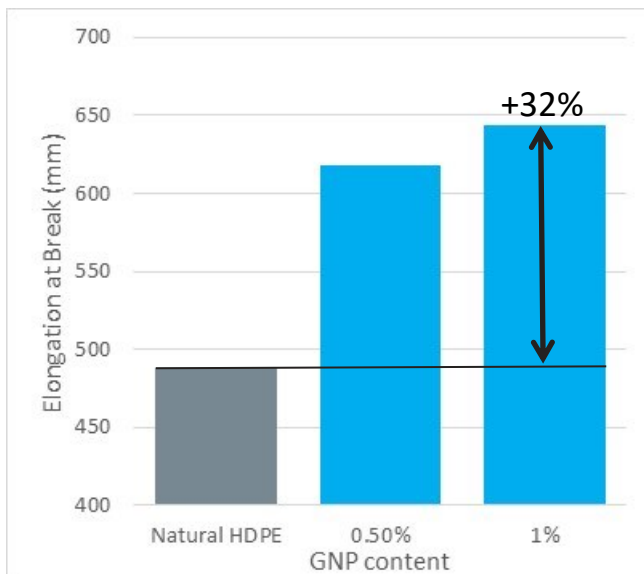
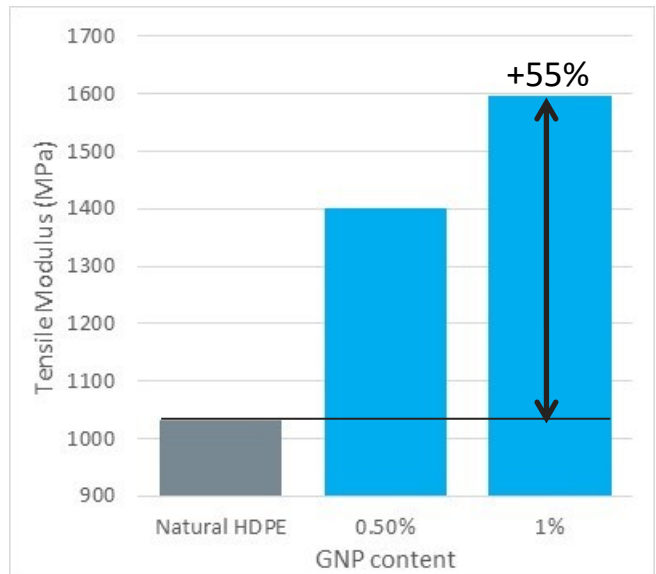
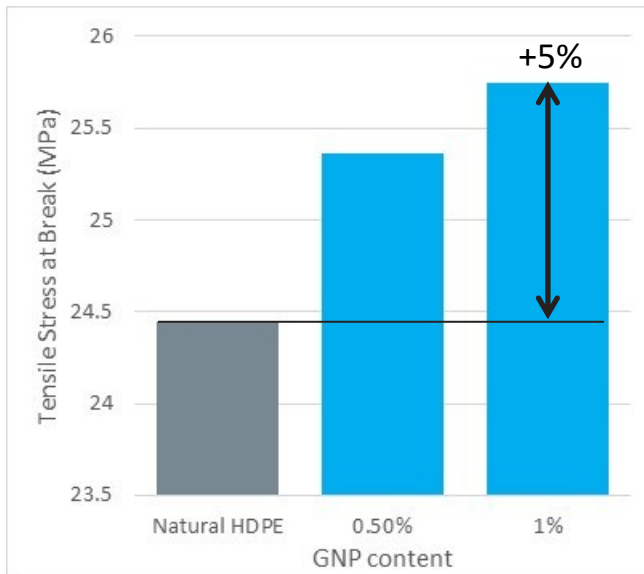
Black Swan **G**raphene **E**nhanced **M**asterbatches are typically available in sealed 25kg Polyethylene Bags. Other forms are available on request and include bulk packaging such as Big Bags, Octabins and Tankers

GEM Products must be stored in cool dry conditions.

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### Material property improvements

Polymers reinforced with our GNP (graphene nanoplatelets) show significant potential for lightweighting, barrier characteristics, and impact resistance. Black Swan offers cost-effective and high-performance polymer-based products, including sustainable EV solutions and other industrial applications.



#### Properties

When diluted with high density polyethylene, GMH1627-S27M can improve tensile and flexural characteristics.

The recommended dosage is <10% (equal to 1% GNP loading). A ladder study may be necessary to optimise performance based on the properties needed.

Performance may differ based on the grade of polymer utilised.