



Graphite on the rise as price pinch starting to be felt

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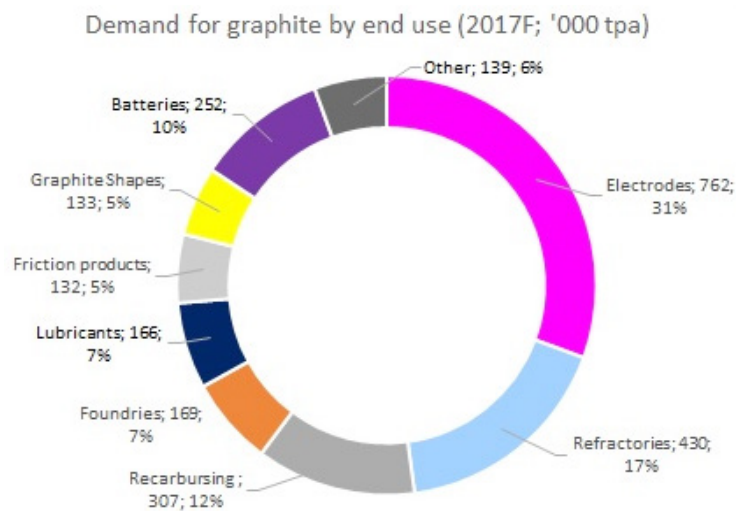
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The equation looks simple...

The supply of graphite is tightening, while the demand is currently forecast to skyrocket.

While you might be most familiar with graphite as the substance that is used in pencils, a surge in the demand for drawing implements is not what is driving the globe towards a potential shortage of several million tonnes per annum over the next ten years. Nor are artists and illustrators responsible for the forecasted growth in price; the early signs of which have already been seen in the first two quarters of 2018.



Graphite is a key component in lithium-ion batteries, used in electric vehicles. The amount of graphite used in car battery anodes is not insignificant; a lithium-ion battery in a fully electric Nissan Leaf contains almost 40kg of graphite.

Meanwhile, in the US...

As US car manufacturers, who are pivoting towards electric vehicles become more reliant on a steady supply of graphite being available, the Trump administration's latest round of tariffs have levied a 10% tariff on all graphite being imported from China. For its part, China has begun closing down several major graphite producing mines as part of a crackdown on unsafe and environmentally damaging practices in the industry. In fact, China is now set to be a net importer of graphite for the first time in the wake of these closures and additional regulations.

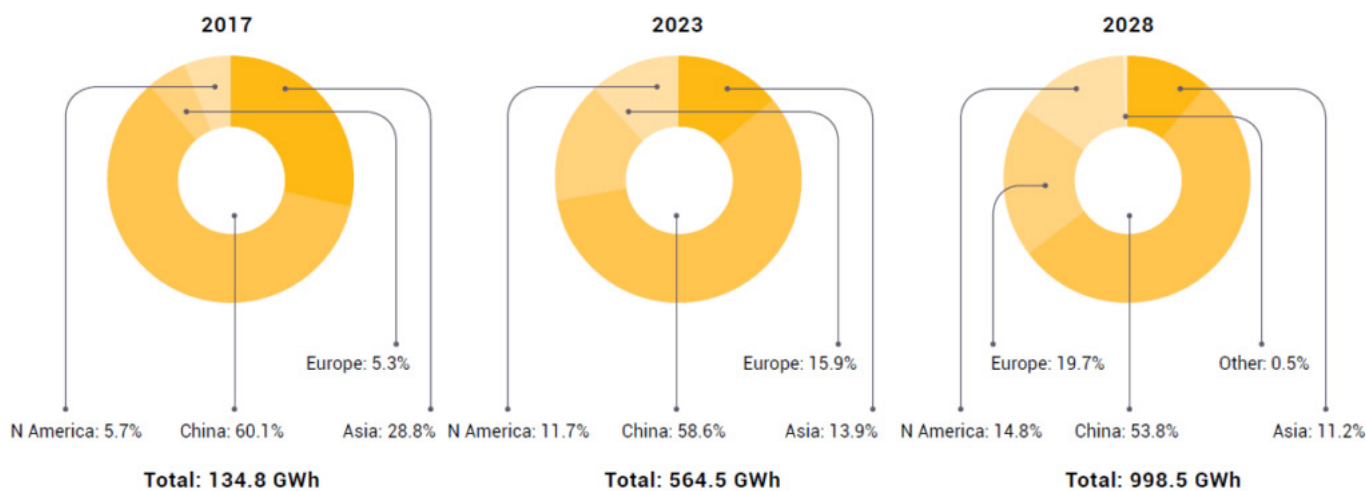
As a result, the price of flake graphite is already on the rise, having increased in the first two quarters of 2018. This is particularly notable because it comes

on the back of a slightly slowing of demand for electric vehicle batteries, which has impacted the prices of lithium and cobalt, two other significant components in the batteries used in EVs.

According to a report from Benchmark Mineral Intelligence however, the demand for batteries, and therefore graphite, is predicted to be much higher in Q3 and Q4 this year. Looking further ahead paints an even starker picture for the future of graphite according to that same BMI report.

Further, BMI currently anticipates an additional 860 GWh could come on stream through the development of new battery megafactories by 2028. This potentially could equate to 950,000 tonnes of additional quality flake production over this period.

MEGAFACTORY CAPACITY BY REGION



Source: Benchmark Mineral Intelligence

Simple Supply and Demand...

The supply and demand mathematics of this scenario is quite simple.

At present, the annual production of natural graphite totals approximately 1.2 million tonnes. Of that 1.2 million tonnes, only around 15-20% is currently used in batteries.

In order to meet a demand of up to 950,000 tonnes per annum for battery grade material, an additional 2.5-3 million tonnes of graphite will need to be produced each year. While the path for the growth in demand for EVs seems reasonably clear, the necessary growth in the production of graphite to meet EV demand is not.

The question is, what is going to happen when demand significantly outstrips the current supply? Well, with the beginnings of a price pinch already being felt, it appears the answer is rather clear.

“When you look at the billions of dollars that are being invested by automotive companies, battery producers, governments building recharging infrastructure and the regulatory pressures, it is a trend that is massive and you would not want to get in the way of it,”

- Evy Hambro - Co-manager of the BlackRock World Mining Trust plc
The Australian Financial Review



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