

ASX Announcement ([ASX: AXE](#))

19 May 2020

## Halloysite Pilot Plant Testing Update

### Highlights

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- A bulk sample from Franklyn Halloysite-Kaolin Project (“Franklyn Project”) has been received in the USA by leading kaolin minerals industry laboratory.
  - Pilot plant trials are due to commence next month with results expected by the end of June 2020.
  - Resultant halloysite and kaolin samples to be sent to potential down-stream customers.
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Archer Materials Limited (“Archer”, “Company”, [ASX: AXE](#)) is pleased to announce that drill hole samples from the Franklyn Halloysite-Kaolin Project (“Franklyn Project”) have been received by a kaolin industry processing plant in the USA for processing through a pilot plant. The Franklyn Project is 100% owned by Archer and is located approximately 220km north of Adelaide, South Australia.

The delivery of the Franklyn sample to the USA based processing facility was delayed by nearly a month due to COVID-19 restrictions. The sample has been received and prepared with the pilot plant processing work to commence mid-June 2020 with results expected by the end of June 2020. The pilot plant will be used to process a bulk sample collected from drilling at the Franklyn Project (ASX announcement 23 Mar 2020).

The Company’s USA based consultant will work with the pilot plant staff to operate the pilot plant continuously. The pilot plant simulates standard industry halloysite-kaolin recovery processes and this initial program is expected to produce a high grade halloysite-kaolin product.

Potential offtake partners will use the high-grade halloysite-kaolin product for testing and verification purposes. The pilot plant campaign and additional metallurgical test work programs previously undertaken by the Company will also provide the process design parameters for future drill programs and commercial-scale processing plant design.

### Franklyn Halloysite-Kaolin Project

The Company has previously announced the discovery of halloysite from drilling at the Franklyn Project (ASX Ann. 3 Mar 2020). Test work undertaken by a well-respected UK based kaolin industry laboratory identified the presence of halloysite with long tubes, a high aspect ratio and other properties which should make it desirable to customers (ASX Ann. 23 Mar 2020).

The shape of the tubes, being long and cylindrical/tubular, may lead to the halloysite performing well in the materials’ high-value applications dependent on surface area, like catalysis, due to the likelihood of a high aspect ratio (“aspect ratio” is the ratio of the tube length to its diameter). The large lumen observed could allow for applications requiring a high loading of gases, liquids,

or nanoparticles. The combination of these properties is also an advantage as high aspect ratio additives are known to improve the mechanical reinforcement of advanced composites.



**Fig. 1.** Pilot plant test work will be undertaken by KaMin LLC, in addition to operating the pilot plant KaMin LLC owns and operates kaolin mining and processing facilities. Photo of Wren, Georgia kaolin processing facility is shown above<sup>1</sup>.

## Industry Background

Kaolin and halloysite are alumina-silicate based clays, that commonly occur intermixed. These materials have recently emerged as a potential feedstock in processing high-value and hard-to-substitute high-purity alumina (HPA)<sup>2</sup> that could be used in deep-tech applications such as light-emitting diodes and lithium-ion batteries; with halloysite having a nanostructure that may allow its use as an efficient catalyst in the petrochemicals industry, in molecular sieves, composites, non-halogenated flame retardant synergists and cosmetics. These large and growing markets offer significant commercial development potential upon successful findings for the Company's Halloysite-Kaolin exploration programs.

## Next Steps

The beneficiation work is expected to be completed by the end of June and the resultant samples will be sent to potential down-stream customers for product testing. The Company's consideration of further drilling at the Franklyn Project to prove up a resource would require acceptance by potential customers for further commercial testing.

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<sup>1</sup> <https://www.kaminllc.com/plantsandoperations.html>

<sup>2</sup> <https://www.gut.edu.au/news?news-id=153588>

## About Archer

A materials technology company developing materials in quantum computing, biotechnology, and lithium-ion batteries, and exploring for minerals in Australia. The Company has strong intellectual property, broad-scope mineral tenements, world-class in-house expertise, a unique materials inventory, and access to over \$300 million of technology development infrastructure.

The Board of Archer authorised this announcement to be given to ASX.

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