First Phosphate Corp. Receives Successful Results for the Pilot Production of Merchant Grade Phosphoric Acid (MGA) from Its Phosphate Concentrate

written by Raj Shah | September 6, 2023

September 06, 2023 (Source) – First Phosphate Corp. ("First Phosphate" or the "Company") (CSE PHOS) (OTC: FRSPF) (FSE: KD0) is pleased to announce that the Central Prayon Process has successfully transformed its apatite concentrate to a high quality Merchant Grade Phosphoric Acid ("MGA").

As previously announced on June 19, 2023, a 900 kilogram sample of apatite concentrate was produced at the First Phosphate pilot plant facilities at SGS Québec and was sent to the facilities of Prayon Technologies SA ("Prayon") in Belgium for testing its suitability for the production of battery-grade purified phosphoric acid ("PPA").

Prayon has begun assessing product quality and process feasibility through pilot testing of the First Phosphate rock concentrate to determine the optimal process parameters for MGA production.

The first initial report on the pilot testing for the production of MGA has been completed. The final report with any additional comments on the MGA production testing as well as details on the PPA production testing through membrane purification (next step) is expected to be available as planned during Q4 2023.

The main results of the MGA tests are summarized below:

- The phosphate rock concentrate can be considered a high-grade igneous rock with about 40.6% P2O5 content. The general impurity content is low, especially chlorine (~630 ppm) compared to other rock concentrates mined from the same region.
- Further grinding of the phosphate rock is not required.
- The operation of the pilot plant using this phosphate rock was stable and quite easily operable in the CPP process route.
- Efficiency (P2O5 recovery of the attack filtration global process) at the pilot unit is high and above 99%. The total phosphate content found in the gypsum produced is low at less than 0.2% on average. Overall plant sizing, including the two filters, will be relatively compact due to the good results obtained.
- MGA quality (54% P2O5) can be easily attained from the weak acid produced.
- The sulfuric specific consumption per ton P2O5 is 2.4 tons as well as 100% H2SO4 and 3.5 tons of process water. The quantity of calcium sulfate generated by the process is 3.5 tons hemihydrate per ton of P2O5 produced.
- The impact of the CPP process route on the environment is low compared to other phosphoric acid processes as it requires less water for the production of a minimum 34% P2O5 weak phosphoric acid. Clean, low impurity, low moisture calcium sulphate is also generated by the process. The calcium sulphate is of a quality that can be used as plaster in housing and building construction or in concrete mixes for construction.

Results with respect to the composition of the phosphate rock concentrate:

- Based on its phosphate content, the phosphate rock can be considered as a high-grade rock with about 40.6% P2O5 content and very few impurities.
- The CaO/P2O5 ratio gives an idea of sulfuric acid consumption and the quality of gypsum generated by the process. Generally, the higher the CaO/P2O5 ratio, the higher the consumption of sulfuric acid required as all the calcium will react with sulfate to produce calcium sulphate. In this case, this ratio of 1.35 is low compared to sedimentary rocks at CaO/P2O5 ratio of approximately 1.60. Consequently, the quantity of gypsum generated by the process will be reduced, and what will be produced can be sold into the construction industry due to its high purity.
- Based on the results of the phosphate blend analysis, the rock reactivity should be low and little amount of foam can be expected during the rock acidulation process.
- The MER (Minor Element) ratio compares the amount of iron, aluminium, and magnesium oxides to P2O5 content. These unwanted elements usually end up in the acid. The 0.042 MER ratio of this rock can be considered as low content for a phosphate rock. Fewer unwanted byproducts will be produced during the phosphoric acid purification process and phosphate-based salts of higher quality can be produced from this MGA.
- The chlorine content in this phosphate rock is acceptable around 100-700 ppm, which limits the investment cost for special material (low potential corrosion is expected).

The Company will provide details on the full final report including details on the full MGA and PPA testing as soon as available from Prayon and as scheduled for Q4 2023.

Figures and Diagrams

Sample Id	Average Dry 105°C
Al2O3 %	0,376
Al2O3 réactive %	0,0424
As ppm	0,771
C Total %	0,35
CaO %	54,9
Cd ppm	0,838
Ce ppm	1210
Cl ppm	626
CO2 %	0,75
D10 avec US µm	5,5
D50 avec US µm	32,2
D50 sans US µm	32,2
D90 avec US µm	79,1
Densité App	1,48
F %	2,56
Fe2O3 %	0,885
H2O 105° %	< 0.02
K2O %	0,0149
La ppm	243
MgO %	0,48
Na2O %	0,0937
P2O5 Ac Cit %	3,51
P2O5 T %	40,6
S Elem ppm	236
S Sulfure ppm	29
SiO2 %	0,847
SiO2 réact %	0,66
SO3 %	0,0425
Sr %	0,0832
Th ppm	4,92
Ti ppm	851
U3O8 ppm	<1
V ppm	2,53
Zn ppm	57,2

Table 1 - Phosphate Rock Analysis

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To view an enhanced version of this graphic, please visit: https://images.newsfilecorp.com/files/8917/179580_12360216142128 16_001full.jpg

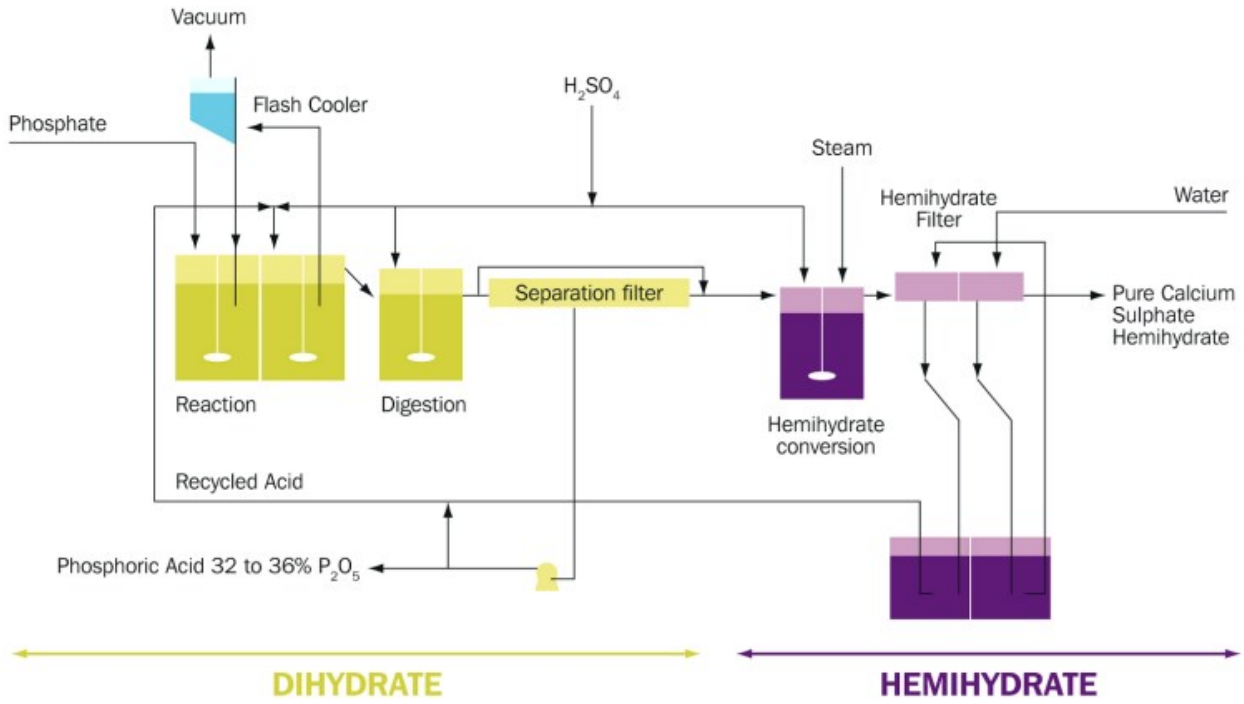


Figure 1 – CPP Process Scheme

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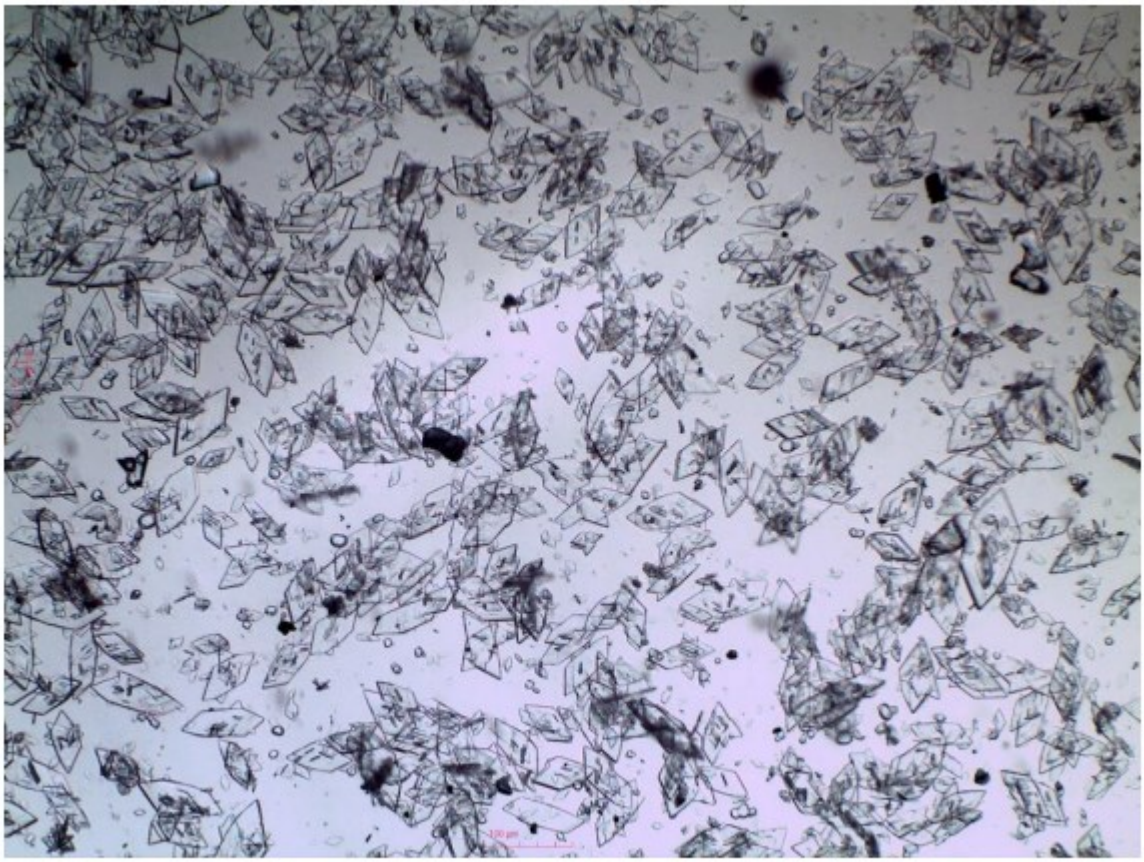


Tableau 2 Gypsum crystals - First filtration

Table 2 Gypsum Crystals – First Filtration

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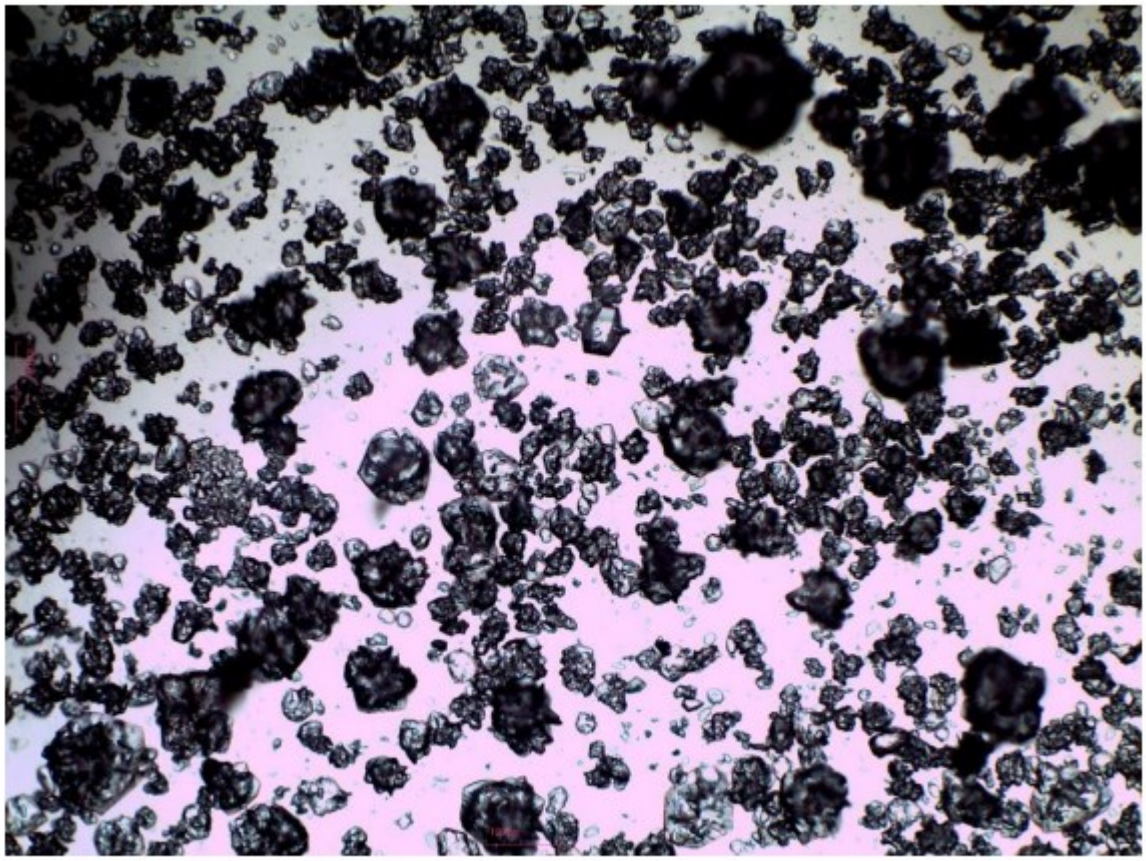


Tableau 3 Hemihydrate crystals – 2nd filtration

Table 3 Hemihydrate Crystals – 2nd Filtration

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Figure 2 - Typical Hemihydrate Calcium Sulphate

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Figure 3 - Typical Acid Produced (left) and Washing Filtrates

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16_006full.jpg

N° Lot	Maturated MGA
Al_2O_3 %	0,0278
As ppm	0,95
CaO %	0,0311
Cd ppm	0,354
Ce ppm	41,3
Cl ppm	167
Density g/cm³	1,668
F %	0,586
Fe_2O_3 %	1,26
K_2O %	0,0153
La ppm	10,1
MgO %	0,665
Na_2O %	0,0274
P_2O_5 T %	55,9
SiO_2 %	0,034
SO_3 %	0,649
Sr ppm	< 1
Th ppm	6,17
Ti ppm	980



Tableau 4 Clarified Concentrated Phosphoric acid : analysis and picture

Table 4 Clarified Concentrate Phosphoric Acid: Analysis and Picture

To view an enhanced version of this graphic, please visit: https://images.newsfilecorp.com/files/8917/179580_12360216142128_16_007full.jpg

Qualified Person

The scientific and technical disclosure for First Phosphate included in this news release have been reviewed and approved by Gilles Laverdière, P.Geo. Mr. Laverdière is Geologist and a Qualified Person under National Instrument 43-101 Standards of Disclosure of Mineral Projects (“NI 43-101”) and has and verified the data disclosed in this news release.

About First Phosphate Corp.

First Phosphate is a mineral development company fully dedicated to extracting and purifying phosphate for the production of cathode active material for the Lithium Iron Phosphate (“LFP”) battery industry. First Phosphate is committed to producing at high purity level, in responsible manner and with low anticipated carbon footprint. First Phosphate plans to vertically integrate from mine source directly into the supply chains of major North American LFP battery producers that require battery grade LFP cathode active material emanating from a consistent and secure supply source. First Phosphate holds over 1,500 sq. km of royalty-free district-scale land claims in the Saguenay-Lac-St-Jean Region of Quebec, Canada that it is actively developing. First Phosphate properties consist of rare anorthosite igneous phosphate rock that generally yields high purity phosphate material devoid of high concentrations of harmful elements.

About Prayon SA

Headquartered in Belgium, Prayon is a world-leading phosphate research, development and production company. Prayon has 1,400 employees and over 140 years of business experience. The Prayon Group has production sites in Belgium, France, Switzerland and the United States, research and development sites in Belgium and a testing and validation facility in Bulgaria (Technophos). OCP and Wallonie Entreprendre (WE) are Prayon’s two shareholders.

OCP is the Moroccan state-owned phosphate rock miner, phosphoric acid manufacturer and fertilizer producer. OCP operations span five continents throughout the value chain, from mining and manufacturing to education and community development. WE is a public sector private-equity group that aims to accelerate the growth and transformation of Walloon businesses for the benefit of economic development and employment in Wallonia, Belgium.

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Forward-Looking Information and Cautionary Statements

Certain information in this news release constitutes forward-looking statements under applicable securities laws. Any statements that are contained in this news release that are not statements of historical fact may be deemed to be forward-looking statements. Forward-looking statements are often identified by terms such as "may", "should", "anticipate", "expect", "potential", "believe", "intend" or the negative of these terms and similar expressions. Forward-looking statements in this news release include statements relating to: the Company's commitment to producing high purity phosphate

materials under a low carbon footprint; the Company's plans to integrate directly into the functions of certain major North American LFP Battery producers; the Company's proposed development of its land claims in the Saguenay Region; the scope, methodologies, results, and timeline of Prayon's pilot testing of the Company's rock concentrates, including, the optimal parameters for MGA production, and the stated timeline for the final reports on the MGA production testing and details on the PPA production testing; the MGA test results, including, the grade, impurities, whether further grinding of phosphate rock is necessary, the stability and operability of the CPP process route, efficiency, MGA quality with respect to the weak acid produced, figures provided on the sulfuric consumption, process water, calcium sulfate, H2S04, and P2O5; environmental impact of the CPP process; statements with respect to the composition of phosphate rock concentrate, including grade, impurities, CaO/P2O5 ratio, quality of gympsum produced and the anticipated uses thereof, rock reactivity, MER ratio, and chlorine content; and the full final report as stated being available from Prayon under the provided timelines.

Forward-looking information in this press release are based on certain assumptions and expected future events, namely: the Company's ability to producing high purity phosphate materials under a low carbon footprint; the Company's ability to integrate directly into the functions of certain major North American LFP Battery producers; the Company's ability to develop its land claims in the Saguenay Region; the Company's ability to carry out the scope, methodologies and obtain results under the stated timeline of Prayon's pilot testing program; the Company's ability to achieve the same or better results as indicated under the initial MGA test results; the Company's ability to achieve the same or lesser environmental impact under the CPP process; the Company's ability to achieve the same or better composition

of phosphate rock concentrate in the final report; and the Company's ability to deliver the full final report as stated under the provided timelines.

These statements involve known and unknown risks, uncertainties and other factors, which may cause actual results, performance or achievements to differ materially from those expressed or implied by such statements, including but not limited to: the Company's inability to produce high purity phosphate materials under a low carbon footprint; the Company's inability to integrate directly into the functions of certain major North American LFP Battery producers; the Company's inability to develop its land claims in the Saguenay Region; the Company's inability to carry out the scope, methodologies and obtain results under the stated timeline of Prayon's pilot testing program; the Company's inability to achieve the same or better results as indicated under the initial MGA test results; the Company's inability to achieve the same or lesser environmental impact under the CPP process; the Company's inability to achieve the same or better composition of phosphate rock concentrate in the final report; and the Company's inability to deliver the full final report as stated under the provided timelines.

Readers are cautioned that the foregoing list is not exhaustive. Readers are further cautioned not to place undue reliance on forward-looking statements, as there can be no assurance that the plans, intentions or expectations upon which they are placed will occur. Such information, although considered reasonable by management at the time of preparation, may prove to be incorrect and actual results may differ materially from those anticipated.

Forward-looking statements contained in this press release are expressly qualified by this cautionary statement and reflect the Company's expectations as of the date hereof and are subject to change thereafter. The Company undertakes no obligation to

update or revise any forward-looking statements, whether as a result of new information, estimates or opinions, future events or results or otherwise or to explain any material difference between subsequent actual events and such forward-looking information, except as required by applicable law.