9 December 2024

SYNTHETIC INDUSTRIAL DIAMONDS

Sarytogan Graphite Limited (ASX: SGA, "the Company" or "Sarytogan") is pleased to announce that Sarytogan Ultra High Purity Fines (UHPF) Graphite has been demonstrated to be suitable for use as feedstock for synthetic industrial diamonds.

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https://sarytogangraphite.com.au/announcements

Highlights

- Synthetic industrial diamonds have been grown up to 1mm in size for industrial use from Sarytogan UHPF at high yields of 48-54% using High-Pressure High-Temperature (HPHT) technology.
- Initially made from granulated UHPF of >150 micron. Then made with spheronisation process rejects of d50 7 micron.
- The global market for synthetic industrial diamonds is 3,000 tpa (USGS), requiring at least 6,000 tpa of high-purity graphite feed.
- This could provide an additional high-value market for Sarytogan Graphite, over and above the production assumed in the Pre-Feasibility Study.

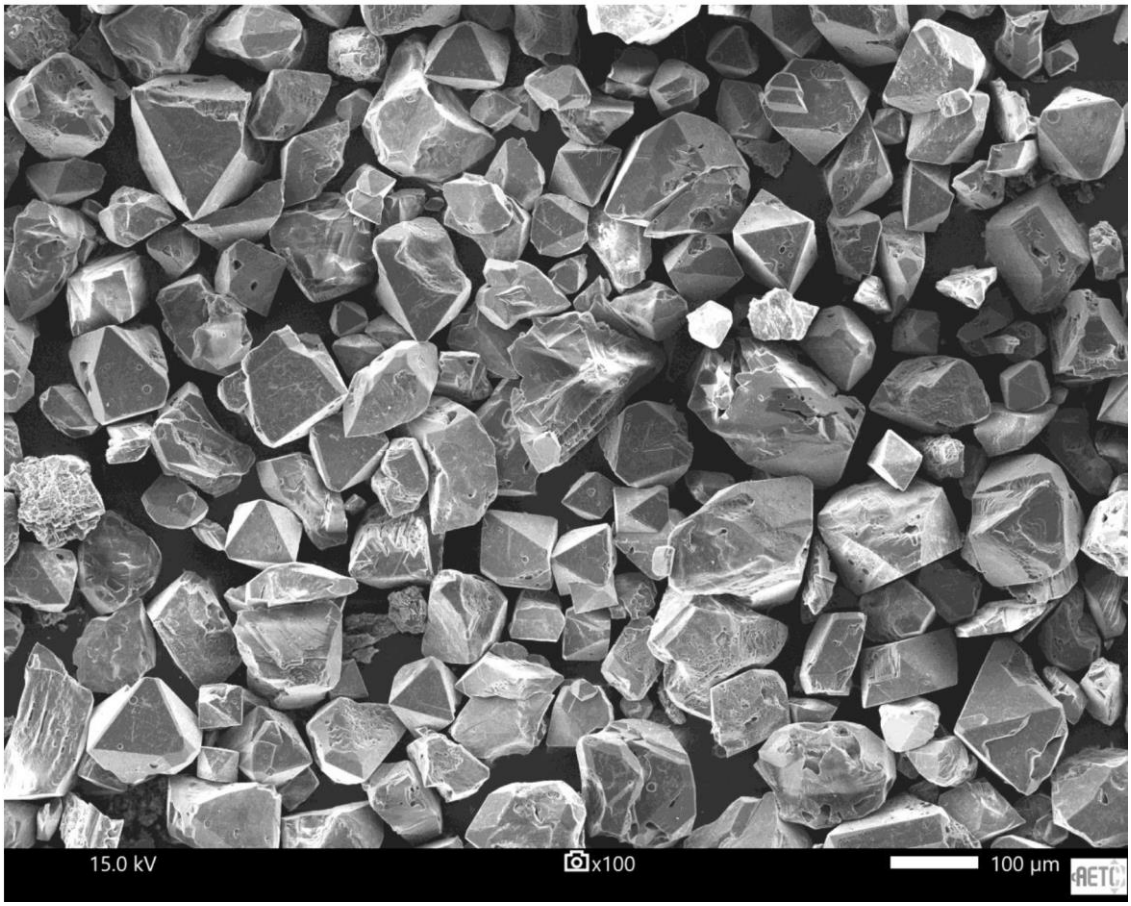

Figure 1 – Synthetic Diamonds for Industrial Use made from Sarytogan UHPF Graphite

Sarytogan Managing Director, Sean Gregory commented:

"Sarytogan Graphite has once again demonstrated remarkable performance to open another high-value market. Sarytogan's development strategy is to place as many units of carbon into as many markets as possible. Sarytogan's inverted flowsheet thermally purifies the graphite before rather than after spheroidization. This allows Ultra-High Purity Fines to be produced as a high value by-product for a range of high technology applications that now includes synthetic industrial diamonds employed in premium performance metalworking, cutting, drilling, lapping, road construction and other industrial uses."

Sarytogan Flowsheet and Product Mix

Sarytogan plans to produce 3 product types to place as many carbon units into as many markets as possible (Table 1) from its giant and exceptionally high-grade Mineral Resource (Table 2).

Table 1 - Sarytogan proposed products, demonstrated performance and pricing ([1]source: Wood Mackenzie, Lone Star Tech Minerals, Company analysis)

Product Groups	Micro80C	UHPF	USPG and CSPG
Grade (% C)	80 to 85	Up to 99.9992	>99.99
Sizings (µm)	D90 15, 10 & 5	D90 15, 10 & 5	d50 20,15 & 10
Pricing applied in the PFS[1] (US$/t)	$400 to $850	$3,000 to $12,000	$2,500 to $8,000
Uses	Traditional - Lubricants, Friction Products, Drilling Fluids, Recarburizer, Foundry	Advanced – Alkaline, Lithium, and Lead Acid Batteries; Nuclear and Synthetic Diamonds	Lithium-Ion Battery Anodes
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Most USPG and CSPG producers undertake a spheroidization process ahead of purification, generating a lower-grade finely sized by-product suitable only for traditional industrial markets. Sarytogan's inverted flowsheet envisages purification ahead of spheroidization (

Figure 2). The by-product is UHPF, a premium priced product with many advanced battery and premium-priced industrial applications. One of the notable markets for UHPF is synthetic industrial diamonds, the subject of this announcement.

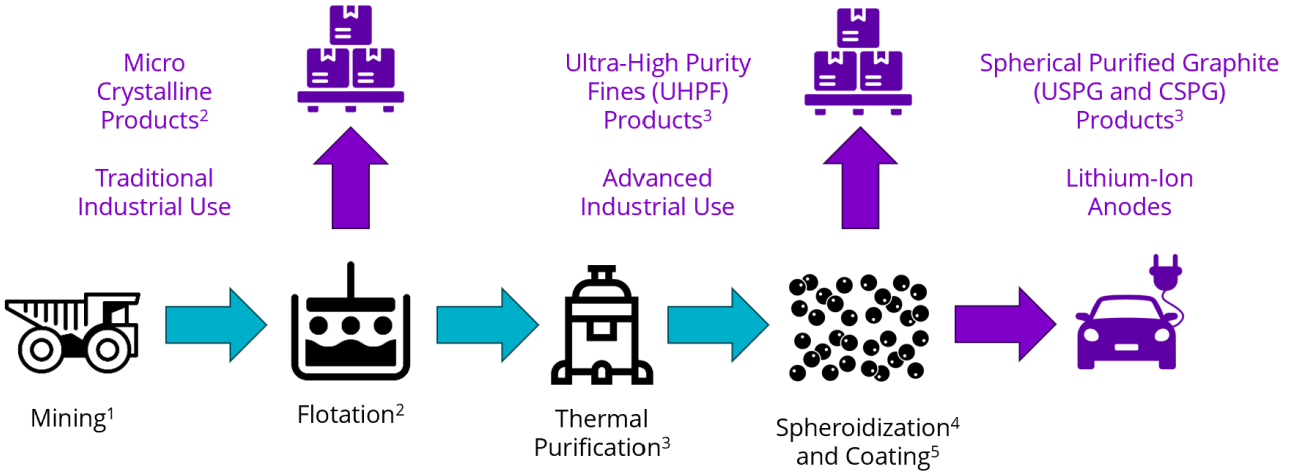

Figure 2 - Sarytogan Proposed Schematic Flowsheet and Product Mix.
Refer ASX Announcements: [1] 27/3/23, [2] 13/11/23, [3] 5/3/23, [4] 19/12/23, [5] 12/6/24

Manufacture of Sarytogan Synthetic Industrial Diamonds

Two alternative feed preparation steps were trialled at our preferred laboratory in the USA:

Firstly, thermally purified granules of Sarytogan UHPF graphite at five nines purity (the purification was announced to the ASX on 5 March 2024) were ground to a >150 micron size as preparation for feedstock to grow synthetic industrial diamonds.

Secondly, wet classification cut WC-4 of spheronisation process rejects from the spheronisation results announced to the ASX on 19 December 2023 with a d50 size of 7 microns was trialled as feedstock.

In both cases, synthetic diamonds were effectively grown to a d50 size of more than 250 micron, with some diamonds of up to 1mm observed under SEM (Figure 1).

The diamonds were grown using the High-Pressure High-Temperature (HPHT) method at an applied pressure in the order of 50-60 kbar and temperatures greater than 1,500°C. Under these conditions, graphite, in the presence of a molten catalyst, turns into a liquid phase, and then re-crystalizes from the saturated solution into the form of diamond.

The diamonds presented in a variety of crystal habits with more octa-hederal than cubic diamonds observed indicated a stable growth pattern (Figure 2). Parallel intergrowths and elongated diamond crystals were also observed.

By contrast, naturally occurring diamonds are mostly cubo-octahedral, a habit developed at prolonged times under high pressure and temperature deep in the earth's crust.

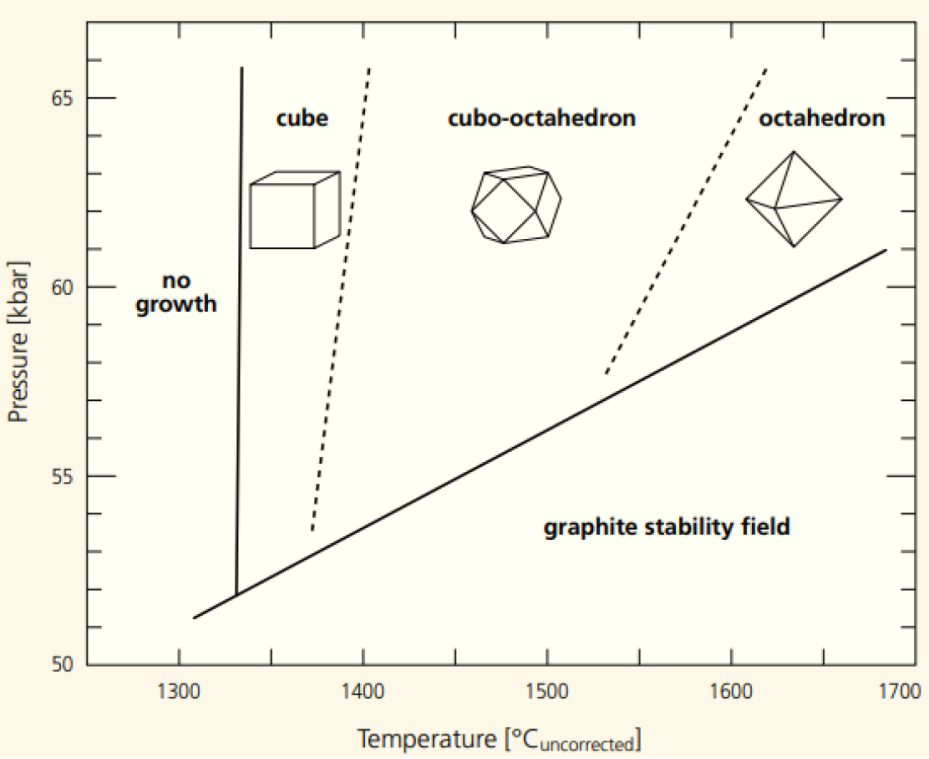

Figure 3 - Typical habits of diamonds at different temperature and pressure conditions.

About Synthetic Industrial Diamonds

Synthetic diamonds are ideal for industrial use because of their unique properties, including: superb hardness, premium strength, and very high thermal conductivity. They are used in a variety of industrial applications, including:

- Precision machining tools to produce products like optical lenses and electronic elements.
- Drilling and crushing applications.
- Pigments in lapping fluid used in polishing of semiconductors.

- Hard coatings for industrial equipment like grinding wheels, machine tools, and mining drills.
- Heat spreaders for high-power laser diodes, laser arrays, and high-power transistors.
- Substrates for growth of CVD diamond semiconductor films.

Next Steps

The 20-tonne trial mining sample is in Karaganda with milling tests now commencing. One tonne of the milled ore will be air freighted to Australia for manufacture of flotation concentrate. Some of this will be air freighted to USA for purification. Hundreds of kilograms of product samples will then be available for vendor machine tests and customer qualification programs in various markets.

This announcement is authorised by:

Sean Gregory

Managing Director

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Engage directly with management at our Investor Hub:

About Sarytogan

The Sarytogan Graphite Deposit is in the Karaganda region of Central Kazakhstan. It is 190km by highway from the industrial city of Karaganda, the 4th largest city in Kazakhstan (Figure 4).

Figure 4 - Sarytogan Graphite Deposit location.

The Sarytogan Graphite Deposit was first explored during the Soviet era in the 1980s with sampling by trenching and diamond drilling. Sarytogan's 100% owned subsidiary Ushtogan LLP resumed exploration in 2018. An Indicated and Inferred Mineral Resource has recently been estimated for the project by AMC Consultants totalling **229Mt @ 28.9% TGC** (Table 2), refer ASX Announcement 27 March 2023).

Table 2 - Sarytogan Graphite Deposit Mineral Resource (> 15% TGC).

Zone	Classification (JORC Code)	In-Situ Tonnage (Mt)	Total Graphitic Carbon (TGC %)	Contained Graphite (Mt)
North	Indicated	87	29.1	25
	Inferred	81	29.6	24
	Total	168	29.3	49
Central	Indicated	39	28.1	11
	Inferred	21	26.9	6
	Total	60	27.7	17
Total	Indicated	126	28.8	36
	Inferred	103	29.1	30
	Total	229	28.9	66

Sarytogan has produced bulk flotation concentrates at higher than **80% C** and further upgraded the concentrate up to **99.9992% C** "five nines purity" by thermal purification, without any chemical pre-treatment (refer ASX Announcement 5 March 2024). Sarytogan envisages three product types:

- Microcrystalline graphite at 80-85% C ("Micro80C") for traditional uses,
- Ultra-High Purity Fines (UHPF) for advanced industrial use including batteries, and
- Spherical Purified Graphite (USPG and CSPG) for use in lithium-ion batteries.

A Pre-Feasibility Study (PFS) was completed in August 2024 that outlined a staged development plan to match market penetration, minimise initial capital expenditure and deliver attractive financial returns.

An Ore Reserve of **8.6 Mt @ 30.0% TGC** (Table 3) was estimated using the Guidelines of the 2012 Edition JORC Code (refer ASX announcement 12 August 2024).

Table 3 - August 2024 Sarytogan Probable Ore Reserve estimate

Ore mass	TGC	Concentrate mass	Concentrate grade	TGC in conc. Mass
kt	**%**	**kt**	**%**	**kt**
8,587	30.0	2,654	81.4	2,160

Notes:

- *Tonnes and grades are as processed and are dry.*
- *The block mass pull varies as it is dependent on the TGC grade, concentrate grade (fixed) and process recovery (fixed) resulting in a variable cut-off grade, block by block. The cut-off is approximately 20% TGC with minimal mass below 20% TGC contributing.*

Sarytogan is also progressing copper porphyry exploration, initially at its Bainazar project and subsequently across a planned portfolio of copper exploration projects to be assembled across the highly prospective Central Asian Orogenic Belt.

Compliance Statements

The information in this report that relates to other Exploration Results is cross referenced to the relevant announcements in the text. These reports are available at www.asx.com.au. The information in this report that relates to Sarytogan Mineral Resources was first reported in ASX announcement dated 27 March 2023. The information in this report that relates to Sarytogan Ore Reserves was first reported in ASX announcement dated 12 August 2024.

The Company confirms that it is not aware of any new information or data that materially affects the information included in relevant market announcements and, in the case of estimates of Mineral Resources and Ore Reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Persons' findings are presented have not been materially modified from the original market announcements.

The Company confirms that all the material assumptions underpinning the production target, or the forecast financial information derived from the production target, in the initial public report (12 August 2024) continue to apply and have not materially changed.