

# Black Swan Graphene Announces Progress in Commercial Initiatives, Highlighting the Strategic Role of Graphene-Enhanced Masterbatch

Toronto, Ontario--(Newsfile Corp. - July 22, 2025) - Black Swan Graphene Inc. (TSXV: SWAN) (OTCQX: BSWG) (FSE: R960) ("**Black Swan**" or the "**Company**") is pleased to provide an update on its ongoing commercial initiatives, underscoring the success of its strategic approach to providing Graphene-Enhanced Masterbatch™ or GEM™ ("**GEM**") to the polymer industry. This model, which involves working closely with distribution partners and masterbatch manufacturers, continues to demonstrate its value by supporting product adoption and maximizing market reach.

"We are incredibly excited to see our efforts and investments culminating in significant progress toward commercialization as our graphene gains traction in the industrial sector. As for many innovative products, the initial commercialization is paramount, as progress with prospective customers and production activities can provide supply security for eventual customers. As volumes expand, not only will the Company be able to compete more effectively in higher-volume applications, but lower production costs open doors to more price-sensitive markets. The path to commercialization success is now clearly within reach," stated Michael Edwards, Chief Operating Officer of Black Swan.

Since launching multiple GEM products in mid-2024 (*see press releases dated April 30, July 9, and July 16, 2024*), Black Swan is already working with over 40 customers or companies engaged in joint projects. The Company cautions that there are no assurances that all or substantially all the initiatives currently being progressed with potential customers will result in sales to such customers.

While protecting confidentiality, the Company presents below various details of its commercial progress across diverse markets. While some key variables are still being formalized, the Company aims to reach a point where it can sell most of its current annual production capacity. Black Swan is confident it can swiftly build on this momentum thereafter.

## Expansion of Production Capacity at Consett, United Kingdom

Black Swan has ordered its next-generation production unit and is undertaking a significant expansion that will increase its production capacity to 140 tonnes per annum, more than tripling its current capacity. This scale-up will position the Company among the leading graphene producers globally (*see press release dated June 3, 2025*).

The additional production unit will be installed within the Company's existing operational facility located at Thomas Swan & Co. Ltd. ("**Thomas Swan**"), a United Kingdom-based global chemicals manufacturer with a century-long track record. Thomas Swan has been at the forefront of graphene innovation and remains a strategic shareholder of Black Swan. This site already comprises a well-established infrastructure, with power and other essential utilities required for expansion. By leveraging the existing site and utilities at the Thomas Swan facility, the Company will be able to minimize capital expenditure, reduce lead times for installation, and accelerate the path to increased commercial output.

## GEM: A Game-Changing Strategy

The GEM strategy is a cornerstone of Black Swan's recent commercial advancements, and the Company has previously announced three key early non-exclusive partnerships with Hubron International Ltd, Broadway Colours Ltd. and Modern Dispersions Inc. (*see press releases dated January 16, July 23, 2024, and May 14, 2025*). Black Swan is particularly encouraged by feedback from masterbatch

companies, which are independently supported by the Graphene Engineering Innovation Centre ("GEIC"), indicating that, after working with various graphene sources, Black Swan's product stands out as exceptionally well-suited for masterbatch applications. This is largely due to its excellent dispersion, where no special technique or dispersant are required, which enables our GEM partners to rapidly develop and deliver tailored solutions for customers.

Offering a library of standard GEMs, Black Swan gives any potential graphene customer access to the technology with a low-cost entry and a quick determination of product suitability. By focusing on producing high-quality graphene powder and partnering with masterbatch specialists, Black Swan avoids the complexities of directly managing end-user supply chains. Furthermore, by dealing with masterbatch specialists, instead of creating its own masterbatch, Black Swan can accelerate the market adoption since customers, often already customers of those firms for other polymer additives, can be confident that those GEMs have gone through a rigorous testing process and provide the advertised benefits with batch-to-batch consistency. This approach allows Black Swan to concentrate on innovation and product development while leveraging the distribution networks and expertise of its partners. Not only does this streamline logistics, but it enhances profitability by focusing on higher-margin graphene powder sales. As more partners adopt the GEM products into their portfolios, Black Swan is positioning itself as a leader in the graphene market, capitalizing on first-mover advantages in multiple industries. Black Swan is currently working through the GEM qualification process with other global masterbatch and compounding companies which provides a quick and robust graphene testing route.

GEM delivers remarkable performance benefits, including<sup>1</sup>:

- Over 20% weight reduction with 1.0% loading in TPU (thermoplastic polyurethane);
- Over 20% increased impact resistance in PP (polypropylene) at 0.2% loading;
- More than 40% reduction in water vapor transmission in PLA (polylactic acid) with less than 1.0% loading; and
- 36% improvement in oxygen transfer rate in PET (polyethylene terephthalate) with 0.2% loading.

This strategy not only expands Black Swan's market penetration but also allows the Company to scale efficiently. By focusing on graphene powder production and allowing partners to handle downstream logistics and customer relationships, Black Swan aims to maximize its gross margins and reduce the logistical complexities that often come with direct customer management.

## **GEM Trademark**

As a first mover in graphene-enhanced masterbatch solutions, Black Swan has secured a trademark for its proprietary GEM brand, setting a new industry standard that prospective customers can confidently trust and quickly test in applications. This trademark not only solidifies Black Swan's leading position but also allows customers in diverse industries to market their products as "*Made with GEM*" ensuring traceable quality and performance consistency in graphene-enhanced materials, and to build a user community of "*Made with GEM™*" customers, similar to the "*Intel inside*" model to share insights and updates from Black Swan on material developments. With GEM as a hallmark of innovation in graphene, Black Swan is primed to lead as demand for high-performance, scalable graphene solutions accelerates.

## **Agricultural Films - North American Agricultural Manufacturer**

In the agricultural sector, Black Swan's GEM are being trialed by a major North American manufacturer of agricultural films. This project, facilitated by one of Black Swan's masterbatch partners, aims to enhance the strength, barrier properties, and sustainability of agricultural films used in crop protection.

The global agricultural films market was valued at USD \$11.45 billion in 2023<sup>2</sup> and is expected to grow

at a CAGR of 8.8% from 2024 to 2030. This growth is driven by rising agricultural output, increasing demand for modern farming practices, and a focus on sustainable agriculture. Agricultural films are used to protect crops in greenhouses and help plants withstand extreme weather conditions.

Agricultural films support various farming techniques by enhancing crop quality, regulating soil temperature, managing weed growth, and increasing crop yields. These films are also essential for storing silage, corn, and hay, fulfilling diverse cultivation needs. Known as effective solutions for soil protection, greenhouse productivity, and precision farming, these elastic films protect plants in both indoor and outdoor settings. Their durability and efficiency contribute significantly to increased production, and in areas with extreme climates or heavy rainfall, they help mitigate the effects of hail.

As the demand for food grows, the use of plastic films in agriculture has surged. These films play critical roles in low tunnels, irrigation, mulching, and silage, all of which improve crop yields and harvest quality. Consequently, agricultural films have become integral to modern farming practices.

## **Packaging Solutions - Global Packaging Innovator**

Black Swan is closely collaborating with a number of prominent packaging companies to enhance the barrier properties of PET in multiple packaging and bottling applications. Those projects have progressed significantly with products undergoing advanced testing in both cases. By using GEM to improve barrier properties and reduce plastic usage, Black Swan is positioning itself in the sustainable packaging market. Black Swan is also seeking FDA approval for food contact and is currently in the application process with a leading partner. The success of these trials could lead to widespread adoption of graphene in high demand packaging solutions, reinforcing the strength of Black Swan's masterbatch strategy.

## **Bio-Based Packaging**

Black Swan is also making strides in the bio-based packaging sector with global sustainability-focused manufacturers. These projects focus on incorporating graphene-enhanced polylactic acid ("**PLA**") into consumer packaging with enhanced barrier properties approaching 50%, specifically in the areas of aerosols, with our partner Farrag Packaging, and vehicle components, resulting in a 40% improvement in barrier properties.

## **Water Bottles and Water Dispensers**

Black Swan is progressing with a Middle Eastern manufacturer of polycarbonate and PET water bottles. The company has entered the final testing phase with Black Swan's GEM for these products. The global plastic bottle market represents a significant growth opportunity for Black Swan as it continues to expand its footprint in the sustainable packaging sector.

## **About Black Swan Graphene Inc.**

Black Swan is focused on the large-scale production and commercialization of patented high-performance and low-cost graphene products aimed at several industrial sectors, including concrete and polymers, which are expected to require large volumes of graphene. Black Swan's graphene processing technology was developed by Thomas Swan over the last decade. Thomas Swan is a United Kingdom-based global chemicals manufacturer, with a century-long track record and has been at the forefront of graphene innovation.

More information is available at: [www.blackswangraphene.com](http://www.blackswangraphene.com).

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## **Black Swan Graphene Inc. on behalf of the Board of Directors**

Simon Marcotte, CFA, President & Chief Executive Officer

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<sup>1</sup> All figures are approximate.

<sup>2</sup> <https://www.grandviewresearch.com/industry-analysis/agricultural-films-market>



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