



6 March 2019

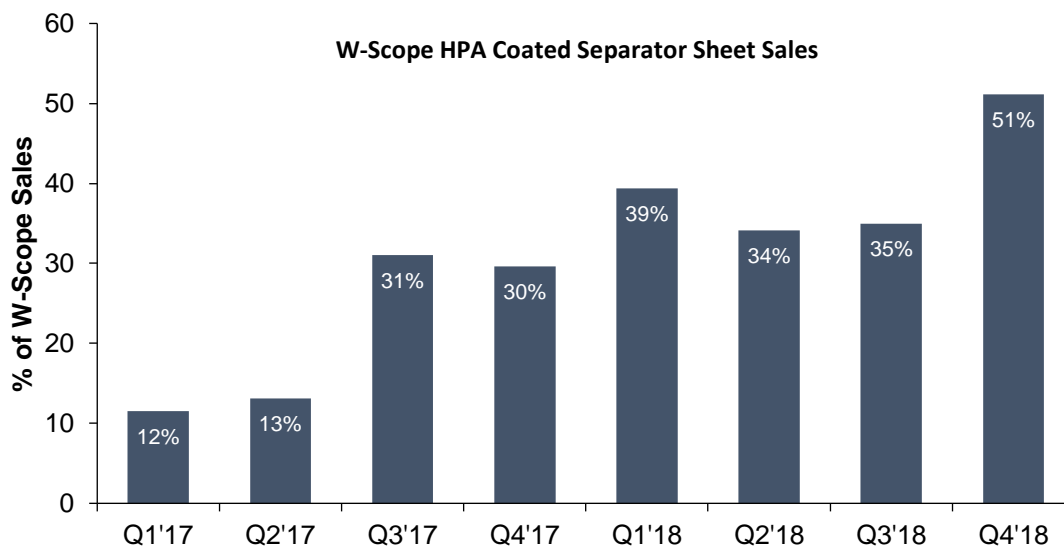
ALTECH – HPA COATED BATTERY SEPARATOR MARKET UPDATE

Highlights

- Transition to HPA coated battery separators clearly evident
- 47% increase in quarterly sales volumes for HPA coated separators
- W-Scope increasing HPA coated separator production capacity
- South Korea a leader in HPA use for separators

Altech Chemicals Limited (Altech/the Company) (ASX: ATC) (FRA: A3Y) is pleased to provide an update on the transition by lithium-ion battery manufactures to high purity alumina (HPA) coated battery separator sheets, as is apparent from recently announced quarterly sales data by Japanese separator sheet manufacturer W-Scope (6619 JT) and from Altech’s recent attendance at the Battery Japan 2019 conference, held in Tokyo.

Table 1 – W-Scope HPA Coated Separator Sheet Sales Volumes (as % of total sales)



Source: W-Scope

W-Scope reported in its 4th quarter 2018 results that as a proportion of total sales, HPA coated separator sheets jumped to 51%, a volume increase of approximately 47% compared to an average sales volume of ~34% in the preceding four quarters (see Table 1).

The transition by lithium-ion battery manufactures to HPA coated separators is primarily a function of advances in battery anode and cathode technology. As a result, battery energy storage capacity is increasing and battery

operating temperature during charge and discharge is higher – to the point where traditional non-coated polymer separator sheets are reaching the limit of safe application, hence the transition to HPA coated separators which tolerate higher operating temperatures (refer Altech’s ASX Announcement of 6 June 2018). The transition to HPA coated separators has been anticipated for some time, however the quarter 4, 2018 W-Scope sales data indicates that the transition may be progressing at a rate faster than previously envisaged.

W-Scope announced two years ago that it was doubling its HPA coated separator business due to its anticipation of increased demand for its coated separators from lithium-ion battery manufacturers that supply the electric vehicle and consumer goods industries. This investment appears to be well founded, as in its investor update published in mid-February 2019, W-Scope announced annual sales revenue guidance of ¥17.5bn for 2019, which compares to actual annual sales revenue of ¥8.7bn for 2018, a year-on-year increase of 100%. And for 2020, W-Scope has forecast a further increase in expected sales revenue that is 50% above its 2019 guidance, primarily on the back of capital expenditure for four additional HPA coated separator sheet production lines in response to coated separator sheet supply contracts associated with the electric vehicle industry. Nearly 60% of W-Scope’s sales are to South Korea.

Most battery separator sheet manufacturers are business units within large conglomerates and/or are not listed on a stock exchange and consequently they do not publish detailed sales data. W-Scope, as a public company with its shares quoted on the Tokyo Stock Exchange, does publish detailed sales data and Altech monitors its published information to assist it in understanding current trends in the battery separator sheet market. W-Scope has a ~10% share of the global battery separator sheet market.



Photo 1 – Altech Chemicals Limited booth at Battery Japan 2019 (with Mitsubishi Representatives)

Altech was a recent exhibitor at the Battery Japan 2019 conference in Tokyo, Japan. The Company continues to work with its off taker, Mitsubishi Corporation to build brand and product awareness. Delegates at the conference reported strong demand for HPA from South Korea and Japan. South Korean battery manufacturers like LG Chemicals produce around 10 different types of coated separators and use between 3,000tpa – 4,000tpa of HPA, its primary HPA suppliers appear to be Sumitomo Chemicals and Nippon Light Metal. Other major

lithium-ion battery producers in South Korea include SK Innovation and Samsung SDI, Samsung is also a major user of HPA for its coated separators.

At Battery Japan 2019, the Altech booth attracted considerable interest as there appears to be heightened concern about the perceived limited additional supply of high quality HPA from established producers. There was also feedback from battery manufactures that HPA is now being incorporated within lithium-ion battery cathode's as it aids with battery temperature tolerance and reduces dendrite (crystalline mass) growth. Although this is an early stage innovation, it is nevertheless adding to HPA supply and quality concerns, and it is another potential area of demand growth for HPA.

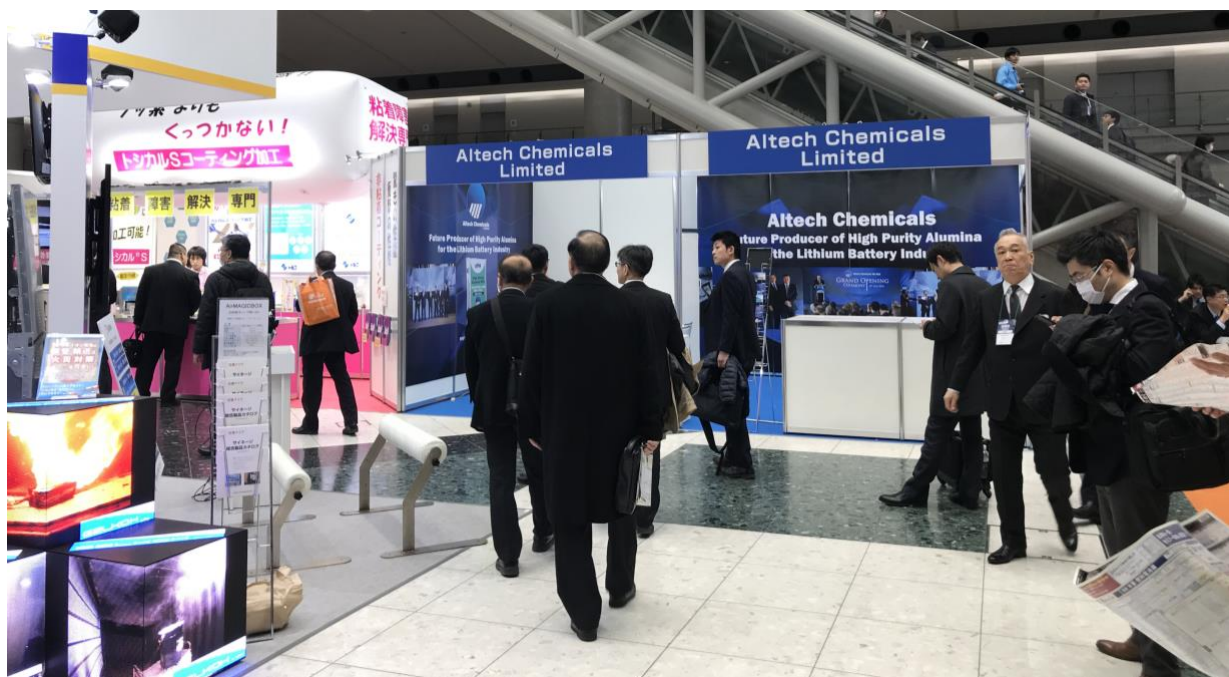


Photo 2 – Altech Chemicals Limited booth at Battery Japan 2019

The global transition to electric vehicles now seems unstoppable. Toyota has announced that it is aiming to achieve annual sales of 5.5 million electrically driven vehicles by 2030; General Motors has plans to launch more than 20 electric vehicle models by 2023; Tesla, the highest profile electric vehicle manufacturer in the world is expecting between 700,000 and 1,000,000 of its electric vehicles to be sold in 2019; whilst German car-makers BMW and VW are expected to launch over 100 new electric vehicle models over the coming 6 years. The demand for HPA, which is currently estimated at 1.5kg – 1.7kg per electric vehicle, should be positively impacted by the migration to electric vehicles, underpinning the forecast rise in global HPA demand from current levels of ~26,000tpa to a conservative demand estimate of in excess of 60,000tpa by 2025. From its recent discussions at various battery conferences, Altech understands that the price of high quality 99.99% HPA in Japan remains unchanged at ~US\$40,000/tonne.

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About Altech Chemicals (ASX:ATC) (FRA:A3Y)

Altech Chemicals Limited (Altech/the Company) is aiming to become one of the **world's leading suppliers of 99.99% (4N) high purity alumina (HPA) (Al₂O₃)**.

HPA is a high-value, high margin and highly demanded product as it is the critical ingredient required for the production of synthetic sapphire. Synthetic sapphire is used in the manufacture of substrates for LED lights, semiconductor wafers used in the electronics industry, and scratch-resistant sapphire glass used for wristwatch faces, optical windows and smartphone components. There is no substitute for HPA in the manufacture of synthetic sapphire.

Global HPA demand is approximately 25,315tpa (2016) and demand is growing at a compound annual growth rate (CAGR) of 16.7% (2016-2024), primarily driven by the growth in worldwide adoption of LEDs. As an energy efficient, longer lasting and lower operating cost form of lighting, LED lighting is replacing the traditional incandescent bulbs.

Current HPA producers use expensive and highly processed feedstock materials such as aluminium metal to produce HPA. Altech has completed a Final Investment Decision Study (FIDS) for the construction and operation of a 4,500tpa HPA plant at the Tanjung Langsat Industrial Complex, Johor, Malaysia. The plant will produce HPA directly from kaolin clay, which will be sourced from the Company's 100%-owned kaolin deposit at Meckering, Western Australia. Altech's production process will employ conventional "off-the-shelf" plant and equipment to extract HPA using a hydrochloric (HCl) acid-based process. Production costs are anticipated to be considerably lower than established HPA producers.

The Company is currently in the process of finalising project financing and has announced the execution of an agreement with its appointed EPC contractor SMS group for the commencement of Stage 1 construction of its HPA plant at Johor, Malaysia.



Forward-looking Statements

This announcement contains forward-looking statements which are identified by words such as 'anticipates', 'forecasts', 'may', 'will', 'could', 'believes', 'estimates', 'targets', 'expects', 'plan' or 'intends' and other similar words that involve risks and uncertainties. Indications of, and guidelines or outlook on, future earnings, distributions or financial position or performance and targets, estimates and assumptions in respect of production, prices, operating costs, results, capital expenditures, reserves and resources are also forward-looking statements. These statements are based on an assessment of present economic and operating conditions, and on a number of assumptions and estimates regarding future events and actions that, while considered reasonable as at the date of this announcement and are expected to take place, are inherently subject to significant technical, business, economic, competitive, political and social uncertainties and contingencies. Such forward-looking statements are not guarantees of future performance and involve known and unknown risks, uncertainties, assumptions and other important factors, many of which are beyond the control of the Company, the directors and management. We cannot and do not give any assurance that the results, performance or achievements expressed or implied by the forward-looking statements contained in this announcement will actually occur and readers are cautioned not to place undue reliance on these forward-looking statements. These forward-looking statements are subject to various risk factors that could cause actual events or results to differ materially from the events or results estimated, expressed or anticipated in these statements.