

First Phosphate Unlocking High-Purity Phosphate for the Rapidly Expanding EV LFP Battery Industry

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Lithium iron phosphate (“LFP”) batteries are rapidly gaining market share

A major trend in the world of batteries and electric vehicles is the move towards lithium-iron phosphate (“LFP”) batteries. Not only do they cost less than rival nickel manganese cobalt (“NMC”) batteries, but they last approximately 2-times longer and are much safer (almost zero risk of fire).

The one drawback is their energy density, meaning an electric car’s range with LFP is less than the comparable NMC batteries. However, advancements in LFP technology now mean a base model (rear-wheel drive) Tesla Model 3 with LFP batteries has an EPA range estimate of [272 miles or 438 kilometers](#). That range is more than enough range for most people.

This explains why LFP battery sales are surging globally and now account for close to [30% market share](#). Most auto OEMs in China offer LFP battery EVs and globally [Tesla Inc.](#) (NASDAQ: TSLA), [Ford Motor Company](#) (NYSE: F), [Volkswagen AG](#) (Xetra: VOW3 | OTC: VWAGY), [Rivian Automotive, Inc.](#) (NASDAQ: RIVN), [Mercedes-Benz Group AG](#) (Xetra: MBG | OTC: MBGAF), [Hyundai Motor Co. Ltd.](#) (KRX: A0053850 | OTC: HYMTF), and others are also recently embracing the technology.

FIGURE 1: Tesla Model 3 RWD comes with an LFP battery

TESLA

US



Model 3

Est. Delivery: May 2023

[Enter Delivery ZIP Code](#)

Purchase Price

Potential Savings*

272 mi

Range (EPA est.)

140 mph

Top Speed

5.8 sec

0-60 mph

Rear-Wheel Drive

Source: [Tesla website](#)

The [IEA](#) Global EV Outlook 2023 states:

“Lithium iron phosphate (LFP) cathode chemistries have reached their highest share in the past decade. This trend is driven mainly by the preferences of Chinese OEMs. Around 95% of the LFP batteries for electric LDVs went into vehicles produced in China, and BYD alone represents 50% of demand. Tesla accounted for 15%, and the share of LFP batteries used by Tesla increased from 20% in 2021 to 30% in 2022.....LFP batteries contrast with other chemistries in their use of iron and phosphorus rather than the nickel, manganese and cobalt found in NCA and NMC batteries. The downside of LFP is that the energy density tends to be lower than that of NMC. LFP batteries also contain phosphorus, which is used in food production. If all batteries today were LFP, they would account for nearly 1% of current agricultural phosphorus use by mass, suggesting that conflicting demands for phosphorus may arise in the future as battery demand increases.”

In the next part of the article, we shift our focus to a company poised to supply the phosphate (“P”) in LFP batteries.

First Phosphate Corp.

[First Phosphate Corp.](#) (CSE: PHOS | FSE: KD0) is the only publicly-listed mineral development company that is fully dedicated to extracting and purifying phosphate for the production of cathode active material for the LFP battery industry.

The Company plans to vertically integrate from the mine source directly into the supply chains of major North American LFP battery producers that require battery-grade LFP cathode active material.

First Phosphate has more than 1,500 square kilometers (370,000 acres) of royalty-free land claims in the Saguenay-Lac-St-Jean Region of Quebec, Canada. The claims contain rare 'anorthosite igneous phosphate' rock that generally yields high-purity phosphate material devoid of high concentrations of harmful elements.

First Phosphate states:

"95% of the World's Phosphate is found in heavy metal laden Sedimentary Rock.

Only 4% of the World's Phosphate is found in Clean Igneous Carbonatite Rock.

Only 1% of the World's Phosphate is found in Even Cleaner Igneous Anorthosite, found mostly in Quebec, Canada."

This means that First Phosphate has a rare type of phosphate and hence a first mover advantage to become a western supplier of pure phosphate for the LFP cathode manufacturers.

Lac à l'Original, Mirepoix, Vanel Trilogy flagship project

First Phosphate's flagship project (Lac à l'Original, Mirepoix, Vanel Trilogy) has an Indicated pit-constrained Mineral Resource of [15.8 million tonnes \(Mt\) at grades of 5.18% P₂O₅ \(phosphorus pentoxide\), 4.23% TiO₂ \(titanium dioxide\), and 23.90% Fe₂O₃ \(iron oxide\)](#) and an Inferred pit-constrained Mineral Resource of 33.2 Mt at grades of 5.06% P₂O₅, 4.16% TiO₂ and 22.55% Fe₂O₃.

There is also resource upside potential at the Project and with more than 1500 km² of additional phosphate-bearing land claims.

Metallurgical test work indicates an anticipated apatite grade of at least 38% P₂O₅ at [over 90% recovery](#). The Lac à l'Original Deposit contains very low levels of potentially hazardous components, such as arsenic, heavy metals, and radioactive elements.

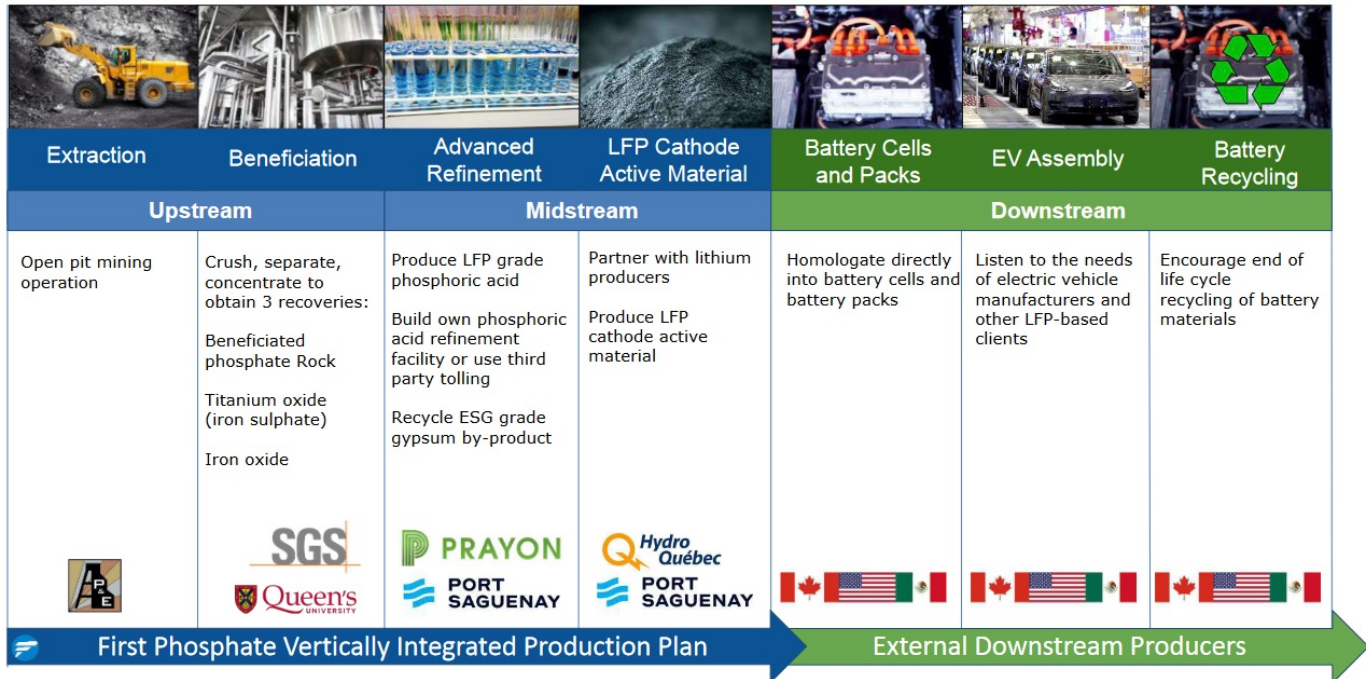
The Project site is accessible and usable in all four seasons, with heavy-haul road access, and is 140 km driving distance from the deep water, Port of Saguenay. There is access to clean Quebec hydroelectricity.

First Phosphate plans to develop midstream phosphate refining (purification) and LFP cathode active material production at the Port of Saguenay in Quebec.

The Company is currently working on its Preliminary Economic Assessment ("PEA").

FIGURE 2: First Phosphate Corp.'s vertically integrated production plan to produce LFP cathode active material

First Phosphate in the ESG-Driven LFP Battery Ecosystem



Source: [First Phosphate Corp. company presentation](#)

FIGURE 3: Reasons to buy First Phosphate Corp.

Reasons to Buy First Phosphate

1. Geographic Advantage

Flagship property with exploration upside
(>1500 km² of royalty-free claims)



- Quebec, Canada is a friendly mining jurisdiction and electric vehicle hub for North America
- Strong government support for industry
- Meets Inflation Reduction Act Requirements

2. The Right Type of Phosphate

World's cleanest source of phosphate rock from igneous anorthosite



- Devoid of harmful elements, low sulphur
- Produces large amounts of LFP battery grade purified phosphoric acid
- Environmentally clean, circular advanced mining and refinement methods. Solventless phosphate extraction

3. Driven by EV Battery Market

Phosphate with characteristics to go from mine to LFP cathode active material



- Process using clean Quebec Hydro
- Traceable, ethical, ESG, secure supply source
- Ability to supply across North America from Saguenay-Lac-St-Jean

Source: [First Phosphate Corp. company presentation](#)

Closing remarks

The trend towards a greater market share of LFP batteries used in EVs and energy storage is extremely strong.

In the past, the LFP demand and supply chain was entirely in China. This changed significantly in 2022 and continues to gain momentum in 2023 with almost all major Western auto OEMs embracing LFP battery technology for their standard-range electric cars.

Due to issues surrounding LFP patents, the West was largely unable to manufacture its own LFP batteries, but this has now changed. New LFP cathode plants are now being [planned](#) and soon will be built in the West. This includes Ford's recently announced [US\\$3.5 billion](#) plan to build an LFP battery facility in the USA licensing CATL's technology.

The high-purity phosphate supply chain will need to try to keep pace with these changes. Leading the charge is First Phosphate, trading on a market cap of [C\\$21 million](#). Be sure to take a look at this company, preferably sooner rather than later.