The Manager Companies - ASX Limited
20 Bridge Street
Sydney NSW 2000

ASX Announcement
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(10 pages)

PROJECTS UPDATE

PRODUCT MARKETING – SEMICONDUCTOR SECTOR

Alpha has continued strong progress to consolidate and expand entry into the advanced semiconductor supply chain

- **Conversion of Letter of Intent (LOI) into binding CY2026 supply contract to a South Korean customer for thermal fillers in HBM chip packaging**
- **Further CY2026 supply contracts to Japanese customers under negotiation**
- **Contracts under negotiation exceed Stage 1 supply capacity**
- **Record semiconductor sector shipments in December 2025**
- **Fourth round qualification of sapphire wafers with leading power-semi manufacturer**
- **SEMICON Japan confirms strong demand and pricing environment for Alpha's products**
- **Strong results from early-stage outreach into fine ceramics/semiconductor tooling**
- **Further outstanding CMP test results using Alpha's nano-alumina slurry product offering**

PRODUCT MARKETING – PHARMACEUTICAL SECTOR

Alpha has now commenced ongoing, low volume, high-value supply to the pharmaceutical sector

- **First high unit value commercial sales and LOI established to a South Korea based end-user at pricing approximately double DFS modelling**
- **MOU established for up to 20 tpa to supply high purity materials to the Japanese pharmaceutical and bio-ceramics sector**

PRODUCT MARKETING – ALL SECTORS

- **Test and sales orders continue to grow strongly with 500 orders since FID (May 2024)**
- **Successful Stage 1 and 2 site audits by two major end-users**

HPA FIRST PROJECT STAGE 2

- **Significant progress across critical workstreams for construction and delivery of Stage 2**
- **Site delivery of first large scale, offsite fabricated process equipment including SX and Orica reagent tanks**
- **First major Structural, Mechanical and Piping (SMP) installation contracts issued and SMP contractor mobilised**

The Board of Alpha HPA Limited (**Alpha** or **the Company**) is pleased to provide an update on activities for the **HPA First** and **Alpha Sapphire Projects**, each representing the commercialisation of the Company's proprietary, exclusively licensed solvent extraction and HPA refining technology and production of critical high purity aluminium products into high technology markets. Alpha's ultra-high purity product capability includes:

- High purity aluminas (**HPA**),
- High purity alumina hydroxides (**ATH**)
- High purity aluminium nitrate precursors (**Al-Nitrate**), and;
- High purity synthetic sapphire glass

Alpha is in continuous production at its HPA First Project Stage 1, Precursor Production Facility (**Stage 1**) across the Company's full range of high purity aluminium materials and in construction of the full commercial scale **Stage 2** of the HPA First Project. Stage 2 of the HPA First Project will be the world's largest, single site facility for the manufacture of high purity aluminium materials.

HPA FIRST PROJECT

PRODUCT MARKETING

Alpha maintains a continuous global product marketing effort to secure the highest value end-user commitments to support each of its projects. The Company maintains a global network of marketing agents and an in-house sales and technical team. Product marketing is supported by test sample delivery and commercial sales from the Brisbane product development centre and the Stage 1 PPF facility in Gladstone.

Alpha's marketing effort is focused on new demand for new technology trends which match the Company's novel process capability including:

- HPA and high purity ATH for the manufacture of spherical thermal interface materials (fillers) for parallel processing logic semiconductors (Data Centres & Artificial Intelligence (**AI**))
- HPA for CMP polishing of Silicon-Carbide (**SiC**) semiconductor substrates and hard-carbon masks for High Bandwidth Memory (**HBM**) chips
- HPA for fine ceramics, with a focus on semiconductor fabrication equipment components
- High purity, amorphous ATH for direct lithium extraction (**DLE**) sorbents
- Ultra-high purity Al-Nitrates for battery coatings and solid state electrolytes
- HPA and high purity Al-hydroxides for a range of pharmaceutical applications
- High purity, synthetic sapphire wafers for power-semiconductor and LED substrates

Summary marketing highlights are listed below, and expanded further in the following sections:

Semiconductor Sector

- Conversion of existing LOI into binding CY2026 supply contract to South Korea for thermal fillers in HBM chip packaging
- Binding CY2026 supply contracts to Japan under negotiation, for thermal fillers in AI logic chips, with strong price confirmation expected in the coming weeks
- Record semiconductor sector shipments in December 2025
- Fourth round qualification stage underway for sapphire wafers with leading power-semi manufacturer
- Confirmation of accelerating demand profile and strong product pricing environment for 'zero-alpha emission' aluminas from SEMICON Japan
- End-user testing confirms excellent sintering performance for Alpha's high-purity low-alpha alumina for alumina ceramic tooling for semiconductor fabrication equipment

Pharmaceutical Sector

- Further outstanding CMP test results using Alpha's nano-alumina slurry product offering
- First, high unit value commercial sales and LOI to the pharmaceutical sector established to a high value South Korean end-user, using Alpha's ultra-high purity, high surface area gamma alumina product
- MOU established for up to 20 tpa to supply high purity materials the Japanese pharmaceutical and bio-ceramics sector

All Sectors

- New generation, Al-Nitrate based lithium battery anode coating developed by Tier 1 anode manufacturer. Coated anode now with Li-B OEM for final qualification
- Additional orders for Alpha's novel, amorphous Al-hydroxide for next generation Direct Lithium Extraction (DLE) sorbent development

Recent marketing activity includes:

- Multiple end-user visits to Japan in December, including multiple new connections at SEMICON Japan in December
- Continued strong build up in sales and qualification test orders, now at >500 since May 2024
- Alpha successfully hosted two, high value end-use site audits to the HPA First Project Stage 1 and Stage 2 facilities in October and November

PRODUCT MARKETING – SEMICONDUCTOR SECTOR

Over the course of CY2025 Alpha has been supporting a dramatic lift in product demand from the semiconductor sector, which has seen the Company supporting multiple end-user product qualifications, low-volume commercial sales from the Stage 1 Facility and negotiating a range of Letters of Intent (LOIs), Memoranda of Understanding (MOUs), and related sales contracts.

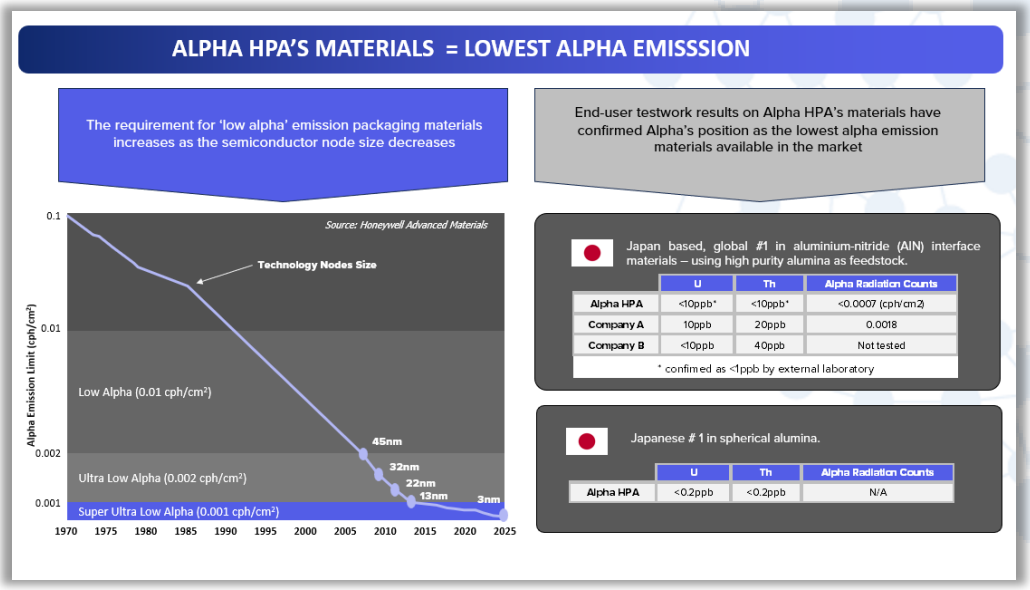
Alpha is progressively qualifying and supplying its materials for three dominant applications within the sector:

- **Thermal Fillers:** Supply of bespoke milled alpha and gamma phase HPA, as well as fine milled ATH for thermal fillers and thermal interface materials for advanced node semiconductor packaging and encapsulation
- **CMP:** Supply of Alpha's novel alpha-phase HPA, in both powder and in nano-slurry form, for the use in Chemical mechanical Polishing (CMP) polishing slurries.
- **Fine Ceramics:** The more recent supply of high sintering, 'low-alpha-emission' alumina for the manufacturer of fine alumina-ceramic components in manufacturing equipment for advanced node semiconductors

Thermal Fillers:

Semiconductor sector demand for Alpha's high purity products in thermal fillers is being driven by the interplay of a number of technology drivers:

- **Continued acceleration of capital expenditure allocation to Artificial Intelligence (AI) infrastructure**, dominated by AI data centres, as well as AI for smart networks and autonomous systems and vehicles. AI infrastructure deployment includes very large scale up of advanced node semiconductors, in both memory and logic processors.
- **Need for improved thermal dissipation and structural strength in advanced node memory and logic semiconductors** driving adoption of high purity alumina as thermal fillers in advanced packaging and encapsulation.
- **Requirement for higher computing output per kilowatt of energy at the data centre level**, to support AI capital infrastructure roll out, increasing adoption of HPA as a thermal filler
- **Requirement for 'zero alpha emission' materials for advanced node packaging and encapsulation**, being materials which are devoid of any detectable emissions of alpha-particle radiation.
    - At the manufacturing level, this represents as <1 ppb levels for 'alpha emitting' impurities uranium and thorium, a key capability of Alpha's production process
- **End users continue to confirm, that Alpha's high purity alumina materials represent the lowest levels of alpha-emission available – see recent industry feedback below**



Consistent with the above, recent marketing highlights within the semiconductor sector includes:

- **Conversion of LOI to binding CY2026 supply contract to South Korea for thermal fillers in HBM chip packaging:** This contract forms the first under an existing Letter of Intent for up to 1,000 tonnes per year and consolidates the supply into the expanding use of high purity alumina fillers for the encapsulation of advanced node, high bandwidth memory (HBM).
- **Further CY2026 supply contracts for thermal filler under negotiation**: Alpha is negotiating additional supply contracts to Japanese end-users for thermal filler supply to support AI GPU packaging. Customer demand levels are in excess of existing Stage 1 production capacity in CY2026. Per previous updates, Alpha is reviewing a number of initiatives to manage capacity allocation and increase Stage 1 capacity in response to existing and expected demand during CY2026 and CY2027.
- **Record semiconductor sector shipments in December 2025:** Alpha recorded record monthly shipments of 2,240kg to the semiconductor sector in December 2025, dominated by sales of products for thermal fillers to end-users in South Korea and Japan. Each of the shipments were manufactured within the Stage 1 Facility, at unit pricing above those assumed in May 2024 DFS.
- **SEMICON Japan:** During the SEMICON Japan conference in December, Alpha was able to secure a range of new end-user connections and initiate new qualification test schedules. In particular, Alpha was able to complete a number of interviews with downstream end-users of high purity alumina fillers, ("*our customer's customer*") particularly the suppliers of epoxy encapsulation and advanced packaging materials. Each end user was able to confirm:
    - The use of high purity alumina fillers, as a replacement to silica fillers, is expected to expand rapidly, subject to suitable supply, overwhelmingly driven by the high thermal demands of AI logic and HBM chips used with AI graphics processing units (GPU's)
    - Adoption of low-alpha alumina fillers is supply constrained, with end-users unable to secure enough materials to meet current or future demand
    - The requirement for low-alpha alumina is critical, and the availability of a new supplier of 'zero alpha' emission aluminas was of high-interest to all sector supplier interviews
    - The pricing environment for high purity, low-alpha alumina remains very strong
    - The internal demand model (included in the ASX release – 13 October 2025), which estimates >8,000 metric tonnes pa demand by 2030, looks to have materially underestimated demand after allowing for production losses during chip encapsulation, which are estimated by industry end-users at ~40%

Some of the shipments to semiconductor thermal filler end-users during December 2025

CMP:

Alpha has now collected a further set of encouraging end user test results completed on the most recent generations of its nano alumina slurry product (nano dispersion), which represents an approximate 2x downstream value-add to the Company's novel, alpha phase alumina particle.

Consistent with previous updates, Alpha's novel HPA particles continue to deliver outstanding CMP performance, in terms of both removal rate and selectivity, across a number of emerging semiconductor substrates, including

- **Silicon Carbide** (SiC) wafers for power semiconductors (driven by electronic vehicles, 5G and solar/wind farm installations);
- **Hard carbon masks**, as increasingly adopted in High Bandwidth Memory (HBM) chips;
- A range of conductive metal substrates, and
- New dielectric layers

This product development is now close to complete, with high volume manufacturing (HVM) of the alumina dispersion due to commence at our Stage 1 PPF facility in March 2026.

Nano alumina dispersion are the dominant input materials for CMP slurries using alumina abrasive.

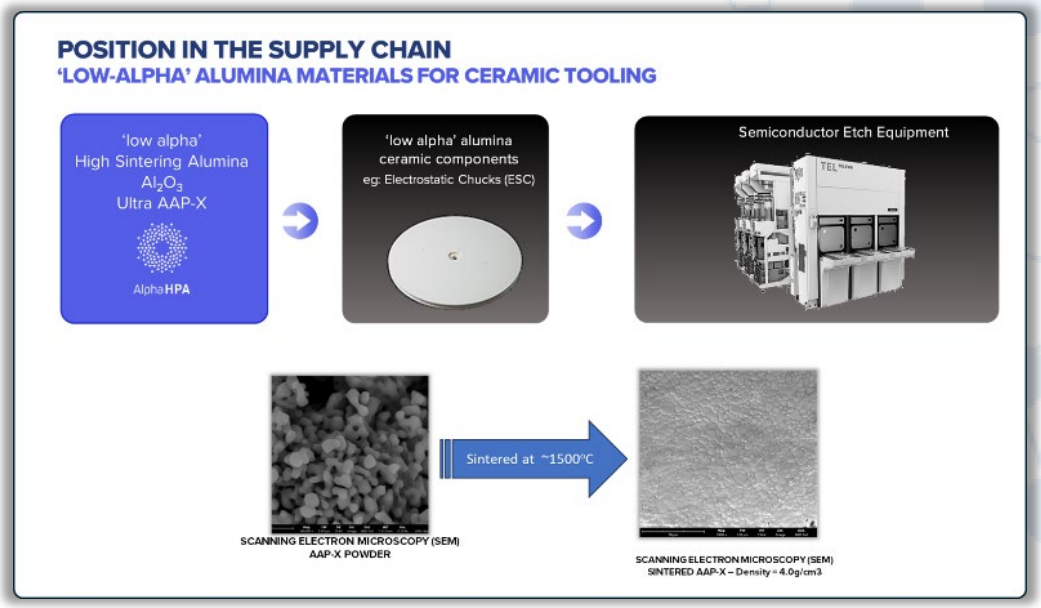
Final development stage nano-slurries are now being tested across 12 separate CMP OEM's dominated by Japan and US based end-users.

Fine Ceramics:

Alpha has collected further-end user test results from the Company's recently developed, high sintering, low-alpha HPA powder (Ultra AAP-X), in the manufacture of alpha-emission sensitive ceramic components for advanced node semiconductor manufacturing.

Results are strongly encouraging, with Alpha now servicing second round test results in anticipation of servicing first sales orders during 2026. Target semiconductor components include vacuum and electrostatic chucks, lifting arms and hold down rings.

The Ultra AAP-X HPA material is capable of delivering maximum theoretical sintered density (+3.9g/cm^3) combined with Alpha's capability of zero-alpha particle emission – see example below:



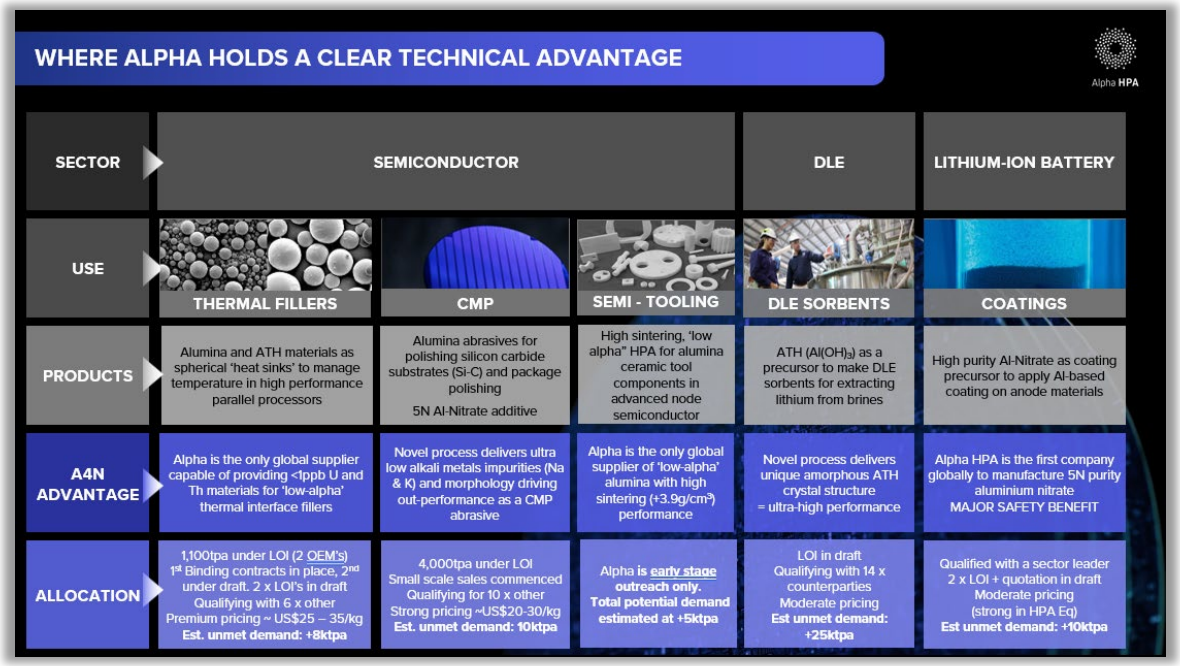
PRODUCT MARKETING – PHARMACEUTICAL SECTOR

Following greater than 12 months of qualification, Alpha has now commenced ongoing, small-volume, high-value sales to a South Korea based end-user in the pharmaceutical sector and established an LOI for ongoing sales up to 1,000kg pa. The end-use is protein collection, and pricing is approximately double the unit values modelled in the Company's DFS (May 2024).

Alpha has also established an MOU with a Japanese distributor for the marketing and sale up to 20,000kg pa, with a specific focus on pharmaceuticals and alumina bio ceramics.

Alpha technology advantage

Over the past 5 years, Alpha's product development and marketing has consolidated the four discrete applications where Alpha's process technology holds a clear advantage over competing manufacturing technologies and/or competing suppliers. This is summarised in the graphic below:



HPA FIRST PROJECT STAGE 2

Alpha continues to make significant progress across critical workstreams for construction and delivery of **Stage 2** including, civil works, procurement, engineering & fabrication, construction and operational team readiness as outlined below.

Site delivery of first large scale, offsite fabricated process equipment

The first large scale, offsite fabricated equipment was delivered to the Project site in December via a dedicated sea freight service. Site assembly will commence in the March quarter of 2026 under the first Structural, Mechanical and Piping (SMP) contract, which was awarded in December.

Dedicated sea freight, offload at Gladstone port & first delivery to site of major process equipment – Dec 2025

Major Civil Works

Concrete civil works continued across multiple areas, with several construction areas successfully completed and handed over for installation by structural, mechanical and piping (SMP) contractors, including the by-product tank farm, evaporators, Orica reagent storage areas. The team continue to focus on finishing off the SX areas and are moving towards pipe rack foundations for both the east-west and north-south pipe rack spines.

Orica Reagent Tanks staged for installation – January 2026

SX Settlers being staged at site for SMP installation – January 2026

SX area civils nearing completion – January 2026

Engineering and Fabrication

Detailed engineering continues to feed the project's critical path, with structural steel, piping and parallel E&I design progressing to support the release of fabrication and construction work fronts. Offsite fabrication remains on schedule, highlighted by the successful delivery of the first tranche of site erected tanks to site and major SX circuit components to Gladstone, together with strong manufacturing progress on long lead equipment such as the Rotary Dryer & Calciner.

Fabrication of structural steel and piping has commenced, including the first major pipe rack modules. Procurement progressed well through the period, with multiple packages released into manufacture, key equipment successfully passing Factory Acceptance Testing to maintain delivery sequencing. The project remains well positioned, with all major procurement packages awarded and multiple key equipment deliveries now successfully arriving in Gladstone and on site.

Construction

The first SMP installation contractor has mobilised to site, including assembly of a 250 tonne crawler crane for installation of major tanks and SX equipment from January. This mobilisation marks the transition into high volume mechanical installation in early 2026.

Preparation of the next SMP and electrical and instrumentation (E&I) installation packages is progressing to maintain construction momentum. Earthworks on the southern plot have progressed well, creating additional temporary construction space to ease site congestion during upcoming peak activity periods.

Operations Readiness

The operations readiness team has been expanded with key appointments in Production, Maintenance and HSE. Implementation of the maintenance management system has progressed with user acceptance testing being completed in December and plans to go live for Stage 1 in February. Key appointments have also been made for the Commissioning Manager and Completions Engineer roles, implementation of the completions and handover system is on track for the commencement of structural, mechanical and piping construction.

Stage 2 Project site – looking west to Orica (mid ground) and Ri Tinto Yarwun (far ground) – January 2026

ALPHA SAPPHIRE

Alpha Sapphire is a wholly owned subsidiary of Alpha that has invested in an initial two, next-generation sapphire glass growth units (**Phase A**) as qualification units prior to decision on the commercial scale deployment of synthetic sapphire growth (**Phase B** & **Phase C**).

The Phase A units are currently running multiple sapphire growth runs using the Company's in-house high-purity alumina feedstock to provide synthetic sapphire for sales and end-user qualification.

Sapphire Marketing Update

Alpha Sapphire is pleased to report that it has now entered the fourth round of 200mm sapphire wafer qualification with a European tier 1 manufacturer of power semiconductors that is developing next generation Gallium-Nitride (GaN)-on-sapphire semiconductor platforms.

GaN-on-sapphire is an emerging semiconductor technology for high power and high-frequency devices. GaN-on-sapphire semiconductors are grown on wider format (8") C-plane sapphire wafers and are considered an excellent match to the capabilities of Alpha Sapphire's sapphire growth units which are optimised for wide-format C-axis sapphire growth.

The fourth round request for additional wafers follows three successful rounds of supply of 200mm sapphire wafers.

For further information, please contact:

Robert Williamson
Managing Director
rwilliamson@alphaHPA.com.au
+61 (0) 407 125 175

Robert Lord
Head of Corporate Development
rlord@alphaHPA.com.au
+61(0) 400 008 553

Rimas Kairaitis
Exec. Director & Chief Commercial Officer
rkairaitis@alphaHPA.com.au
+61 (0) 408 414 474