



AUSTRALIAN BAUXITE LIMITED

ALCORE Limited

AlF₃ for aluminium smelters and lithium ion batteries

ASX: ABX

ASX ANNOUNCEMENT

27 August 2020

Alcore Confirms Key Requirements at Laboratory Scale

Australian Bauxite Limited (ASX: ABX) (**ABX**) presents the following update being presented today at ALCORE Limited's (**Alcore**) Annual General Meeting. Alcore is a majority owned subsidiary of ABX.

- Aluminium fluoride (AlF₃) is a strategically important mineral because it is an essential ingredient for aluminium smelting. It is also being investigated for advanced lithium ion batteries
- Alcore is conducting advanced laboratory production of AlF₃ from aluminium smelter waste materials and from ABX's gibbsite-rich clean bauxite
- Alcore is planning to be the first domestic producer of AlF₃ so as to diversify and increase security of supply for Australasian smelters and to export to other smelters worldwide
- Alcore's method is the world's first production of AlF₃ from the recycling of aluminium smelter waste and low-grade bauxite
- Alcore uses the aluminium-related parts of the CORE Technology (patent pending)

Alcore has recently demonstrated:

- Production of hydrofluoric acid (HF) from aluminium smelter waste
- Reaction of this manufactured HF with gibbsite to produce AlF₃ that is indistinguishable from AlF₃ produced in the Alcore laboratory using gibbsite and purchased HF
- Consistent production of AlF₃ with composition meeting commercial specifications, superior to that produced in Q2 2020. The chemical analysis was performed by CSIRO (see Table 1)
- Prevention of key impurities in bauxite from reacting with fluorine acids, allowing the impurities to remain as solids that can be separated from the AlF₃ solution during processing
- Improved separation techniques to remove solid impurities from the AlF₃ solution during processing. This enhances Alcore's ability to produce AlF₃ from bauxite and dross, a waste material from aluminium smelting

Alcore has now proven it can:

1. Produce hydrofluoric acid (HF) from aluminium smelter waste
2. Produce AlF₃ from gibbsite with composition meeting commercial specifications
3. Produce AlF₃ from gibbsite and HF recovered from aluminium smelter waste that is indistinguishable from AlF₃ produced gibbsite and purchased HF
4. Manufacture saleable Corethane gas-substitute by reducing ash content in coal from 28% to less than 0.3%¹, thus making an ideal, ultra-clean substitute for coke and ideal for industrial heating as a substitute for gas and diesel

Alcore is currently:

1. Designing a pilot plant, to confirm process and product performance, and produce larger samples for evaluation by aluminium smelters
2. Conducting experiments to:
 - Optimise the process conditions to ensure that required physical properties of AlF₃ are consistently achieved
 - Produce AlF₃ from bauxite and dross of equivalent quality to that produced from gibbsite

¹ Final ash content was erroneously stated as "less than 3%" in the ASX release of 26 August 2020

Table 1: CSIRO chemical analyses of recent Alcore AlF₃ products.

	AlF ₃	Fe ₂ O ₃	SiO ₂	Na ₂ O	CaO	P ₂ O ₅
Commercial specification	>90%	<0.050%	<0.280%	<0.600%	<0.090%	<0.040%
Alcore Sample 1	95%	0.040%	0.015%	0.341%	0.106%	<0.005%
Alcore Sample 2	92%	0.040%	0.018%	0.347%	0.082%	<0.005%
Alcore Sample 3	99%	0.040%	0.005%	0.336%	0.090%	<0.005%
Alcore Sample 4	94%	0.056%	0.012%	0.316%	0.091%	<0.005%

Comment: these are exceptionally good results

COMMERCIAL ISSUES

- AlF₃ is an essential electrolyte ingredient for aluminium smelting. Global demand for AlF₃ increases as aluminium production increases and the use of AlF₃ in lithium-ion batteries increases
- Market prices for AlF₃ are mainly **determined by the Chinese export price** set on the basis of free-on-board in Chinese Ports which is published daily and monthly by China Customs, similar to bauxite, alumina and aluminium prices
- Market prices are still around the long-term average price of US\$1,200 per tonne (see Figure 1).
- Alcore plans to be the first producer of AlF₃ in the southern hemisphere, starting at the production rate of approximately 10,000 tonnes of AlF₃ per year, which is a small percentage of the 1.5 million tonne global market for AlF₃
- Alcore's business plan is to increase production steadily by commissioning five of these 10,000 tonne production modules at an industrial site in Bell Bay, northern Tasmania; an industrial precinct that currently has an aluminium smelter, a manganese smelter and an aluminium powder plant all powered by hydro-power. Alcore's recycling strategy would improve the environmental credentials of Bell Bay Aluminium.

Governments

Discussions continue with governments, agencies and with major companies in the aluminium industry. Alcore considers AlF₃ to be a strategically important mineral product.

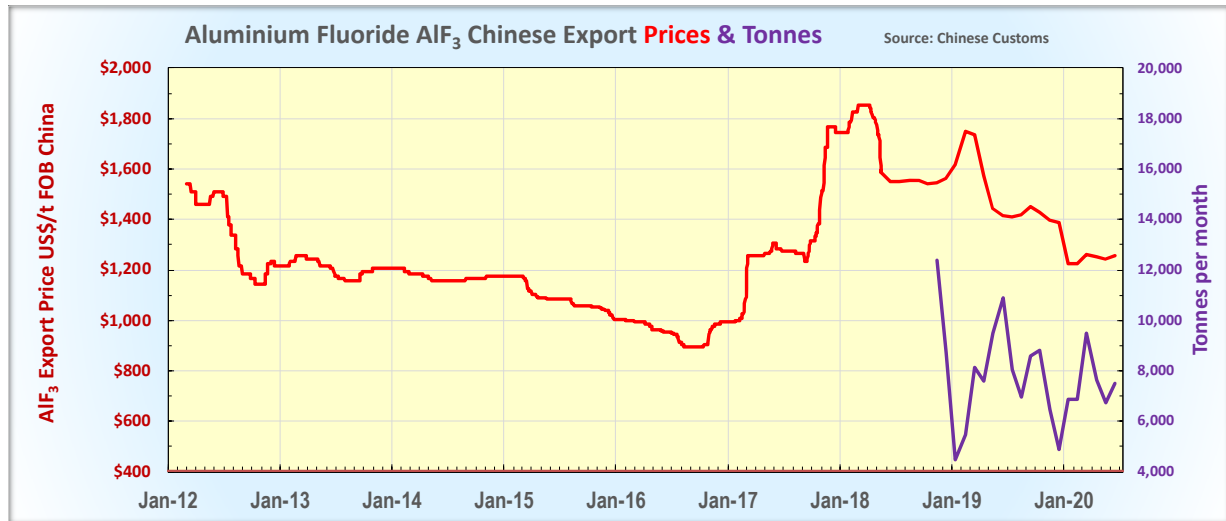
Comment: Alcore CEO, Mark Cooksey commented: "Despite the constraints imposed by Covid-19, Alcore has made significant progress in the last few months. For the process selected for our first 10,000 tonnes/year production module, we have now demonstrated all of the key requirements at the laboratory scale. We are now fast-tracking a pilot plant scale confirmation of the engineering parameters for the first module. It is planned to present a feasibility study to investors as soon as possible."

This announcement has been approved for release by the Board of Australian Bauxite Limited.

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Figure 1: Chinese AIF3 export prices and tonnages.



About Australian Bauxite Limited

ASX Code **ABX** Web: www.australianbauxite.com.au

Australian Bauxite Limited (ABx) has its first bauxite mine in Tasmania & controls the Eastern Australian Bauxite Province. ABx's 11 bauxite tenements in Queensland, New South Wales & Tasmania totalling 662 km² are all 100% owned, unencumbered & free of third-party royalties. ABx's bauxite is gibbsite trihydrate (THA) bauxite that can be processed into alumina at low temperature.

ABx has committed a large proportion of its expenditure into Research and Development to find ways to capitalise on the main strengths of its bauxite type which is very clean, free of all deleterious elements and partitioned into layers, nodules, particles and grains of different qualities that can be separated into different product streams using physical, chemical and geophysical methods.

ABx has declared large Mineral Resources in northern NSW, southern NSW, Binjour in central QLD & in northern Tasmania. ABx's first mine commenced at Bald Hill near Campbell Town, Tasmania in December 2014 – the first new Australian bauxite mine for more than 35 years.

ABx aspires to identify large bauxite resources in the Eastern Australian Bauxite Province and has created significant bauxite development projects in 3 states, Queensland, New South Wales and Tasmania. Its bauxite deposits are favourably located for direct shipping of bauxite to both local and export customers.

ABx endorses best practices on agricultural land, strives to leave land and environment better than we find it.

We only operate where welcomed.

About ALCORE Limited:



Australian Bauxite Limited (ABx)'s 89%-owned technology subsidiary ALCORE Limited was created to fund and manage the Alcore Project involving the construction of an Alcore Production Plant to produce Aluminium Fluoride (AIF₃) and valuable co-products using patent pending new Australian technology. Alcore intends to convert low grade bauxite worth \$50 per tonne into a suite of valuable products worth more than \$800 per tonne. Alcore's testwork commenced on 1 July 2019 at Alcore's high-technology Research Centre in Berkeley Vale, Central Coast NSW and is currently focussed on producing AIF₃ test samples for pre-qualified aluminium smelter customers. Its processes can also produce Corethane, which is pure hydrocarbon powder to provide thermal and electrical power with low CO₂ emissions when used as a gas-substitute or as a diesel substitute for fuel security purposes and is ideally suited for use as a sulphur-free bunker fuel. Corethane is also useable as a chemical reductant instead of imported coke and coals.

AIF₃ is a vital ingredient in aluminium smelters and is currently 100% imported. Alcore will be the first Australian producer of this strategically important mineral product and will provide security of supply to the large aluminium smelting industry in Australia. Alcore will make AIF₃ from smelter waste materials and thereby maximise the recycling by Australian aluminium smelters.

Directors of ABx

Paul Lennon	Chairman
Ian Levy	CEO & MD
Ken Boundy	Director
Henry Kinstlinger	Company Secretary

Officers

Leon Hawker	Chief Operating Officer
Jacob Rebek	Chief Geologist
Paul Glover	Marketing, Exploration & Relationships
Nathan Towns	Operations Manager
Dr Mark Cooksey	CEO Alcore Limited

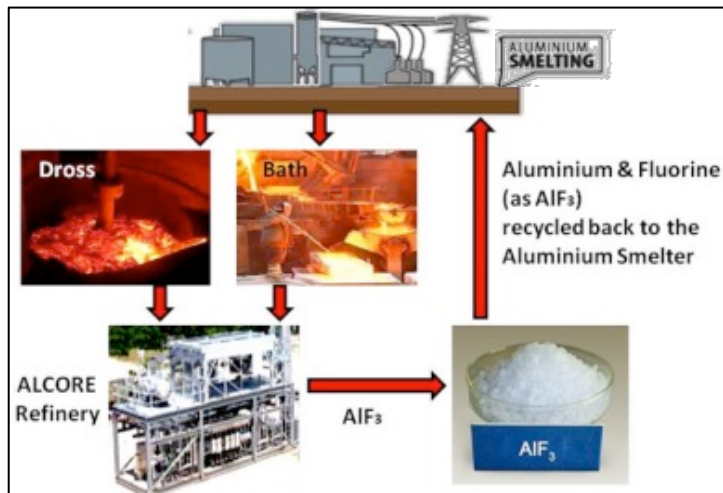


Figure 2: Summary of the Alcore 'Refine & Recycle' strategy

This process has the strong potential to be the simplest and lowest cost method to make AlF_3 . It provides an economically attractive way to utilise the aluminium-rich and fluoride-rich by-products from many aluminium smelters.



Figure 3

The \$2.5 million Alcore laboratory built inside the Alcore Research Centre

The Core Lab is a climate-controlled laboratory constructed inside the Alcore Research Centre to produce test samples of AlF_3 and co-products. It will become a research centre for testing the technology on many ores.



Figure 4: Preparation & Analytical Lab, XRF & furnaces



Figure 5: Alcore test lab, fume cabinets with hi-tech scrubbers, showers, microscopes & Drager air monitor (wall)