

Further L-Max[®] Products Developed

- Caesium and rubidium have successfully been concentrated into two separate products, including a caesium rich brine, which has applications in offshore oil and gas drilling
- Testwork demonstrates that S-Max[™] generated amorphous silica materially increases the compressive strength of concrete when added as a partial cement replacement¹
- Trials to commence in September for the use of L-Max[®] residue as a land reclamation product, following receipt of positive material characterisation tests

Lepidico Ltd (ASX:LPD) (“Lepidico” or “Company”) is pleased to announce that significant advances have been made in the development of the L-Max[®] product suite, in collaboration with consultants Strategic Metallurgy and Knight Piésold. Further product development work is planned over the balance of the year with the objective of integrating outcomes into the closing stages of the Phase 1 L-Max[®] Plant feasibility study, while maintaining the planned project timeline.

Caesium brine

A caesium brine grading 32% caesium, 8% rubidium and less than 1% potassium has been produced from a lepidolite concentrate generated from the Alvarrões mine in Portugal. A mixed rubidium-potassium salt was also produced that graded 23% rubidium, 29% potassium and less than 1% caesium, which will be evaluated for its potential industrial application.

Oil companies and oil service companies use caesium brine – a high specific gravity, stable fluid at normal operating temperatures – to: 1) increase well productivity; 2) reduce drilling and completion costs; and 3) provide a safe, non-corrosive and environmentally acceptable solution in well development and completion that eliminate the risks involved in handling heavy bromide brines.

Lepidico is pursuing commercial alternatives in relation to a caesium brine by-product sourced from lepidolite. Further testwork is planned with the objective of producing a marketable quality caesium brine, while also refining the associated process circuit. No value was considered for caesium products in the Phase 1 L-Max[®] Plant Pre-Feasibility Study (PFS).

¹ Testwork conducted according to ASTM C1240 standard specification for silica fume used in cementitious mixtures

Amorphous silica

Since lodging the provisional patent application for S-Max™ in May 2018² Lepidico, in collaboration with Strategic Metallurgy, has been evaluating alternate uses for amorphous silica generated from the L-Max® leach residue. Testwork has indicated that this silica residue is suitable for use in concrete as a Supplementary Cementitious Material (SCM). When added to Ordinary Portland Cement (OPC) and water the SCM reacts (with the excess calcium hydroxide generated by the OPC reaction with water) to yield additional cementitious material. This is a valuable attribute of the residue as substitution of OPC with L-Max® silica residue could reduce concrete production costs and increase its strength for equivalent OPC additions.

Tests conducted by Strategic Metallurgy resulted in a significant increase in concrete compressive strength of up to 30% when the L-Max® residue replaced 10% of the OPC and after curing for approximately 20 days. Subsequent tests by Boral, conducted according to ASTM C1240 standard specification for silica fume used in cementitious mixtures, resulted in strength increases ranging from 4 to 11% versus the baseline 100% OPC sample after curing for just 7 days. Compressive strength increases with curing time and further testwork is planned.

Production of amorphous silica from the planned Phase 1 L-Max® Plant will simplify the process flowsheet versus the PFS, which assumed the production of sodium silicate. The associated operating cost and capital cost savings are expected to be offset by lower revenue and are planned to be incorporated into the current feasibility study. A market study has commenced for the sale of amorphous silica from the Phase 1 Plant and the Company is pursuing commercial alternatives in this regard. Once in operation the research and development of alternative higher value silica products may be considered.

Land reclamation residue product

Following receipt of favourable geochemical, geotechnical and material characterisation testwork Lepidico has committed to a three month research collaboration with the Department of Earth and Environmental Sciences at the University of Waterloo in Ontario and Knight Piésold Ltd, commencing 4 September 2018. The purpose of the project is to characterise samples of the blended residue streams from the L-Max® process and assess this material as a by-product for use in land reclamation applications. The objective is to validate the L-Max® residue as a simple, rapid and cost-effective material to assist in the environmental reclamation of city landfill sites.

The Phase 1 Plant feasibility study continues to contemplate the development of a Residue Storage Facility (RSF). However, assuming the land reclamation residue project is successful, the need to have a dedicated RSF on site may be eliminated, thereby making the Phase 1 Plant a “zero waste” facility, and result in further capital and operating cost savings.

² Reference Lepidico Ltd ASX Announcement of 1 May 2018

Further Information

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About Lepidico Ltd

Lepidico Ltd is an ASX-listed Company focused on exploration, development and production of lithium. Lepidico owns the technology to a metallurgical process that has successfully produced lithium carbonate from non-conventional sources, specifically lithium-rich mica minerals including lepidolite and zinnwaldite. The L-Max[®] Process has the potential to complement the lithium market by adding competitive cost lithium supply from alternative sources. The Company is currently conducting a Feasibility Study for a Phase 1 L-Max[®] plant, targeting commercial production in 2020. Feed to the planned Phase 1 Plant is proposed to be sourced from the Alvarrões Lepidolite Mine in Portugal under an ore access agreement with owner-operator Grupo Mota. Lepidico has delineated a JORC Code-compliant Inferred Mineral Resource estimate at Alvarrões of 1.5 Mt grading 1.1% Li₂O (see ASX announcement of 7 December 2017). More recently Lepidico has added S-Max[™] to its technology base, which can produce amorphous silicas at minimal cost when integrated with the L-Max[®] process.

Lepidico has a strategic alliance with Galaxy Resources Limited (ASX:GXY, which holds a 12% interest in LPD) based on a shared vision for the significant global opportunity provided by the commercialisation of L-Max[®]. With its strong industry contacts and relationships in the lithium industry, Galaxy will assist Lepidico with future business and growth opportunities, that include the evaluation and potential synergies with its Mt Cattlin Mine and James Bay Project.