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Alpha HPA
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ASX: **A4N**
ASX Announcement
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(4 pages)

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

MARKETING AND PRODUCT DEVELOPMENT UPDATE

MAJOR PROCESS IMPROVEMENT

- **Manufacture of battery grade HPA particle sizing with no milling**

PRODUCT MARKETING

- **First HPA sales to German LED phosphor counterparty**
- **Global network of specialty marketing agents now in place**
- **A further 6 products sent to St Gobain with a further 4 under development**
- **20kg of Al-Precursor #1 despatched to 4 separate counterparties for testwork including battery anode particle coating and ceramic scintillators**
- **Additional sales orders of 93kg for Al-Precursor #1**
- **2 new boehmite product orders from Japan based Li-B separator OEM**

The Board of Alpha HPA Limited ('Alpha' or 'the Company') is pleased to provide an update on product development and marketing activities for its HPA First Project, representing the evaluation and intended commercialisation of the production of ~10,000tpa equivalent of high purity alumina (HPA) and related products using the Company's proprietary licenced solvent extraction (SX) and HPA refining technology.

PRODUCT DEVELOPMENT

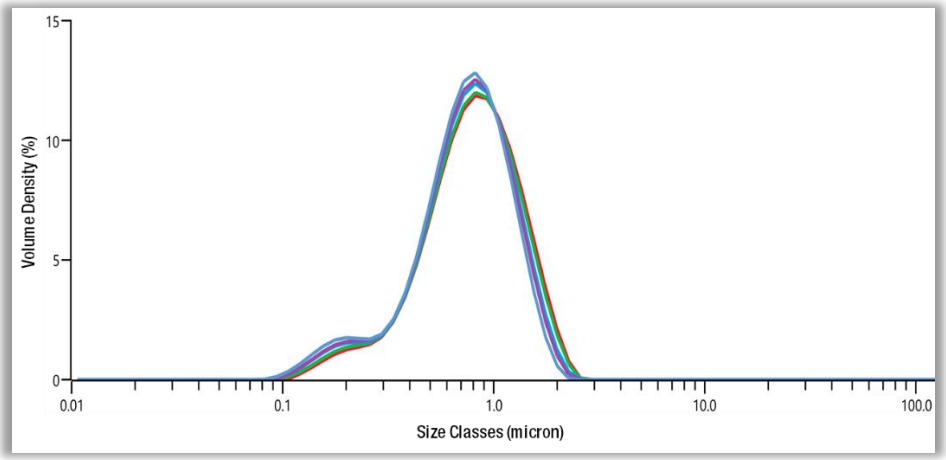
In addition to the ongoing product outreach, Alpha maintains a continuous process of product development and process improvement. This is driven both by end-user feedback and leveraging the considerable process expertise within the Company.

'Battery grade' HPA powder particle sizing achieved without milling

The dominant application of HPA (by volume) within the lithium-ion cell is the in the single or double-sided layer coating of battery separators with HPA (ceramic coated separators, or 'CCS'). This application generally requires HPA powders with a particle size distribution ('PSD') of between 0.1 and 2.1 micron, to allow smooth layer coats of 4-8 micron thickness. This PSD is achieved by Alpha and existing manufacturers utilising a jet milling step, with bespoke milling settings to achieve the desired PSD.

Alpha is now very pleased to confirm that through a key process improvement in the 'HPA Precursor' step, the Company can now achieve 'battery grade' particle size distribution ('PSD') without jet milling. Particle sizing from unmilled, static calcined HPA material manufactured in the Brisbane facility is presented in graphic form below. This process change has now been implemented at demonstration plant scale.

The removal of jet milling for the manufacture of battery grade HPA powder is considered a very positive process development, and is expected to translate into significant capital and operating cost savings. In addition, removal of jet milling for battery HPA removes a process step which usually introduces small levels of impurities.



'Battery grade' particle sizing distribution ('PSD') for alpha form HPA powder, achieved without jet milling

PRODUCT MARKETING

Alpha continues to advance its marketing effort across its full range of high purity alumina and aluminium products, spanning a diverse range of end users and applications, as both direct engagements and via intermediaries. The Company remains extremely pleased with the level of end-user engagement across its suite of ultra-high purity aluminium products, which continue to accelerate towards commercial end-user supply arrangements. Alpha's Brisbane facility is continuing to prepare and ship test samples for product assessment, and to service product sales into specialty markets.

First commercial HPA sales to German LED phosphor counterparty

Following a successful program of product assessment and testing, and the development of a bespoke particle sizing, Alpha is pleased to record its first commercial sales order of HPA to a German-based, specialist LED phosphor manufacturer. The initial order is only modest (25kg @ US$35/kg), but with the potential for much larger volumes.

Critically, this order represents an important validation of Alpha's product development for application in LED phosphor manufacture. The HPA product order will be delivered to over the next two weeks.

Global network of specialty marketing agents now in place

Alpha has now established a network of marketing arrangements covering the key technology jurisdictions of North America, Japan and China, and the European Union, via a series of MoU's with marketing counterparties focusing on specialty market applications. which now include:

- North America: via Rhineland Specialties (ASX announcement: 25 November 2020),
- Japan and China: via APL Engineered Materials, (ASX announcement: 28 April 2021), and
- European Union: via Technologica (ASX announcement: 3 May 2021)

Each of the MoU's has been designed with a particular focus on marketing Alpha's high purity aluminium precursor products and to complement existing marketing and distribution arrangements with Traxys (ASX announcement: 20 August 2020) and the Company's various direct end-user engagements.

Each of these arrangements allows for Alpha's products to access a range of high value specialty applications and markets and key market intelligence and product applications already developed with Rhineland Specialties can now be applied to these new markets.

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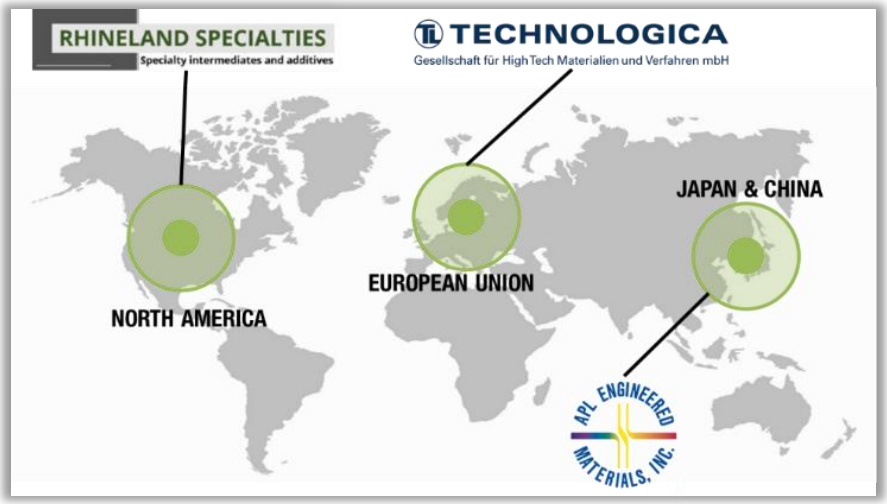

Alpha has established a global network of marketing counterparties to access high value specialty markets

Al-Precursor #1

Alpha's expanded geographic reach has started to increase the level of market interest in Al-Precursor #1, with:

- Further sales orders for 93kgs, and;
- a further +20kg despatched for testwork by 4 separate end-users.

These end-user applications span a range of applications and industries including:

- Particle coating of lithium-ion battery anodes;
- Yttrium-aluminate garnet (YAG) laser crystals, and
- LED phosphor synthesis.

St Gobain

Alpha continues to work with Saint Gobain across a range of its high purity aluminium products. Alpha has despatched a further 6 products for testwork over the last 4 weeks, with a further 4 products under development within its Brisbane facility.

Further boehmite orders from Japan based separator manufacturer

Alpha has received 2 new boehmite product orders from a Japan based manufacturer of coated lithium-ion battery separators. This order follows the delivery of initial boehmite product sample in 2020. These product orders will be delivered within 3 weeks.

High density sintered pellets under production for Japanese ceramics business

In December 2020, Alpha completed the successful delivery of 96kg of sintered pellets to AlOx technology ('AlOx'). AlOx then subsequently grew a ~90kg sapphire boule that was successfully wafered and qualified for optical applications. Building from this testwork, Alpha is currently manufacturing a 20kg sample order of bespoke, high density HPA pellets for a large Japan based ceramics and sapphire glass manufacturer.

Sintering of HPA pellets for sapphire glass manufacture

Competent Persons Statement (Process Development Testwork)

Information in this announcement that relates to metallurgical results is based on information compiled by or under the supervision of Dr Stuart Leary, an Independent Consultant trading as Delta Consulting Group. Dr Leary is a Member of The Australasian Institute of Mining and Metallurgy (AusIMM). Dr Leary has sufficient experience to the activity which he is undertaking to qualify as a Competent Persons under the 2012 Edition of the 'Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr Leary consents to the inclusion of the technical data in the form and context in which it appears.

For further information on testwork results and processes see ASX announcements dated 2 March 2021, 14 December 2020, 8 October 2020, 28 September 2020, 28 July 2020, 19 June 2020, 21 May 2020, 23 April 2020, 25 March 2020, 17 March 2020, 10 December 2019, 21 November 2019, 10 October 2019, 23 September 2019, 28 August 2019, 5 August 2019, 25 July 2019, 2 July 2019, 3 June 2019, 17 April 2019, 7 March 2019, 4 December 2018, 20 November 2018, 6 September 2018, 31 August 2018, 9 July 2018, 30 April 2018, 26 April 2018, 21 March 2018, 6 March 2018, 21 February 2018, 8 December 2017, 30 November 2017, 29 November 2017, 24 November 2017 and 13 November 2017.

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About the HPA First Project

The Company's HPA First Project represents the evaluation and intended commercialisation of the production of ~10,000tpa equivalent of high purity alumina (HPA) and related products using the Company's proprietary licenced solvent extraction and HPA refining technology. The technology provides for the extraction and purification of aluminium from an industrial feedstock to produce 4N (>99.99% purity) alumina for the intended use within the lithium-ion battery and LED lighting industry. Alpha completed Definitive Feasibility Study (DFS) in March 2020 following a successful pilot plant campaign in 2019. Alpha has since upscaled its Brisbane facility to demonstration scale and has now recorded over 2,000 operating hours delivering an expanded range of high purity product to over 35 end-users globally.

The Company is now in the mature phases of project permitting, market outreach and project financing processes, with the expectation of positioning the HPA First Project to Final investment Decision.

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