HUDSON RESOURCES INC

CALCIUM FELDSPAR -
A Case for Alumina Production

HUDSON TECHNICAL ALUMINA PRESENTATION

March 2015

Forward Looking Statements

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- **Forward-looking Statements**
  - This presentation includes certain forward-looking statements about future events and/or financial results which are forward-looking in nature and subject to risks and uncertainties. Forward-looking statements include without limitation, statements regarding the company's plan, goals or objectives and future mineral projects, potential mineralization, resources and reserves, exploration results and future plans and objectives of Hudson Resources. Forward- looking statements can generally be identified by the use of forward-looking terminology such as "may", "will", "expect", "intend", "estimate", "anticipate", "believe", or "continue" or the negative thereof or variations thereon or similar terminology. There can be no assurance that such statements will prove to be accurate and actual results and future events could differ materially from those anticipated in such statements. Important factors that could cause actual results to differ materially from expectations include risks associated with mining generally and pre-development stage projects in particular. Potential investors should conduct their own investigations as to the suitability of investing in securities of Hudson Resources.
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- **Qualified Person (QP)**
  - John Goode is a qualified person as defined by National Instrument 43-101 and has reviewed the preparation of the scientific and technical information in this presentation.

White Mountain – Alumina/E-Glass/Filler

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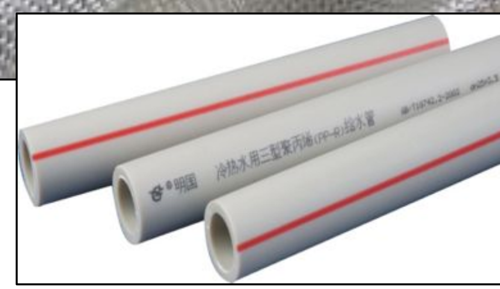
White Mountain is a very large anorthosite intrusion located close to shipping. It is almost pure plagioclase (also known as calcium feldspar) comprised of silicon, aluminum, calcium with no deleterious or heavy metal impurities.

<u>Three major potential markets:</u>

1. **A primary source of alumina**
2. A replacement for Kaolin (and minor limestone and dolomite) in the production of E-glass
3. A replacement for Kaolin, etc in the filler market (ie. paint and plastic)

Paint

Aluminum Cans



Plastic

White Mountain Anorthosite Overview

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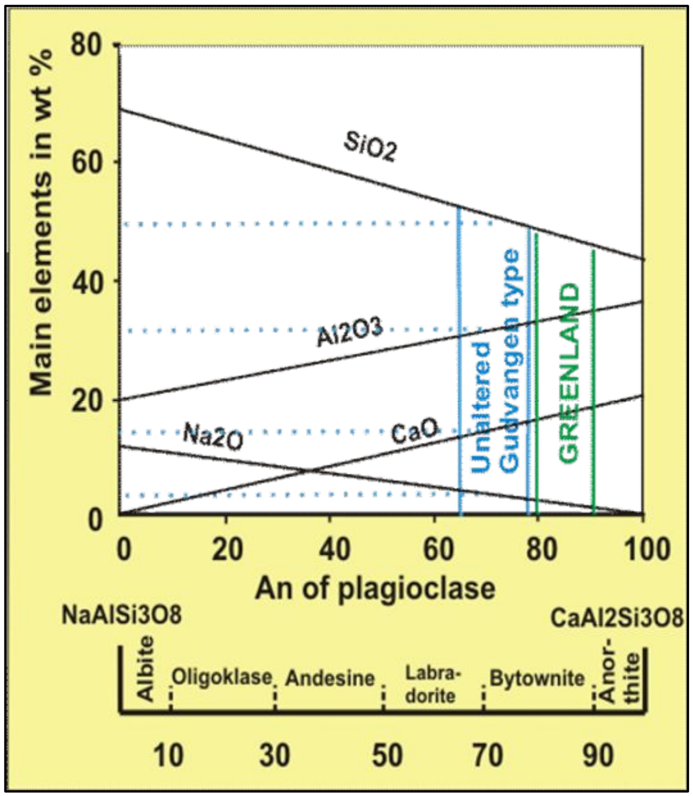
- High aluminum (33% max.) & calcium (16% max.) bytownite anorthosite
- Very large tonnage potential. Indicated and inferred resource of 60M tonnes. Greatly expandable over 6km x 2 km intrusive.
- Highly soluble by HCL leaching easily puts aluminum into solution without the need for expensive autoclaves.
- Residues from the process (amorphous silica and calcium silicate) can be sold as opposed to being sent to tailings.
- Both metallurgical (smelter grade) and specialty (calcined) samples have been produced.
- Process based on known – expired – patents
- Amorphous silica by-product important to the cement industry has been produced and tested by McGill University.

Background to Greenland Anorthosite

Anorthosite is by definition an igneous rock consisting of 90-100% plagioclase feldspar. When the amount of mafic minerals exceeds 10 % the name leucogabbro or anorthositic gabbro (alternatively -norite) is commonly used, depending on the nature of the pyroxene. The plagioclase is of varying chemical composition in a solid solution series of its end members albite $NaAlSi_3O_8$ and anorthite $CaAl_2Si_2O_8$.



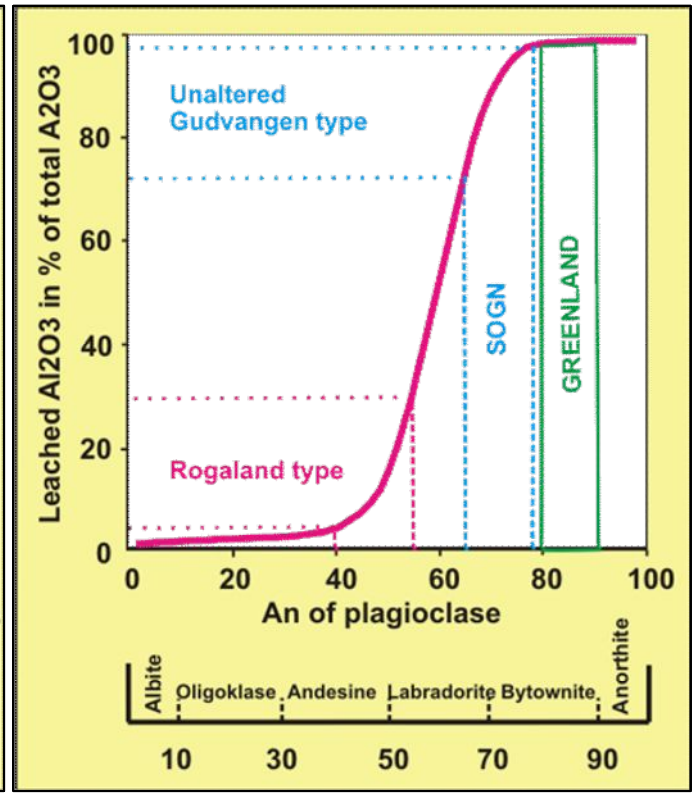


Fig. 3 Chemical composition of plagioclase

Fig. 4 Solubility of plagioclase

High Solubility Makes it Unique

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The anorthosites on Greenland, reported to be predominantly in the range of An_{60-90}, are then almost perfect in regard to an industrial process based on dissolving the rock. This high An content also means an especially high aluminium and calcium content - preferable if those two elements are wanted. In favour of the anorthosites of Greenland, it seems to be a fact that they are generally somewhat higher in aluminium and probably a little more soluble than the very best Norwegian ones in Sogn and Voss □averaging An_{65-75} (fig. 4).

Figure 5 illustrates the influence leaching time and temperature have on the anorthosite. Both graphs are based on well-soluble Sogn anorthosite. High temperature is vital for good

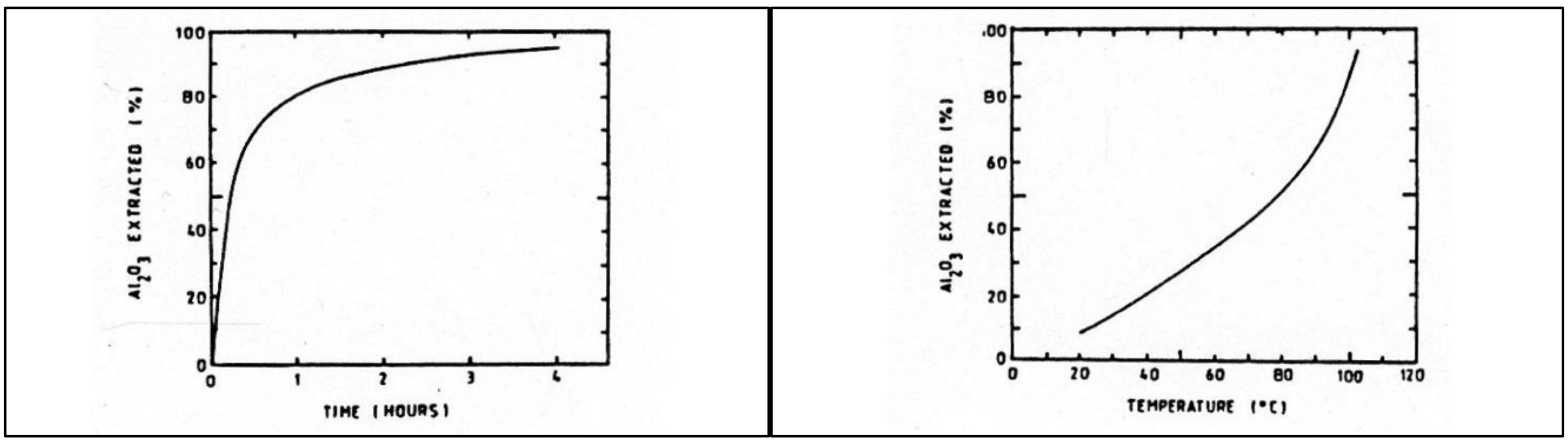

Fig. 3 Solubility in relation to time and temperature. (Gjelsvik 1980)

Bayer Process Alternatives – Long History

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Bulletin 267

DEPARTMENT OF COMMERCE
HERBERT HOOVER, SECRETARY
BUREAU OF MINES
SCOTT TURNER, DIRECTOR

ACID PROCESSES FOR THE EXTRACTION OF ALUMINA

BY

G. S. TILLEY, R. W. MILLAR, and O. C. RALSTON

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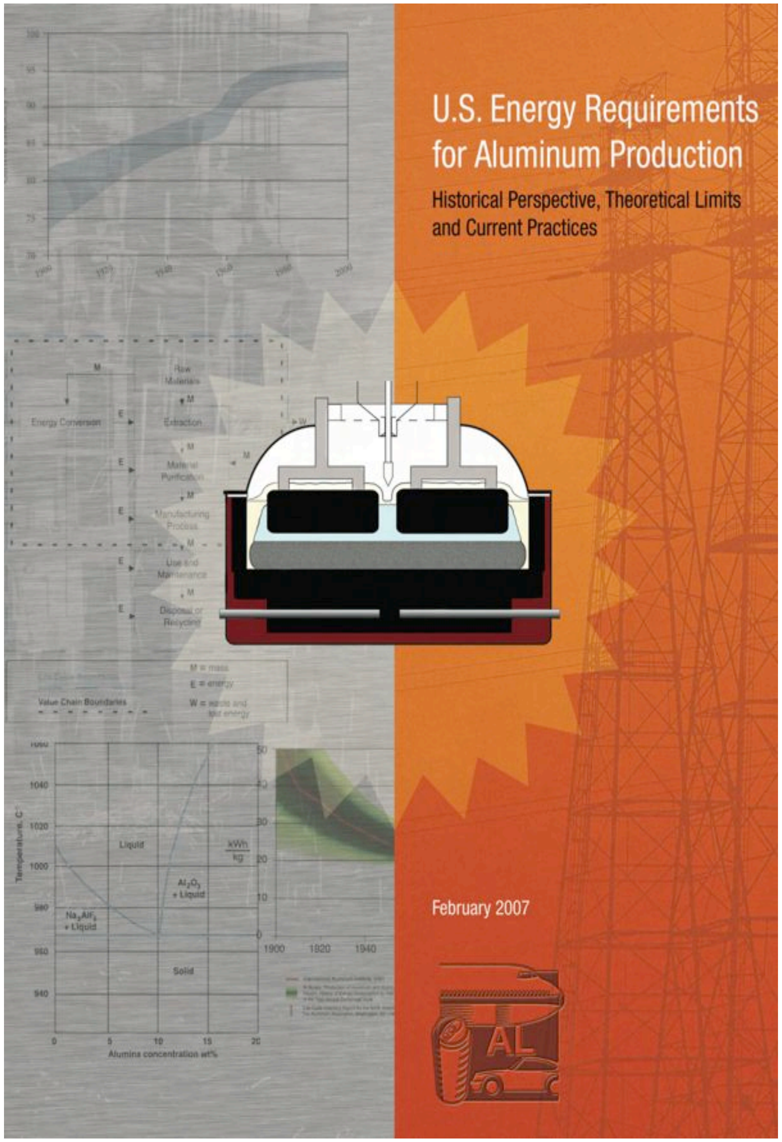
CONTENTS

III

IV CONTENTS

New Studies/Technology Improvements

There have been significant advancements in energy saving improvements and acid regeneration techniques in recent years.



Bench-Scale Testing – 3 main steps

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1. Leach the Anorthosite using hydrochloric acid (HCl). Testing has demonstrated the high solubility of the anorthosite material at normal atmospheric pressure and relatively low temperatures. Aluminum recoveries ranged from 89.7% to 93.7%.

2. Sparge the leachate with hydrochloric gas to generate AlCl3•6H2O (ACH) crystals. Done correctly, this grows the aluminum chloride hexahydrate crystals with a minimum amount of contaminants – principally sodium chloride. Which is washed out after the first stage of calcination.

3. Calcine the ACH with two stages of heating. Alumina is created by removing the HCl (and regenerating it to save costs) and water moisture (Loss of Ignition or LOI).

   Depending on the temperature used in the second stage calcine either metallurgical (Low Alpha) or specialty (~100% Alpha) alumina is produced.

Modelled Flowsheet

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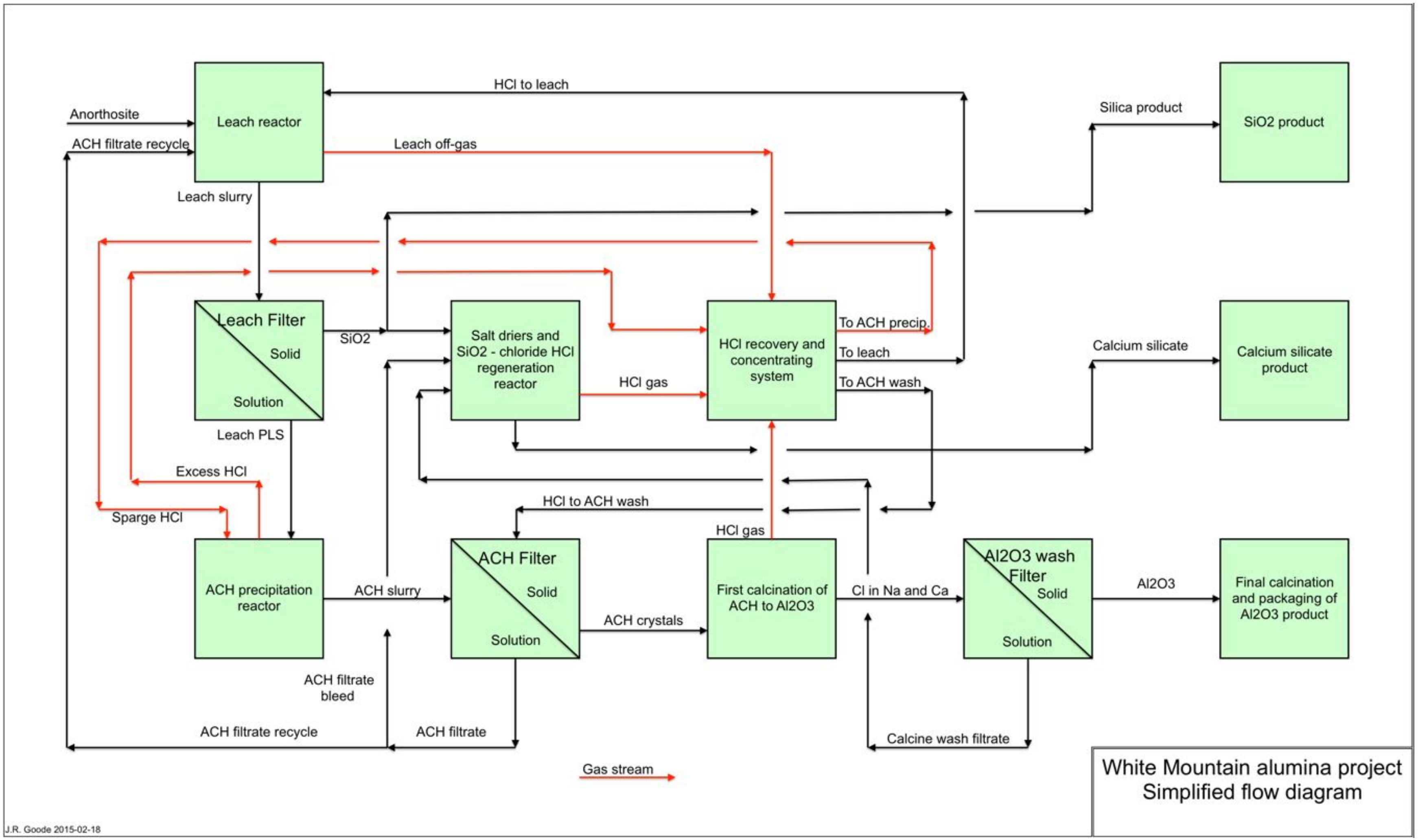

Sparge Test Equipment Setup

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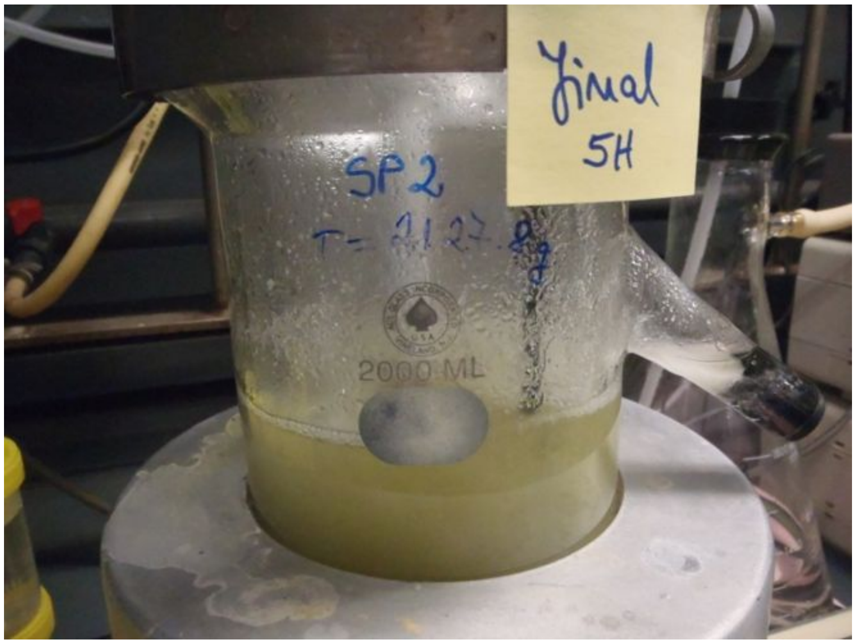
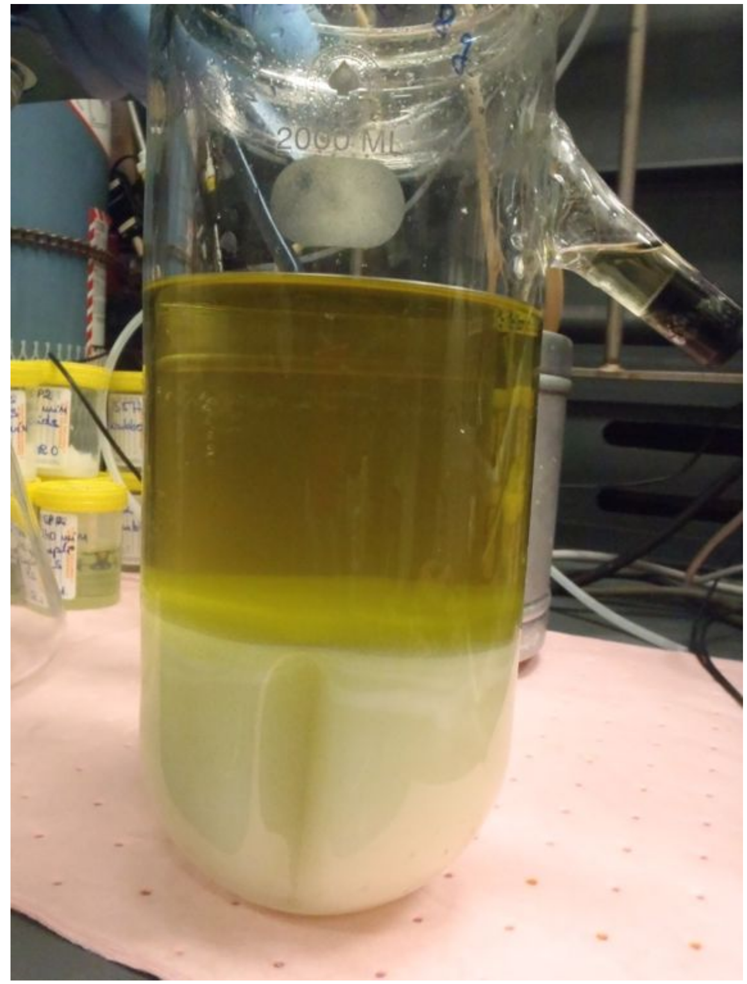
Final Test while Mixing





Final Pulp - Filtration

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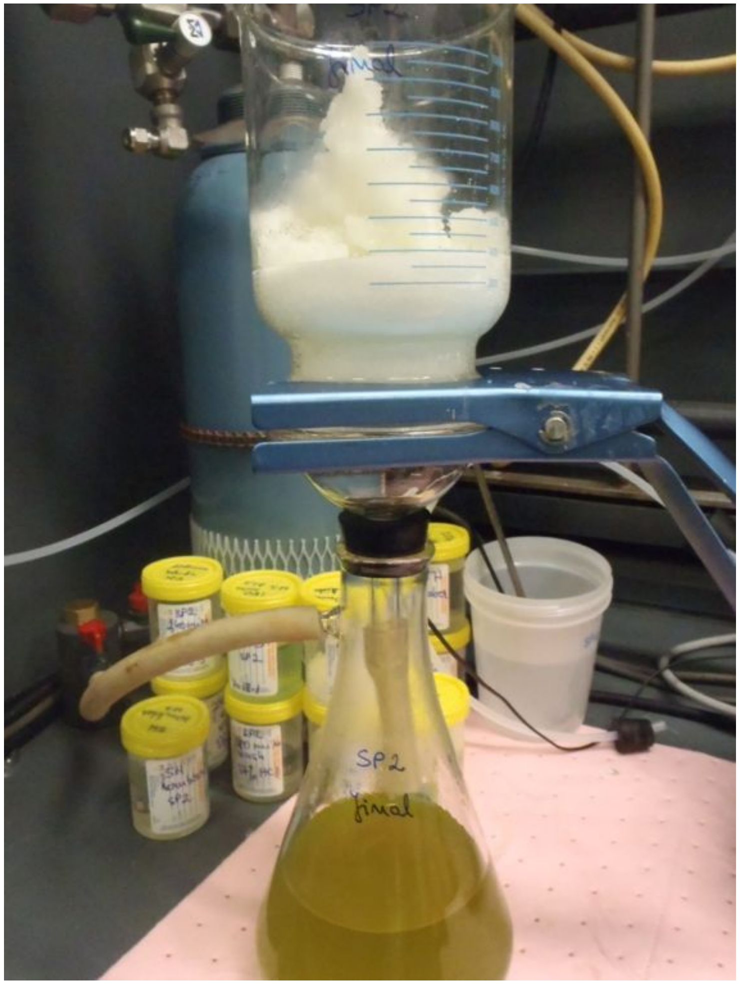

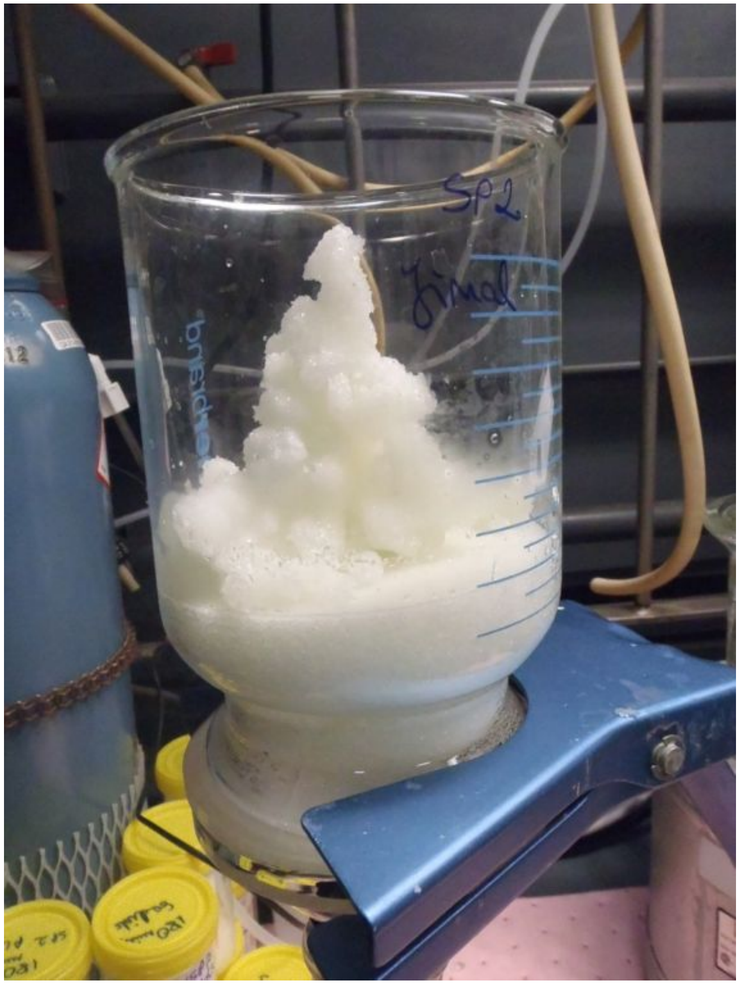

Kinetic and Final Washed Precipitate (ACH)

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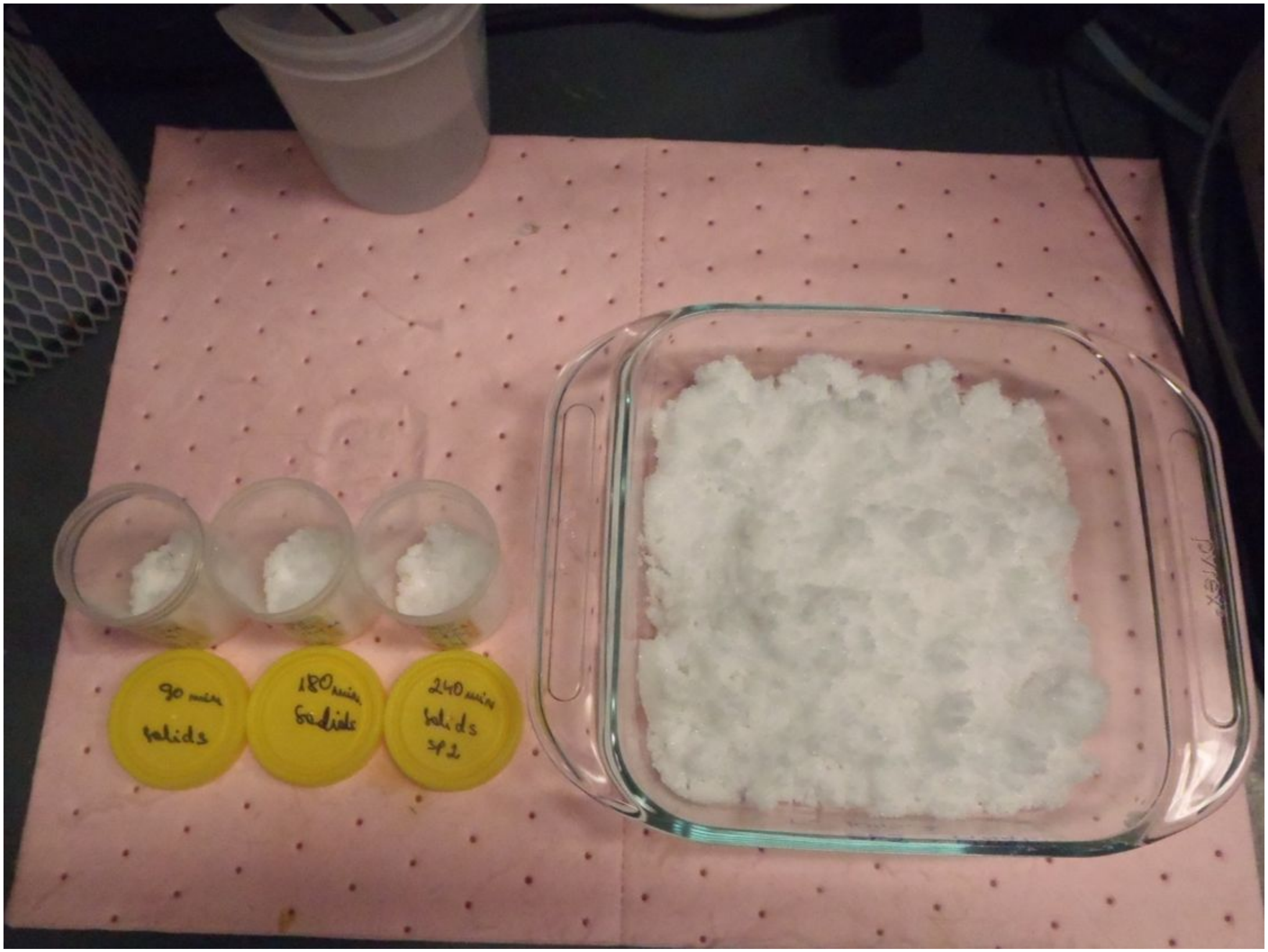

SEM Images – Sample ACH Crystals

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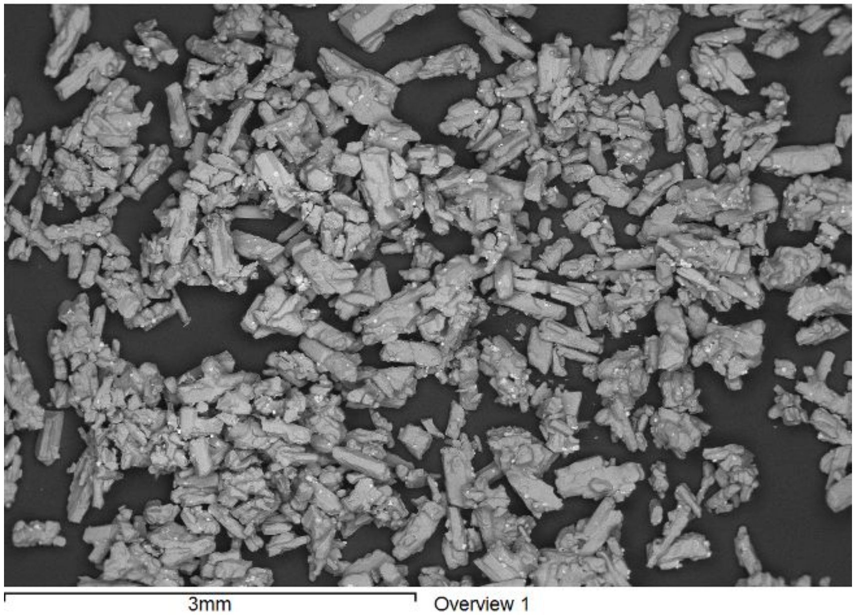

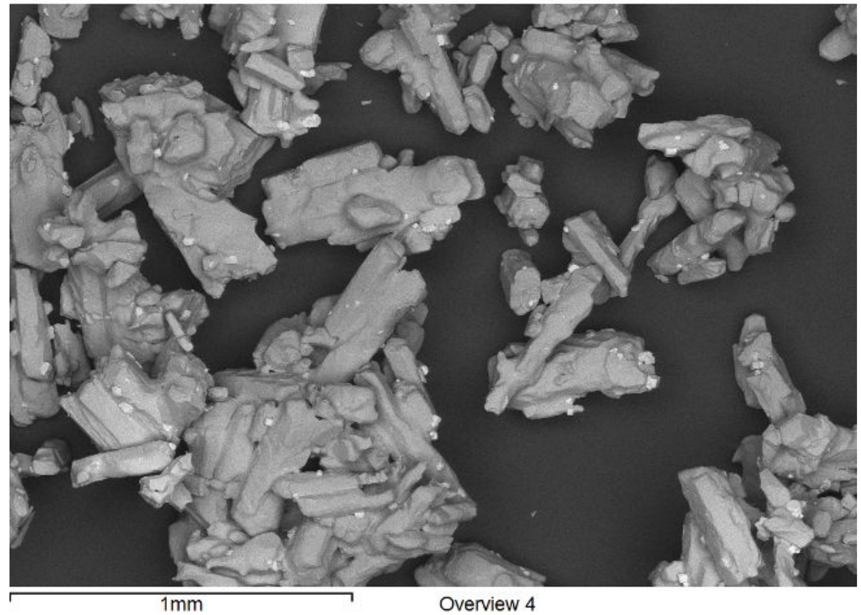

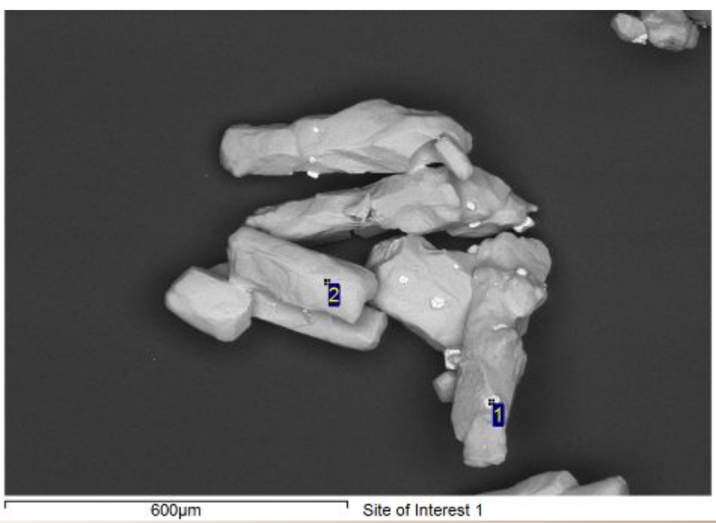

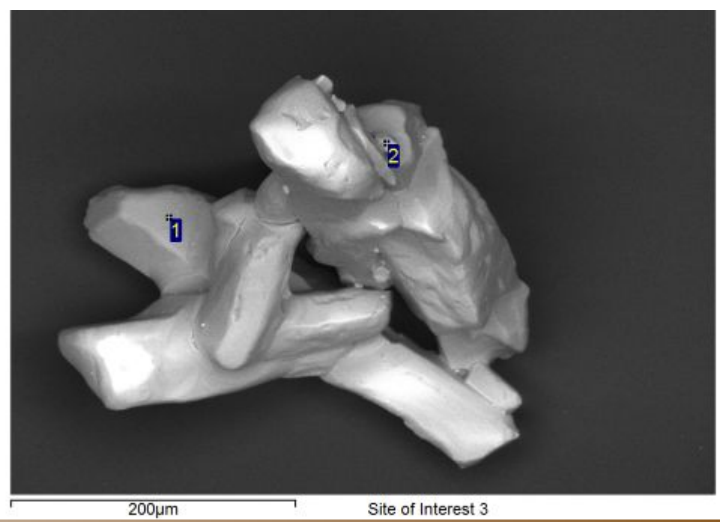

Initial Low Temperature Calcine

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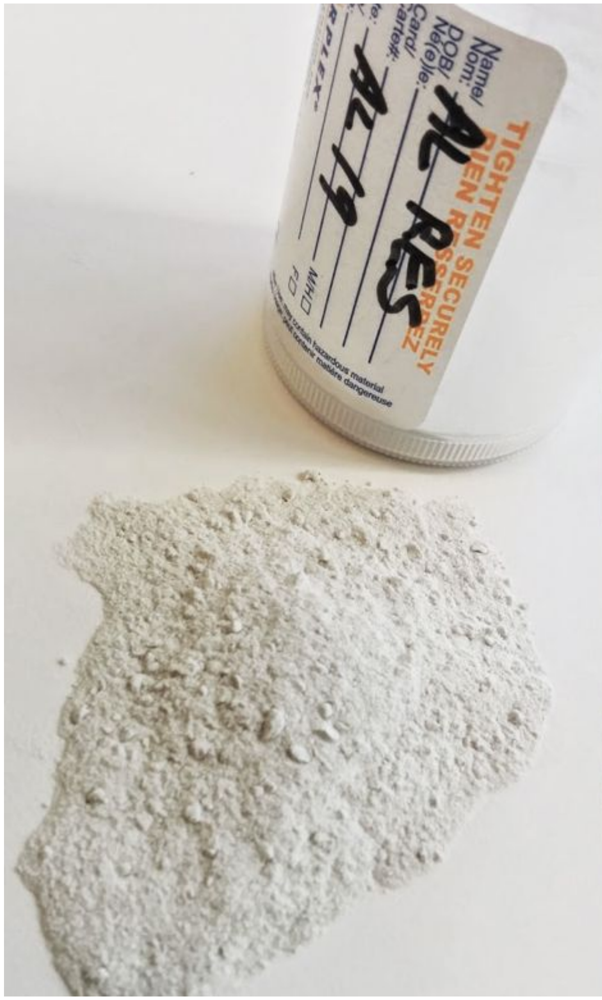
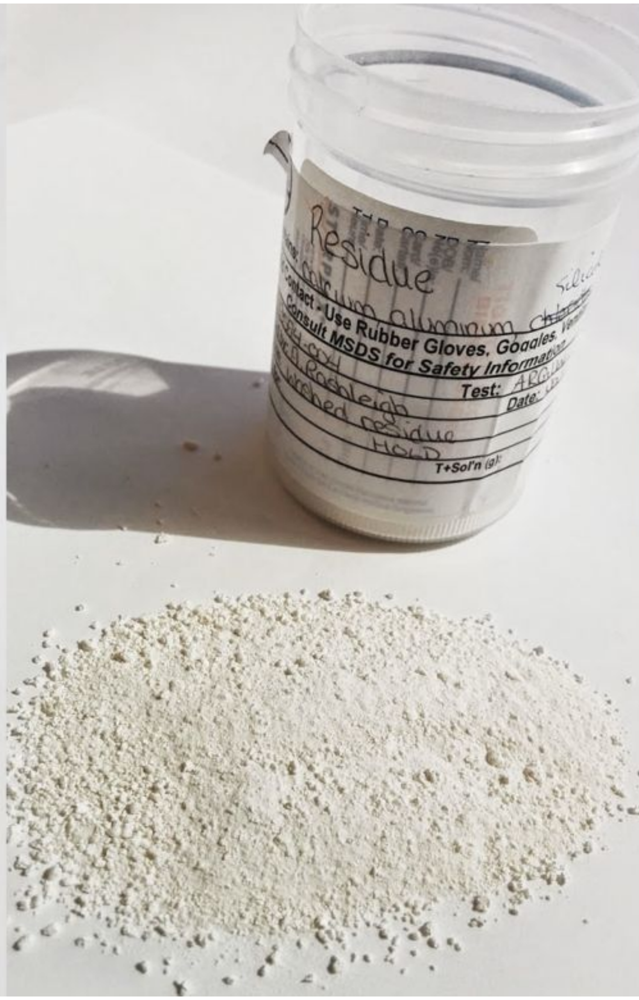
Three Products Produced

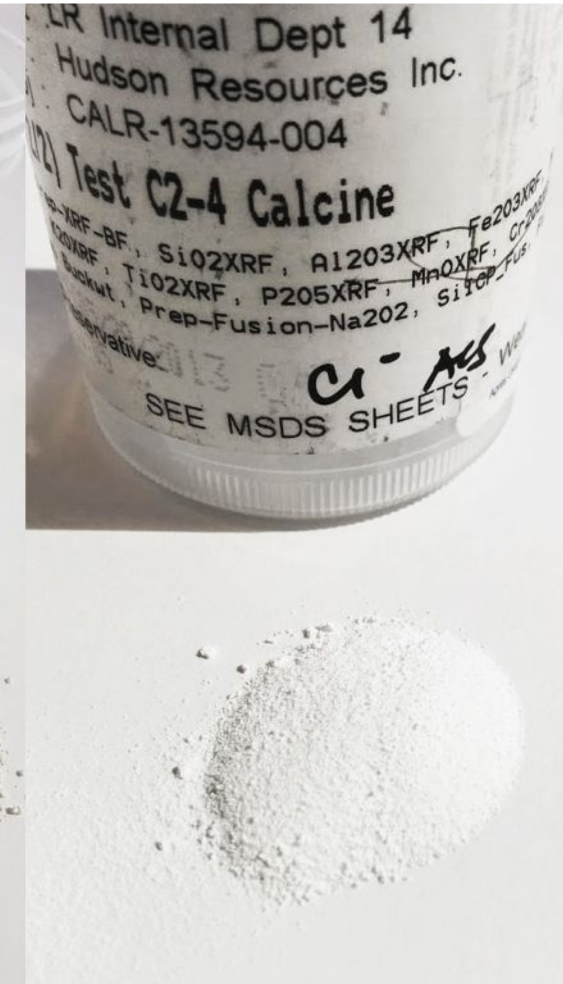
Amorphous Silica



Calcium Silicate

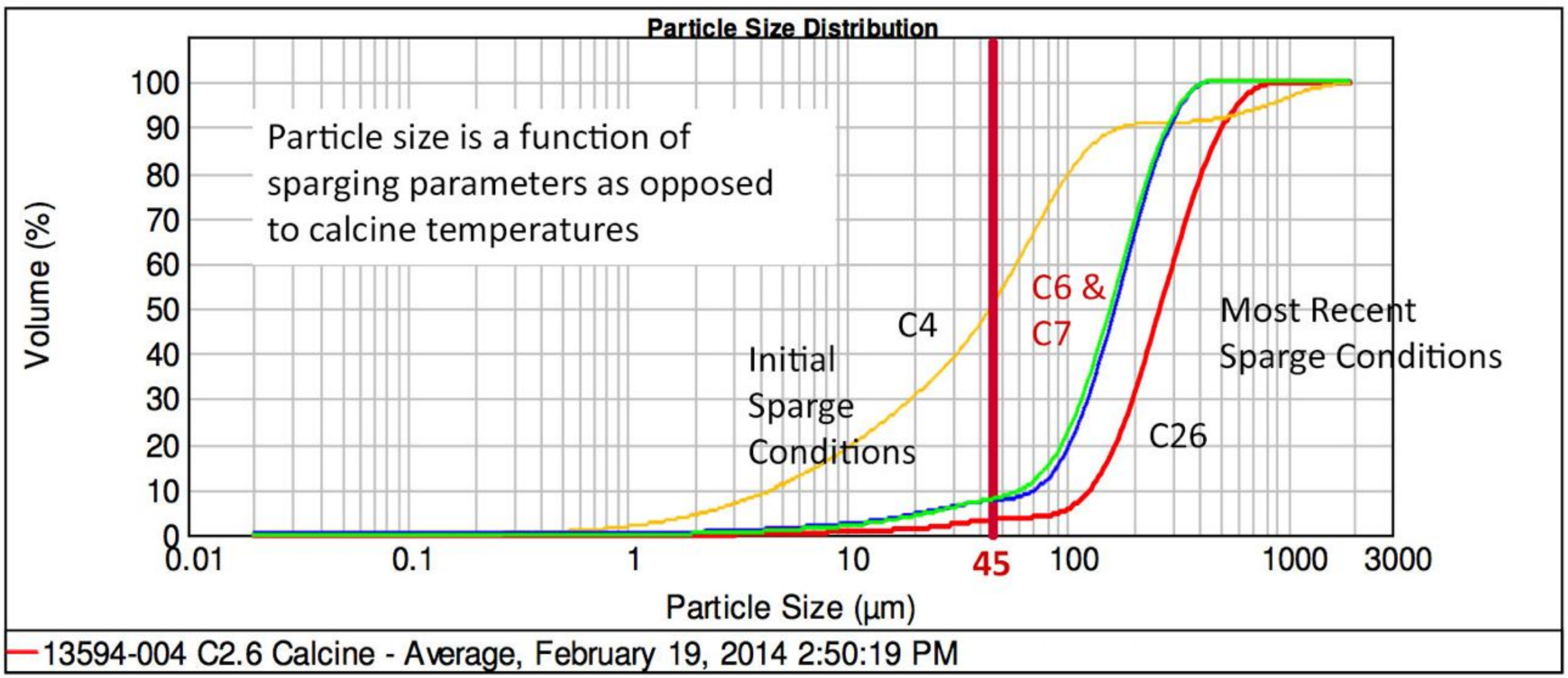


Alumina



Recent Tests Meet Minimum Particle Size

Alumina specifications generally require no more than 12% of the particles to be less than 12 microns. Recent tests show only 3.3% less than 45 microns.



Select Data - C 2.11 – Calcined Alumina

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Chemical Composition assuming LOI=0%

Al2O3	SiO2	Fe2O3	MgO	CaO	Na2O
99.8%	0.07%	0.01%	0.005%	0.05%	0.04%

K2O	TiO2	P2O5	MnO	Cr2O3	V2O5
0.002%	0.009%	0.003%	0.0002%	0.001%	0.0002%

LOI
0.35%

Cl, g/t
31

Alpha
99.8%

BET, m2/g
4.1

k80, µm
5.8

Note:

1. SiO2 pre-calcination was 0.014%. Contamination during bench scale calcination in quartz tube is likely cause of increase.

2. LOI is expected to approach 0% for a commercial operation.

3. Commercial milling is expected to reduced the particle size substantially.

SEM Images From C 2-11

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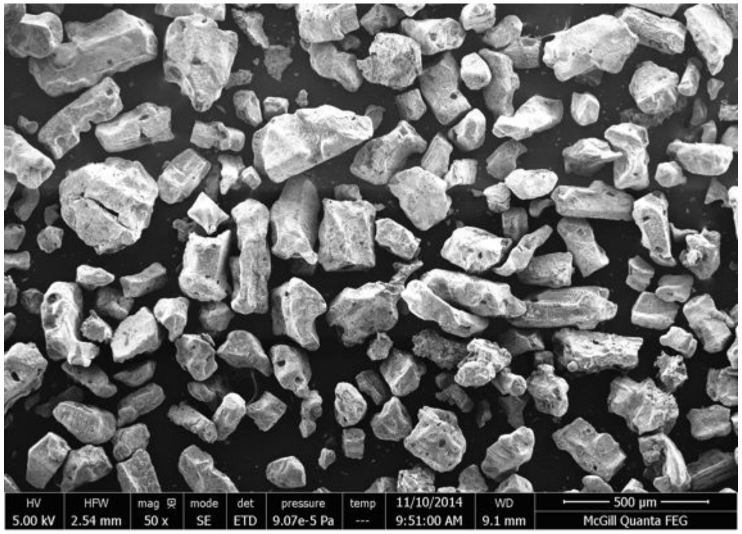

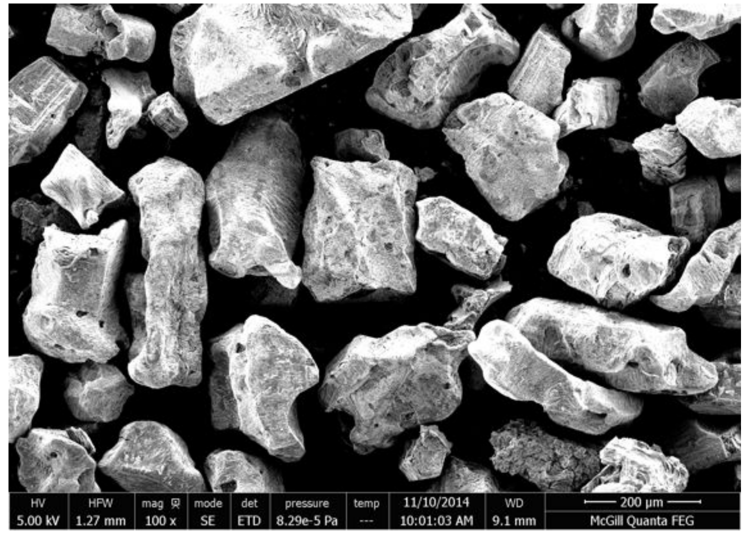

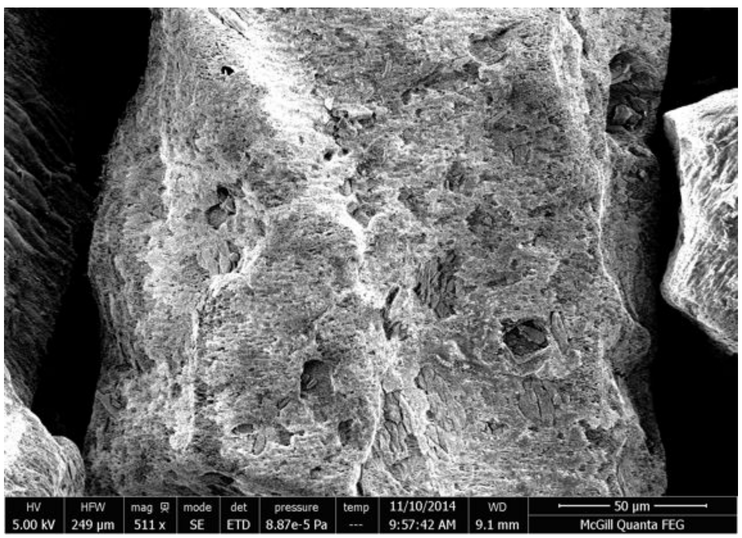

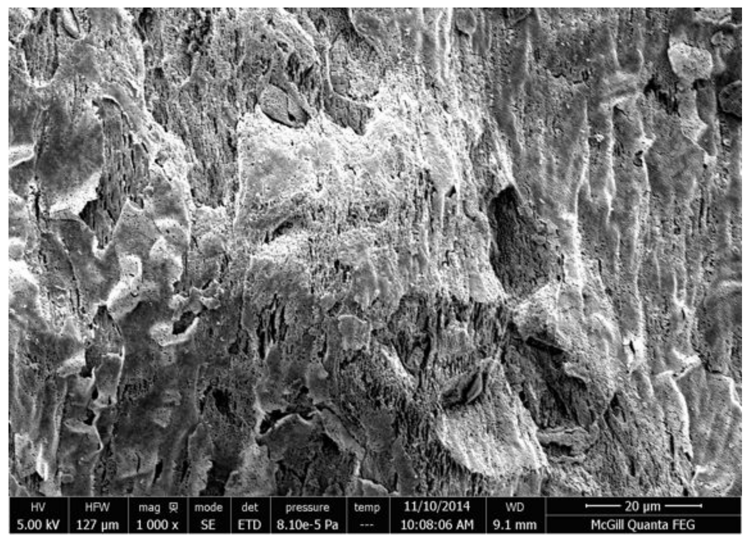

Hand Ground C 2-11

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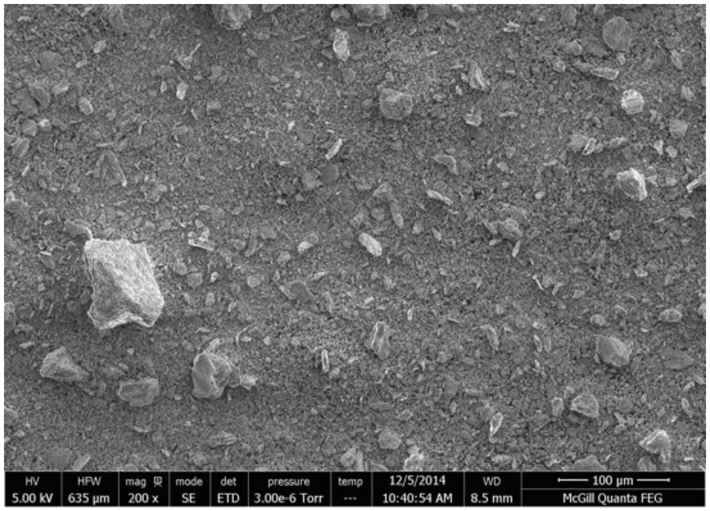
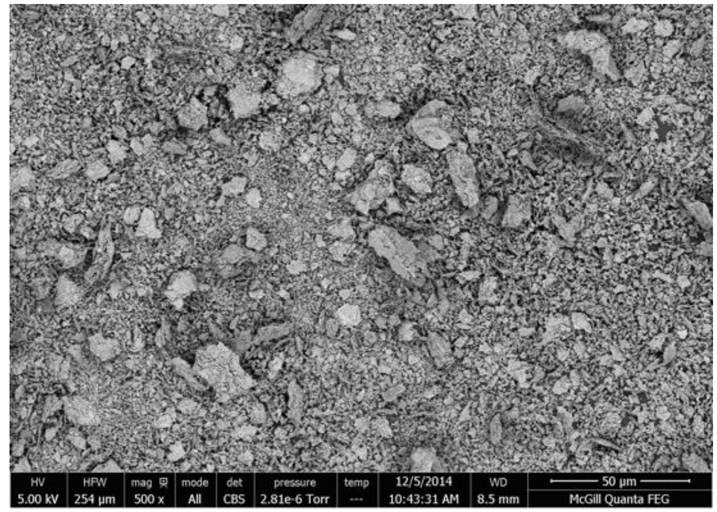
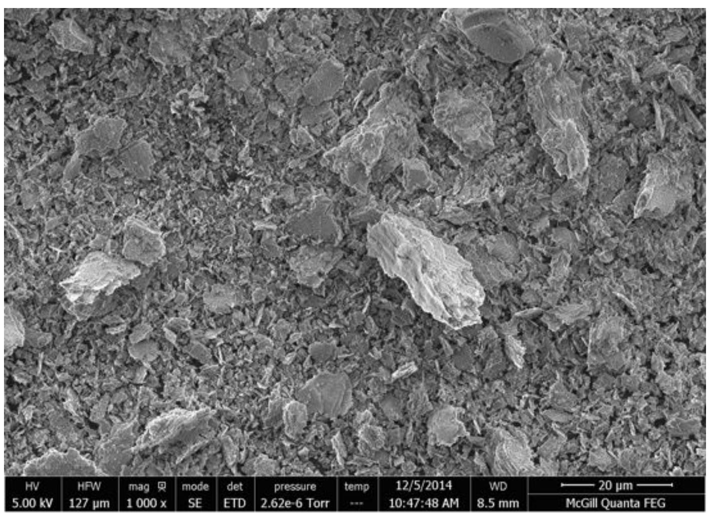
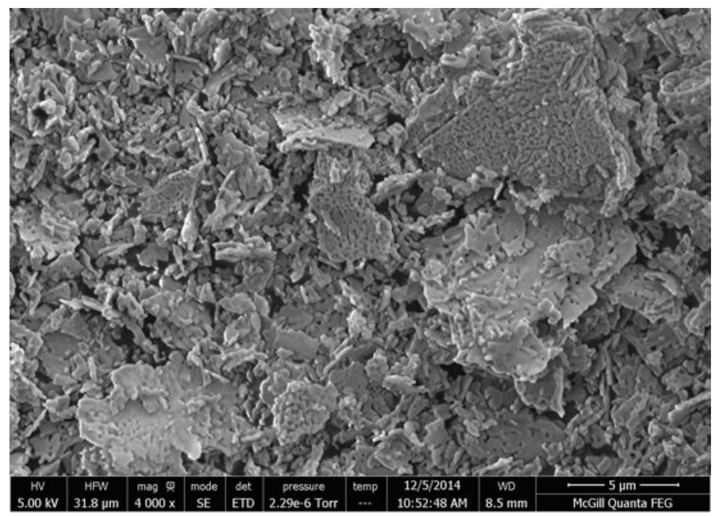
Hand Ground with pestle and mortar – 5µm slide shows tabular nature of the alumina which could be further reduced in size.

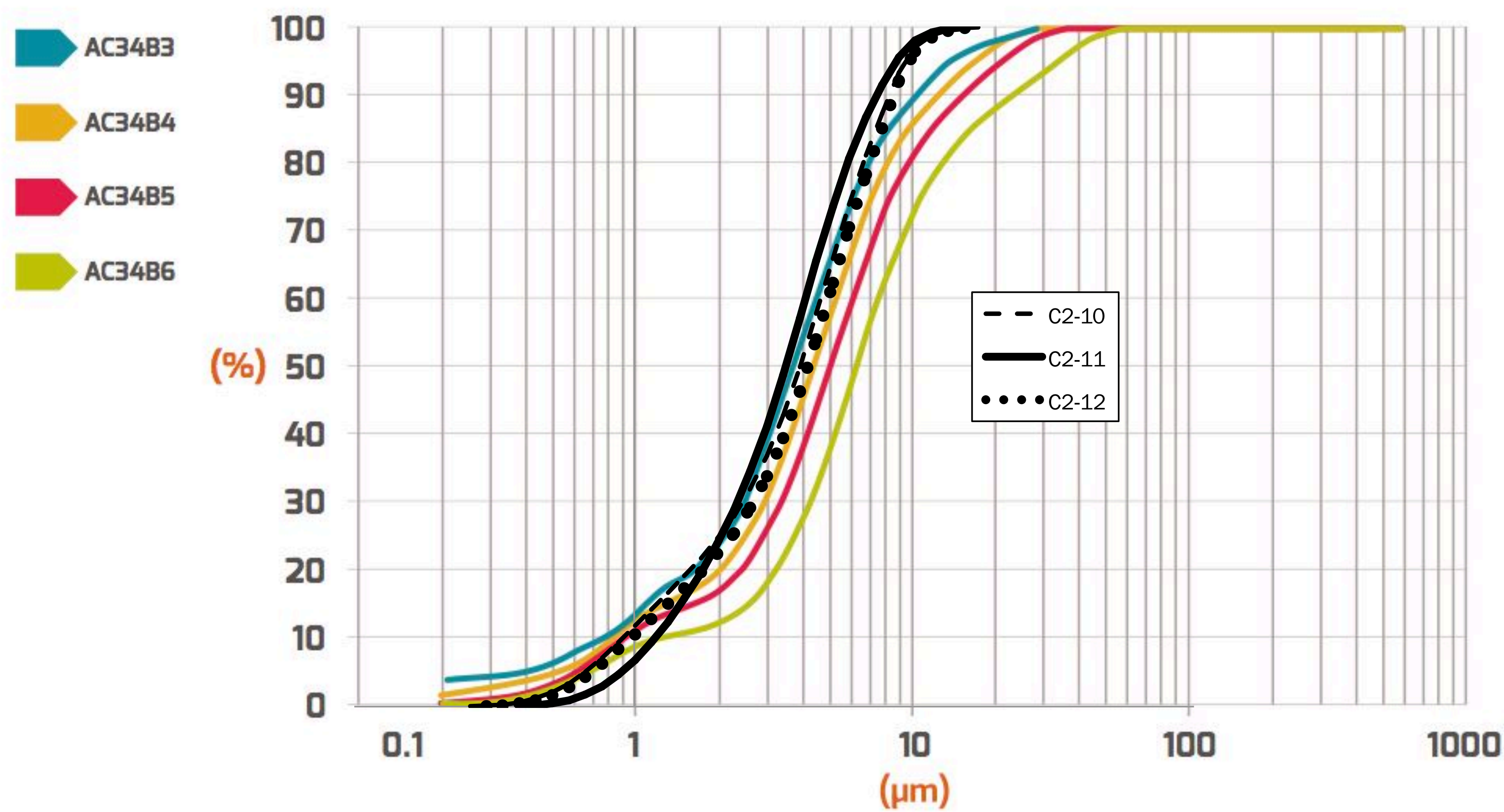








HUD Al2O3 vs Alteo Ground Calcined Al2O3



HUD Al2O3 vs Alteo Low Soda Al2O3

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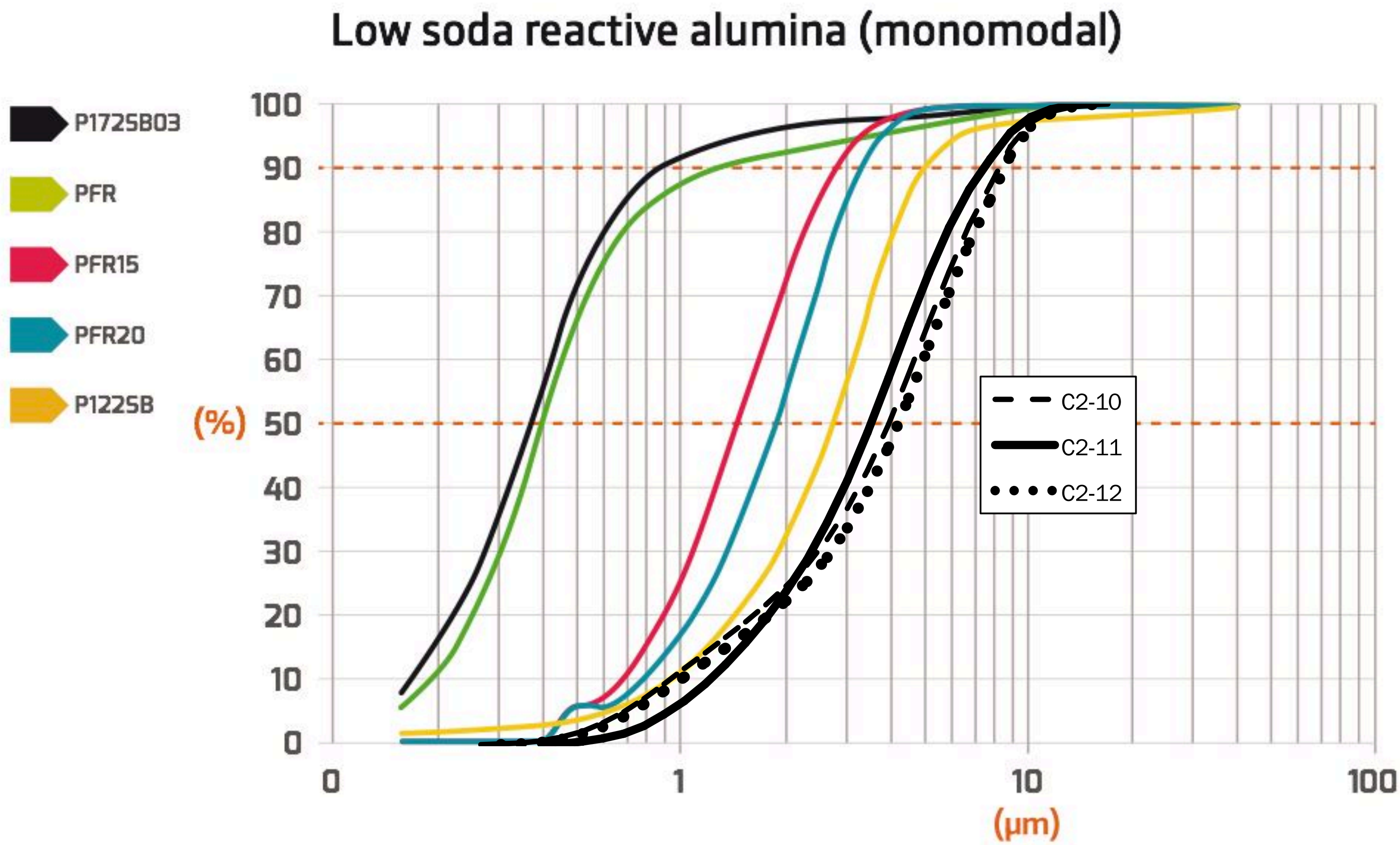

What's Next?

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1. Develop a pilot plant to demonstrate continuous alumina production;

2. Work with aluminum producers to test efficacy of the alumina in the production of aluminum;

3. Work with industrial minerals users to test efficacy of the alumina in ceramic, refractory and other applications.