Jack-in-the-Stox: Fluorspar, a Critical Mineral, Is Not Yet a Chemical Product

written by Jack Lifton | August 26, 2026

In his ongoing *Jack-in-the-Stox* series, Jack Lifton comments on public companies, technologies, capital markets, supply chains and geopolitics. He is not a licensed investment adviser, and his views are provided for informational purposes only. Nothing in this column constitutes investment advice or a recommendation to buy, sell or hold any security.

The United States Geological Survey classifies fluorspar as a critical mineral. The United States is also wholly dependent on foreign sources for its fluorspar supply. Those two facts are enough to generate political speeches, government grants, and enthusiastic headlines about reopening American mines. They are not enough to create a domestic fluorochemical industry.

Fluorspar is the commercial name for fluorite, a naturally occurring mineral composed principally of calcium fluoride (CaF_2). It is the world's principal mined source of fluorine. But, as is so often the case in the critical minerals business, the mineral in the ground is only the beginning of the story.

A fluorspar deposit is not hydrofluoric acid. It is not aluminum fluoride. It is not a refrigerant, a fluoropolymer, a uranium processing reagent or an electronic grade chemical. It is not even necessarily a product that an industrial customer can use. The value is added after the mining.

This week's company is **Ares Strategic Mining Inc. (CSE: ARS | OTCQX: ARSMF)**, owner of the Lost Sheep fluorspar mine in Utah's Spor Mountain mining district. Ares describes Lost Sheep as the only permitted fluorspar mine in the United States.

The company has now advanced beyond the familiar junior mining cycle of drilling, announcing and promoting. It began mining at Lost Sheep earlier this year and accumulated several thousand tons of ore at the surface. In August, Ares began trucking the ore to its processing facility in Delta, Utah, where the ore is being fed into its metallurgical lumps plant. That is a genuine operating milestone. It connects the mine to a processing plant and marks the difficult transition from project development to product manufacturing. But it is also where the important questions begin.

Fluorspar Is Sold by Specification

There are two principal commercial classifications of fluorspar. Metallurgical grade fluorspar generally contains between 60% and 96% calcium fluoride. It is used principally as a flux in steelmaking and foundries. A flux lowers melting temperatures, improves the fluidity of slag and assists in removing unwanted materials from molten metal. Acid grade fluorspar, usually called acidspar, must generally contain at least 97% calcium fluoride, with strict limits on silica, sulfur, arsenic, phosphorus, and other impurities. It is reacted with sulfuric acid to produce hydrogen fluoride, which is then used directly or converted into hydrofluoric acid and a wide range of fluorine compounds. This distinction is fundamental. Metallurgical grade material and acid grade material are not interchangeable simply because both came from the same mine.

A mine may produce ore containing a high percentage of calcium fluoride, but a chemical producer must know much more than the

headline grade. It must know the complete impurity profile, particle size distribution, moisture content and consistency of the product from shipment to shipment. It must know whether the concentrate will react predictably in its chemical plant without damaging equipment, contaminating downstream products or disrupting production. A chemical customer does not buy a geological story. It buys a chemical specification.

The Fluorine Economy Is Much Larger Than the Mine

The public discussion of fluorspar frequently focuses on steel and aluminum, but its greater strategic importance lies in the chemical supply chain. Acid grade fluorspar is the raw material used to produce hydrogen fluoride. That material, in turn, is used to produce fluorocarbons, refrigerants, fluoropolymers and many inorganic fluorides. Fluorine chemistry is involved in semiconductor manufacturing, uranium processing, petroleum refining, glass etching, stainless steel pickling, pharmaceuticals and advanced battery materials.

Even lithium ion batteries depend upon fluorine chemistry. Electrolyte salts such as lithium hexafluorophosphate and fluorinated binders such as polyvinylidene fluoride are not manufactured by mining fluorspar. They require a series of chemical transformations performed in qualified plants by experienced personnel. The United States may therefore have a fluorine problem that cannot be solved by reopening a fluorspar mine alone.

It needs the mine. It also needs beneficiation, acid grade concentrate production, hydrogen fluoride manufacturing, fluorochemical conversion, purification and customer qualification. Every one of those stages requires capital,

equipment, trained operators, process knowledge and an assured market. This is why I continually warn that governments cannot mine their way to critical mineral independence.

What Ares Must Demonstrate

Ares reports that the natural grade of its fluorspar mineralization averages approximately 75% calcium fluoride. That is unusually high compared with many deposits, and it could reduce the amount of beneficiation required to produce saleable material. The company intends to produce both metallurgical grade lumps and acid grade concentrate. Its lumps plant represents the nearer term opportunity. It can potentially produce material for metallurgical and industrial customers with less complex processing than is required to manufacture acidspar.

The flotation plant is the more important test. To reach acid grade specifications, Ares will have to demonstrate that its beneficiation system can consistently raise the calcium fluoride content above 97% while reducing silica and other contaminants to levels acceptable to customers. It must then show acceptable recoveries, operating costs, throughput and product consistency. Producing one acceptable sample is useful. Producing hundreds or thousands of tons to the same specification, month after month, is a business.

The company must also qualify its product with actual customers. Qualification can take time because a chemical producer will not risk an expensive continuous process merely to accommodate a new and unproven supplier. Samples must be analyzed and tested, larger batches may be required, and the customer must be confident that future deliveries will match the material originally approved. This is where many critical mineral development companies discover that a laboratory result is not

the same thing as commercial production.

The Economics Cannot Be Separated From the Market

Ares enjoys an obvious strategic advantage. The United States currently depends on imported fluorspar, while Lost Sheep is located in Utah, with its processing facilities nearby. Domestic customers could benefit from shorter transportation routes, reduced geopolitical exposure, and a supplier operating under American law. Those advantages are real, but they do not suspend economic reality.

Domestic fluorspar must still compete with imported material on delivered price, quality and reliability. Customers may pay something for supply security, particularly if the federal government supports domestic procurement. They will not normally accept unlimited premiums or unreliable production merely because a product carries an American flag.

Ares must therefore demonstrate the economics of the complete operation: mining, transportation, beneficiation, waste handling, product recovery and delivery to the customer. The relevant figure is not simply the ore grade or the cost of removing it from the mine. It is the cost per saleable ton of material that meets the customer’s specification. This is capability due diligence.

Does the company have the people who know how to operate the mine and both processing plants? Can the equipment achieve its design throughput? What percentage of the contained fluorspar reports to the final product? What impurities remain? How much material must be rejected? Who will buy each product, in what quantities, and with what specifications? These questions are

more important than the theoretical size of the national market.

Why Ares is Worth Watching

Ares has reached a stage that relatively few junior critical mineral companies ever reach. It is mining ore, transporting that ore, and introducing it into a processing plant. Its success or failure will now increasingly be determined by operating performance rather than promotional claims. That makes Ares an appropriate company for Jack-in-the-Stox. It also makes the company an excellent demonstration of the central problem in the Western critical minerals revival. The United States has spent years discussing deposits as though the discovery of a mineral automatically creates an industrial supply chain. It does not.

The Lost Sheep mine may provide domestic fluorspar. The Delta facilities may convert that ore into useful metallurgical grade and acid grade products. If Ares can achieve specification, recovery, throughput and repeatability—and if customers qualify and purchase those products—the company will have created something strategically valuable. But that outcome must be demonstrated, not assumed.

A critical mineral is a geological and political classification. A chemical product is a manufactured material that repeatedly meets the requirements of an industrial customer. The distance between those two things is where value is added—and where most critical mineral ventures will ultimately succeed or fail.