

The Manager Companies - ASX Limited 20 Bridge Street Sydney NSW 2000 ASX Announcement 8 May 2024 (10 pages)

PRODUCT MARKETING AND PRODUCTS PRICING UPDATE

HIGHLIGHTS

- Comprehensive market outreach and product marketing campaign delivers favourable product pricing for the HPA First Project
- Supported by independent market consultants, with robust pricing forecast
- Highly constructive regulatory and technology environment supports
 Alpha's product marketing efforts and strong pricing outcomes

Alpha HPA Limited (**Alpha** or **the Company**) (ASX: **A4N**) is pleased to provide a comprehensive update to the market outreach and high-purity aluminium products marketing effort as a key support piece ahead of the imminent Definitive Feasibility Study (DFS) for Stage 2 of the HPA First Project (**Stage 2**). This update sets out Alpha's marketing strategy to date, together with key findings of the status of each of the end-user sectors and product applications, including:

- Key market thematics
- Alpha's detailed market price discovery
- Independent consultant pricing

A consolidated summary of pricing for products to be manufactured within Stage 2 is presented below:

	Product Pricing (US\$/kg)						
		Alpha HP	A Market Discov	ery	Indepe	ndent Consultants	
Product	Low	Low High Weighted Avg*			CM Group (FY27)	GLG	HPA Eq**
5N Purity Aluminium Nitrate	15.0	350.0	18.5	123.3	n/a	20 - 30	125.0
4N5+ Purity Alumina	20.0	68.5	32.0	32.0	39.3	n/a	39.3
4N5+ Purity Alumina for pucks	20.0	30.0	25.0	25.0	35.0	n/a	35.0
4N5+ Purity Gamma Alumina	13.0	30.0	20.3	20.3	27.5	n/a	27.5
4N5+ Purity Alumina Trihydrate	12.5	20.0	15.0	23.1	19.4	n/a	29.8
4N5+ Purity Nano-Alumina	33.0	44.0	43.0	43.0	50.0	n/a	50.0

^{*}Demand Vol Weighted Average: Average prices weighed by volumes indicated from customers and potential end-users, and/or sales achieved.

Alpha's Managing Director, Rimas Kairaitis said, "Alpha's comprehensive, and ongoing product marketing process has internally and independently confirmed favourable product pricing with highly constructive dynamics for both pricing and increasing demand. In addition, the expansion of Alpha's product offerings has confirmed our process advantages and our ability to maximise product revenues."

^{**} **HPA Eq:** Is calculated from Demand Vol Weighed Average*. Al-Nitrates and alumina tri-hydrate have lower aluminium content than high purity aluminas but a close to equivalent sales value by unit weight, provides a lift in HPA/Eq price received versus the HPA product price.

PRODUCT MARKETING STRATEGY

The summary elements to Alpha's product marketing strategy are set out below. Alpha notes that product marketing is an ongoing and dynamic activity and will continue to evolve in response to new end-use opportunities.

Detailed Market Understanding

Over the past 4.5 years, Alpha has been executing a detailed marketing strategy to penetrate the specialised high purity aluminium product markets and establish commercial relationships with end-users.

The strategy has been built around developing a comprehensive technical and commercial view of target markets, product applications and identifying and engaging with key customers/end-users. Alpha has developed a deep in-house knowledge of the applications and market dynamics for high purity aluminium products, through:

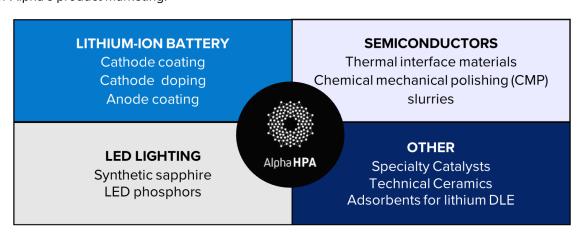
- extensive use of **market consultants** where required, and;
- engagement in research and test programs with multiple technical research partners:

Market Consultants		\ / /
Counterparty	Sector	Scope
CRU	HPA market	HPA Market Analysis
Benchmark Mineral Intelligence	Li-B	Lithium-ion battery (Li-B) cathode and anode trend and chemistries
P3 Group	Li-B	Cathode chemistry trends and applications of high purity aluminium salts
GLG	Al-Salts Market	Applications for high purity aluminium salts
Yole Group	Semiconductor	Semiconductor, LED and micro-LED lighting markets

Research Partners		
Counterparty	Sector	Scope
E-lyte Innovation (Germany)	Li-B	Li-B cathode research – alumina doping
FBI-CRC (Aust)	Li-B	Separator coatings and electrolyte interaction research
Seaborough (Netherlands)	LED	Nano phosphors for micro-LEDs
QUT (Queensland)	Li-B	Li-B anode coating research and testwork
Innovation Impact (US)	Semiconductor	HPA applications in the semiconductor sector

Target Applications

Alpha's market research consolidated the following sectors and product applications as the key targets for Alpha's product marketing:





Market Engagement

Apart from direct engagement and multiple trade shows and conferences, Alpha is also working with a range of intermediaries and sales/marketing/distribution agents to accelerate market engagement, these include:

Agents and Market Intermediaries					
Counterparty	Scope				
Arkesso LLC	LED and Semiconductor sectors - global				
Alto Group	Li-B Sector global				
AustMin	LiB sector SE Asia				
APL Japan	Sales and Marketing agent - Japan				
Technologica GmbH	Sales and Marketing agent - EU				
Rhineland Specialties	Sales and Marketing agent - North America				
Brenntag AG	Applications for high purity aluminium salts				

Government Agencies	\
Counterparty	Scope
Trade and Investment Queensland (TIQ)	Global
Austrade	Global

Current Status

To date, Alpha has engaged with over 210 end-users, and is recently averaging two new end-user engagements per week through website enquiry, direct engagement and agent inquiry.

Key highlights of market engagement include:

- over 220 test samples despatched to over 125 end-users;
- production test samples supplied from both the Gladstone Stage 1 PPF and the Brisbane facility;
- currently, the Brisbane facility is fulfilling 27 product test orders for ~16 separate end-users;
- the Stage 1 PPF is currently fulfilling 4 tonnes of HPA based end-user test and/or sales orders;
- Alpha has received 4 Letters of Intent (LOIs) from end-users in the past 3 weeks, for 1,290 tonnes, and;
- current LOI coverage has reached 2,290 tonnes.

Progression of engagement varies for each counterparty, however the pathway toward developing commercial end-user supply contracts can typically be described as a number of phases.

Alpha currently has active engagement and qualification sampling underway with end-users representing over 30,050tpa of estimated potential product demand (i.e. ~300% coverage of Stage 2 production capacity).

Early-phase product sampling is important for Alpha to demonstrate a high level of technical competence in the timely delivery of fully characterised test sample materials. Alpha has successfully received positive feedback on a substantial portion ($^{\circ}82\%$) of samples sent.

Investment in follow-up testing typically involves larger quantities of product and substantial investment by the end-user. As such, a quote may be requested to provide price guidance between first round sample testing and follow-up testing. Commencement of follow-up testing represents a significant milestone for end-user engagement and involves a high level of engagement between Alpha management and the end-user, with follow-up testing samples customised in collaboration with the end-user to meet their bespoke specifications.

The timeframe for this phase varies depending on the range of products and specifications requested by the end-user. Alpha is currently actively engaged with end-users in this analysis, representing over



25,900tpa of estimated potential product demand.

Sales have commenced to a small number of customers fulfilled by product from the Stage 1 PPF. This represents an important step for the customer and Alpha as the relationship has progressed through qualification sampling and Alpha has been onboarded as an approved supplier.

Market convention is to sign LOIs, and in some cases MOUs, before conversion to binding sales contracts.

The LOIs and MOUs establish a framework for the parties to agree the commercial terms upon which binding contracts will be based. Progression from completion of follow-up testing and successful onboarding of Alpha as a supplier to signed LOIs or MOUs typically takes between 3 and 6 months.

To date, Alpha has LOIs in place with 6 end-users representing 2,290 tonnes of annual production.

The current status of key phases is described below, showing current product volume indications.

Engagement Phase	Volume indication (tpa)
NDA signed	29,150
Product samples sent	30,050
Positive feedback received on samples sent	25,900
Follow-up testing under way	25,400
LOIs signed (6 end-users to date)	up to 2,290

The scale and degree of end-user engagements provide Alpha with the confidence it will continue to convert technical engagements into commercial outcomes.

Technical Support

Critically, Alpha has been able to support the end-user market engagement with comprehensive inhouse technical support and product characterisation, providing in-house capability for:

- XRD: for alumina phase analysis;
- Malvern PSD: for ultra fine particle size measurement down to 10 nanometres;
- **BET:** for measurement of particle specific surface area; and
- **ICP:** for ultra-low level detection of material impurities.

The Company accesses external laboratory services that provide technical support in the form of:

- GDMS: solid state alumina analysis by glow discharge mass spectroscopy; and
- **SEM:** scanning electron microscopy.



Alpha's product analytics support - Brisbane



MARKET THEMATICS

Macro

To complement the Company's detailed market engagement described above, Alpha notes the following macro thematics, which are considered constructive to the Company's marketing efforts and strong pricing outcomes:

- government support for 'friend-shoring' of critical material supply chains, both in Australia and target customer jurisdictions;
- end-user commitments to de-carbonising supply chains; and
- strong growth in target end-user sectors, particularly power-semiconductors, LED lighting and Li-B sectors

Semiconductor Sector

The semiconductor sector is undergoing a major demand inflection in power-electronics ('power-semis') to support new sector growth from Artificial Intelligence (AI), electric vehicles (EVs) and gaming.

A key subset of this trend is the increasing adoption of silicon-carbide (Si-C) substrates with attendant demand for:

- HPA based thermal interface materials; and
- HPA based abrasives for Si-C substrate polishing (CMP)

Lithium-Ion Battery Sector

Within the wider, well-established trend of Li-B technology driving e-mobility, consumer electronics and energy storage, the following factors as considered favourable to Alpha's product marketing efforts:

- the focus on higher energy density battery chemistries, many of which require high purity aluminium materials for cathode coatings and dopants for cathode stability; and
- the wider regulatory and EV manufacturer focus on Li-B fire prevention is considered strongly favourable for the accelerated testing, and adoption of this coating technology, enabled by the establishment of commercial scale aluminium nitrate production by Alpha.

MARKET PRICE DISCOVERY

Company Price Discovery

Alpha has reached a stage where wide technical engagement is maturing into commercial outcomes, including:

- active, ongoing, small-scale sales and/or sales orders;
- firm pricing provided by end-user;
- refined, live quotations (price, freight and volume) after multiple pricing rounds; and
- LOIs in place for 2,290 tpa of Stage 2 production capacity.

The commercial stage of Alpha's market engagement is expected to continue to build through CY2024 as end-user technical qualification stages are successfully passed.

The final allocation of sales contracts to end-users will be dependent on the commercial outcomes able to be achieved with the various end-users.

Alpha's market engagement has allowed the Company to develop a detailed view of market pricing across a range of products and specifications.

A summary of these end-users from which market pricing was extracted is presented in the following table.



Product	End-user Sector	Application	Data Type
Alpha Phase - HPA powder	Semiconductors	Manufacture of thermal interface materials for semiconductors	Sales by Alpha
Alpha Phase - HPA powder	Semiconductors	Manufacture of thermal interface materials for semiconductors	Refined quotes & LOI
Alpha Phase - HPA powder	Semiconductors	Manufacture of thermal interface materials for semiconductors	Bids
Alpha Phase - HPA powder	Multiple	(Existing producer)	Interview
Gamma Phase - HPA powder	Lithium-ion battery	Cathode coating/doping	Existing supply
Gamma Phase - HPA powder	Lithium-ion battery	Cathode coating/doping	Existing supply
Alpha Phase - HPA powder	LED lighting	LED phosphors	Sales by Alpha + LOI
Nano-HPA powder	Semiconductors	CMP polishing	Existing supply
Nano-HPA powder	Semiconductors	Manufacture of aluminium nitride for semiconductor housings	Refined Quotes
Alpha Phase - HPA powder	Lithium-ion battery	Cathode coating/doping	Order
High purity boehmite	Semiconductors	CMP polishing	Order + Refined Quotes
Gamma Phase - HPA powder	Lithium-ion battery	Cathode coating/doping	Existing supply
Alpha Phase - HPA powder	Multiple	(Existing producer)	Interview
High Purity alumina hydrate	Multiple	HPA precursor	Refined quotes + Interview
Aluminium Nitrate	Medical	YAG crystal for medical lasers	Sales by Alpha
Aluminium Nitrate	Automotive	Emissions catalysts	Refined Quotes
Alpha Phase - HPA powder	Lithium-ion battery	Separator coatings	Previous supply
Gamma Phase - HPA powder	Lithium-ion battery	Cathode coating/doping	Refined Quotes + Interview
Nano-HPA powder	Semiconductors	CMP polishing	Interview
Alpha Phase - HPA powder	LED/Sapphire	Synthetic sapphire	LOI
Aluminium Nitrate	Catalysts	Catalysts	Refined Quotes
Aluminium Nitrate	Various	Various	Sales
Alpha Phase - HPA powder	Medical	Pharmaceutical	Refined Quote
Alpha Phase HPA Powder	LED Lighting	LED phosphors	Sales
Alpha Phase HPA powder and precursors	Semiconductors	CMP polishing	Interview
High Purity alumina hydrate	Semiconductors	Precursor for CMP polishing	Interview
High Purity alumina hydrate	Semiconductors	Manufacture of thermal interface materials for semiconductors	Refined Quote
HPA Pucks	LED Lighting	Synthetic sapphire Glass	Interview
Alpha Phase HPA Powder	Lithium-ion battery	Cathode coating/doping	Refined Quote
High Purity alumina hydrate	Semiconductors	Manufacture of thermal interface materials for semiconductors	Refined Quote
Gamma Phase HPA Powder	Lithium-ion battery	Cathode coating/doping	Refined Quotes + LOI
High Purity alumina hydrate	Lithium-ion battery	Cathode coating/doping	Refined Quote + LOI

Selected summary of product price discovery based on Alpha's market engagement to date



The outcomes of this price discovery are shown below:

	Product pricing (US\$/kg)					
Product	Low	High	Demand Vol Weighted Avg*	HPA Eq**		
5N purity Aluminium Nitrate	15.0	350.0	18.5	123.3		
4N5+ Purity Alumina	20.0	68.5	32.0	32.0		
4N5+ Purity Alumina Pucks	20.0	30.0	25.0	25.0		
4N5+ Purity Gamma Alumina	13.0	30.0	20.3	20.3		
4N5+ Purity Alumina Trihydrate	12.5	20.0	15.0	23.1		
4N5+ Purity Nano-Alumina	33.0	44.0	43.0	43.0		

^{*}Demand Vol Weighted Average: Average prices weighed by volumes indicated from customers and potential end-users, and/or sales achieved.

Independent Consultant Price Discovery

Alpha engaged the independent market research firm, **CM Group**, to conduct a detailed independent analysis of the global HPA market as of November 2023. Prior to this, independent market research firm CRU Group was engaged to prepare a report on the HPA Market to January 2022.

CM Group and CRU Group engaged with market participants – current producers and consumers, as well as projects and other market participants in several geographies (Japan, South Korea, China, Europe and North America) to better understand HPA market dynamics.

The CM Group report notes the niche, specialised nature of most HPA 4N+ markets, combined with an expectation that the provision of technical support services will almost always accompany supply, means that prices are typically set through confidential bilateral negotiations between customers and qualified suppliers.

Applying a typical commodity supply demand pricing model based on the cost of the marginal 'tonne' supplied into a particular market is, in CM Group's view, not applicable to HPA pricing methodology. This market characterisation aligns with Alpha's marketing experience to date.

HPA prices, especially for high value-add and sophisticated products such as nano-grade, sit well above production costs, reflecting both the highly customised and segmented nature of the market and embedded cost of significant levels of pre and post-consumer support. This adds considerably to the price achievable for specialised HPA 4N+ products.

CM Group's approach to forecasting rest-of world, ex China (ROW) HPA prices was based on:

- direct market intelligence acquired from different market participants (ROW and China) relating to current price levels and market trends;
- discussions with supplier and customer groups to gauge the range of prices both would be prepared to accept given current market conditions; and
- projections of current and short-term pricing based on the outlook for demand growth in each key market sector and the likely barriers to entering each market.

Using the conservative base case assumptions and adopting specific weightings based on Alpha's intended product mix, CM Group has presented the following as a real (un-escalated) price forecast.



^{**} HPA Eq: Is calculated from Demand Vol Weighed Average*. Al-Nitrates and alumina tri-hydrate have lower aluminium content than high purity aluminas but a close to equivalent sales value by unit weight, provides a lift in HPA/Eq price received versus the HPA product price.

CM Group Price Forecast - High Purity Aluminas (US\$/tonne)									
FY25 FY26 FY27 FY28 FY29 FY30									
4N5+ Purity Alumina	24,631	32,875	39,344	39,625	39,625	39,625			
4N5+ Purity Alumina Pucks	18,625	27,500	35,000	35,000	35,000	35,000			
4N5+ Purity Gamma Alumina	18,333	21,667	27,500	27,917	27,917	28,750			
4N5+ Purity Alumina Trihydrate	11,500	15,500	19,375	19,688	19,688	19,688			
4N5+ Purity Nano-Alumina	45,000	50,000	50,000	50,000	50,000	50,000			

CM Group Base Case (used to determine the Independent Pricing Case) – Forecast Global Average Prices for Alpha's Major Product Lines (US\$/t)

Alpha notes CM Group's forecast product pricing is expected to increase from current levels, underscored by the increase in demand for customised and demanding product applications and increasing end-user focus on diversifying supply away from Foreign Entities of Concern (**FEOC**).

Alpha notes the close alignment between the CM Group market pricing and the upper end pricing observed within Alpha's own market engagement.

Alpha also engaged Gerson Lehrman Group (**GLG**) to prepare a market report regarding high purity aluminium salts. GLG was appointed by Alpha to deliver a market assessment, involving:

- interviews with producers, sellers, buyers and independent experts;
- a quantitative survey with buyers; and
- existing industry reports, surveys and datasets.

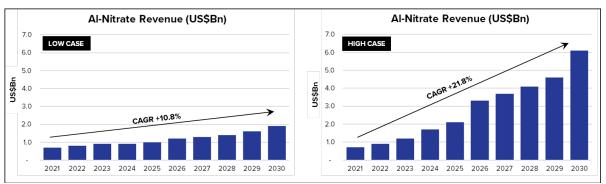
The report was conducted by Dr. Peter Manshausen, an independent academic and consultant with more than 30 years of senior professional experience in the chemicals manufacturing and distribution space. The market report outlined core applications for ultrapure (5N) aluminium salts, outlined in the table below.

Demand for 5N aluminium salts under a low case market forecast:

Core Application	5N Market Size (2021)	Growth (CAGR)	Price (US\$/kg)	5N Usage
Battery manufacturing	20 kt	10-12%	20-30	High usage.Highly likely to switch to 5N.
Lighting and LED	10 kt	8-10%	35-45	High usage.Likely to switch to 5N.

Source: GLG.

In the above table the 5N aluminium salts are dominated by 5N aluminium nitrate (75%) which is shown in the graph below:



Global Al Nitrate Revenues – as subset of ultrapure (5N) aluminium salts sector projection (low case vs high case) – source GLG



Pricing Summary

As stated above, Alpha notes that product marketing is an ongoing and dynamic activity and will continue to evolve in response to new end-use opportunities.

Summary findings based on the comprehensive marketing process to date are set out below:

	Product Pricing (US\$/kg)						
		Alpha HP	A Market Discov	ery	Indepe	ndent Cons	ultants
Product	Low High Weighted HPA Eq** Avg*				CM Group (FY27)	GLG	HPA Eq**
5N Purity Aluminium Nitrate	15.0	350.0	18.5	123.3	n/a	20 - 30	125.0
4N5+ Purity Alumina	20.0	68.5	32.0	32.0	39.3	n/a	39.3
4N5+ Purity Alumina for pucks	20.0	30.0	25.0	25.0	35.0	n/a	35.0
4N5+ Purity Gamma Alumina	13.0	30.0	20.3	20.3	27.5	n/a	27.5
4N5+ Purity Alumina Trihydrate	12.5	20.0	15.0	23.1	19.4	n/a	29.8
4N5+ Purity Nano-Alumina	33.0	44.0	43.0	43.0	50.0	n/a	50.0

^{*}Demand Vol Weighted Average: Average prices weighed by volumes indicated from customers and potential end-users, and/or sales achieved.

ALPHA'S PROCESS ADVANTAGE

The Company's extensive market engagement and detailed technical interaction with end-users has clarified the Company's understanding of where the discrete advantages of Alpha's process sit, and where the Company holds a comparative process advantage.

In summary, these advantages are with the ability of the Alpha process to produce:

- aluminium-nitrate at a world-leading purity and at a commercial pricing to drive end-user adoption:
- alumina-hydrates (boehmite and alumina tri-hydrate) at world leading purity with unique surface area properties and high-reactivity;
- high purity aluminas with zero radio-nuclide impurities (Uranium and Thorium) which is a critical consideration for supply of material to the semiconductor sector;
- high purity aluminas at matching purity levels to existing premium producers, but at a lower cost base and carbon profile; and
- gamma alumina with a uniquely high surface area (+250m²/g) making it appropriate for high-end catalysts and selected Li-B applications.

For further information, please contact:

Rimas Kairaitis Managing Director rkairaitis@alphaHPA.com.au +61 (0) 408 414 474 Robert Lord Investor Relations rlord@alphaHPA.com.au +61(0) 400 008 553 Cameron Peacock
Business Development
cpeacock@alphaHPA.com.au
+61 (0) 439 908 732



^{**} HPA Eq: Is calculated from Demand Vol Weighed Average*. Al-Nitrates and alumina tri-hydrate have lower aluminium content than high purity aluminas but a close to equivalent sales value by unit weight, provides a lift in HPA/Eq price received versus the HPA product price.

About the HPA First Project

The Company's HPA First Project represents the commercialisation of the production of high purity aluminium materials using the Company's proprietary, exclusively licensed solvent extraction and HPA refining technology. The disruptive, low-carbon process technology provides for the extraction and purification of aluminium from an industrial feedstock to produce 4N (>99.99% purity) and 5N (>99.99% purity) aluminium materials for sale into high technology markets including the semiconductor, lithium-ion battery and LED lighting sectors.

Alpha is now in production at its HPA First Project Stage 1, Precursor Production Facility (PPF), located in Gladstone, QLD. The Stage 1 PPF has now been expanded to produce the full range of Alpha's high-purity aluminium materials with \$15.5M grant funding from the Australian Government.

The Company is now in the mature phases of market outreach and product marketing and is due to shortly deliver the final Definitive Feasibility Study and complete project financing with respect to the full scale Stage 2 HPA First Project, to be located on the same project site.

