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Alkemy Capital Investments Plc

Cathode Active Material manufacturer confirms Tees Valley Lithium’s ultra-pure battery-grade lithium hydroxide exceeds prevailing standards

Tees Valley Lithium Limited (“Tees Valley Lithium” or “TVL”) is pleased to announce that the specifications of the ultra-pure battery-grade Lithium Hydroxide it will produce are higher than the prevailing industry standards.

The testwork was performed by leading technology provider JordProxa and independently verified by an internationally recognised cathode active material manufacturer.

Tees Valley Lithium is a wholly-owned subsidiary of LSE listed Alkemy Capital Investments Plc and is looking to establish a world-class, independent and sustainable Lithium Hydroxide production facility at the Wilton International Chemicals park in the Teesside Freeport, UK.

By sourcing low carbon feedstock and powering an electrochemical process with Offshore Wind Tees Valley Lithium is aiming to supply its customers with the world’s lowest carbon Lithium Hydroxide.

HIGHLIGHTS:

- **Ongoing testwork had produced ultra-pure battery-grade lithium hydroxide from low quality industrial grade (95%) lithium sulphate**
- **Product superior to prevalent Chinese standard specification GB/T 26008-2020 D1**
- **Full end product specifications now identified and independently verified by an internationally recognised cathode active material manufacturer**
- **Testwork completed by JordProxa, a globally recognised technology provider, confirms ability to upscale to commercial production**

Tees Valley Lithium CEO John Walker commented:

“These outstanding testwork results and third-party validation by a cathode active material manufacturer is yet another positive milestone for Tees Valley Lithium. The conversion of industrial grade lithium sulphate to ultra high purity lithium hydroxide highlights the robustness of our process. These excellent results also pave the way for advancing our discussions with suppliers of feedstock as well as off-takers of lithium hydroxide.

We continue to move quickly to establish the UK’s first major independent and sustainable lithium hydroxide producer at the Wilton International Chemical Park in the Teesside Freeport to supply burgeoning demand from the European giga factories.”



Metallurgical Testwork

Tees Valley Lithium announced the results of its Feasibility Study (announced on 27 April 2022) for a 96,000tpa lithium hydroxide production facility to be developed at Wilton International Chemical Park in Teesside, UK.

As part of the Feasibility Study, various metallurgical testwork programmes were undertaken by a number of leading laboratories in the field of lithium and speciality minerals processing and treatment.

The testwork in respect of the proposed train 1 Glauber’s Salt route was completed by JordProxa Pty Ltd, a leading technology provider for crystallisation equipment used in the production of lithium hydroxide products and was overseen by Wave International, a leading engineering consultancy firm with significant experience in developing lithium hydroxide projects worldwide.

The product specification of TVL’s battery-grade lithium hydroxide was also independently validated by an internationally recognised cathode active material manufacturer as well as a prominent European-based battery technology manufacturing company.

Utilising the facilities of a technology provider gives a high degree of confidence in scale-up of the process, and the ability to replicate the testwork results in commercial scale equipment.

A key programme undertaken to support the proposed Glauber’s Salt route was Glauber’s Salt and lithium hydroxide crystallisation. The crystallisation testwork programme was designed to prove that the causticisation and crystallisation process could produce a final ultra-pure lithium hydroxide end product. This programme included causticisation, Glauber’s Salt crystallisation, three stage lithium hydroxide crystallisation, and Zero Liquid Discharge (ZLD) crystallisation.

A representative feed material of purified lithium sulphate was processed at JordProxa’s facilities, following the proposed train 1 flowsheet. The purified lithium sulphate is representative of the output of the impurity removal circuit based on industrial grade feedstock at 95% lithium sulphate purity.

After three stages of crystallisation, an ultra-pure battery grade lithium hydroxide product was produced, exceeding the Chinese Standard GB/T 26008-2020 D1 as well as TVL’s target specifications. The full results and specifications are set out in Table 1 below.

Table 1 – Lithium Hydroxide Product Specifications

ANALYTE	UNIT	GB/T 26008-2020 D1	TVL TARGET	TVL TESTWORK RESULT	TARGET
LiOH	%	56.5% ~57.5%	59%	99.90%	Exceeded, calculated by difference
Al	ppm	-	≤1	<0.5	Exceeded



Ca	ppm	≤20	≤15	2.8	Exceeded
Cu	ppm	≤1	≤1	<0.3	Exceeded
Fe	ppm	≤7	≤7	<2.5	Exceeded
K	ppm	≤30	≤10	5.2	Exceeded
Mg	ppm	≤10	≤10	<2.5	Exceeded
Mn	ppm	≤10	≤10	<1	Exceeded
Na	ppm	≤50	≤50	3.8	Exceeded
Ni	ppm	-	≤10	<2.5	Exceeded
Si	ppm	≤50	≤30	8.1	Exceeded
Zn	ppm	-	≤10	0.9	Exceeded
Cl-	ppm	≤20	≤20	8.0	Exceeded
SO42-	ppm	≤80	≤80	20.5	Exceeded
CO32-	%	≤0.4	≤0.2%	.09	Exceeded
B	ppm	≤50	≤50	<1	Exceeded
Acid Insoluble	ppm	≤50	≤50	Not analysed	N/A
Magnetic Impurities	ppb	≤50	≤50-	Not analysed	N/A

Whilst Chinese Standard GB/T 26008-2020 D1 is considered to be the industry reference for battery grade LHM, Tees Valley Lithium will aim to produce a premium product which exceeds these requirements and will be attractive to tier 1 customers.

The production of an ultra-pure, premium product from TVL's flowsheet (without the need for extensive optimisation) validates the robust flowsheet adopted and represents a significant milestone.

Further testwork to be undertaken will include the production of larger customer samples from the Glauber's Salt process and crystallisation of liquors from the electrochemical testwork to further refine the ultra-pure battery grade lithium hydroxide produced from this process.





Figure 1 – Crystallisation testwork at JordProxa. Top left: glass jar crystallisers. Top right: crystallisers. Bottom left: centrifuge. Bottom right: LHM crystals.

Further information

For further information, please visit the Company's website: www.alkemycapital.co.uk or www.teesvalleylithium.co.uk

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NOTES TO EDITORS

Alkemy is seeking to develop, construct and operate the world's leading independent and sustainable lithium hydroxide production facility.

Alkemy, through its wholly-owned subsidiary Tees Valley Lithium, has secured a 9.6ha brownfields site at the Wilton International Chemical Park located in Teesside, a major UK Freeport.

Alkemy has completed a Class 4 Feasibility Study for its proposed lithium hydroxide facility which will process feedstock imported from various sources to produce 96,000 tonnes of premium, low-carbon lithium hydroxide annually, representing around 15% of Europe's projected demand.

Forward Looking Statements

This news release contains forward-looking information. The statements are based on *reasonable assumptions and expectations of management and Alkemy provides no assurance that actual events will meet management's expectations. In certain cases, forward-looking information may be identified by such terms as "anticipates", "believes", "could", "estimates", "expects", "may", "shall", "will", or "would". Although Alkemy believes the expectations expressed in such forward-looking*



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