

Refining high-purity battery metals with Lewatit MK51 from LANXESS

- **Purification of metal concentrates using ion exchange resin**
- **Selective removal of impurities like boron results in high-purity precursors**
- **More efficient and sustainable compared to established processes**

Cologne, March 6, 2025 – LANXESS is offering a new solution for the rapidly growing battery industry. The Lewatit MK 51 ion exchange resin from LANXESS selectively removes boron from metal concentrates, thus enabling the extraction of high-purity raw materials for use in batteries.

In contrast to solvent extraction, ion exchange technology does not employ any environmentally harmful, flammable solvents. This enables users to operate sustainably and also saves investment costs, as the plants do not need to be equipped with explosion protection. Another advantage is that ion exchange plants can be built more compactly.

“With Lewatit MK 51 for the selective removal of boron from metal concentrates like e.g. lithium ore, we are expanding our solution portfolio for the battery industry,” says Dr. Dirk Steinhilber, Application Technology Manager in the Liquid Purification Technologies business unit at LANXESS.

Lewatit MK51 removes boron impurities

To produce high-quality batteries with a high energy density and a long service life, battery metals, such as lithium, nickel and cobalt, must be available in the purest possible form. During ore mining, these metals are often contaminated with boron due to the nature of the ore. This boron must be selectively removed so that the battery metals are as pure as possible after extraction. “Our Lewatit MK51 is ideal for this purpose because it only binds boron. Other components of the metal concentrates, such as sulfate, hydrogen carbonate and

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Page 1 of 4

chloride, do not interact with the resin. This facilitates the production of high-purity battery metal concentrates which can then be further processed," says Steinhilber.

Sustainable processes

The use of ion exchangers enables highly efficient refining processes that can be used to produce high-performance batteries with a good CO₂ and water balance. Large quantities of water are used in the processing of ores – from the cleaning of the raw ores to extracting the pure metals. Recovering and, if necessary, separating the metal ions from this water is essential for both economic and ecological reasons.

Lewatit ion exchange resins can selectively bind specific metal ions. They can also be used to remove by-products, such as zinc from nickel and cobalt electrolytes or cobalt from nickel salt solutions. The metal ions are removed from the aqueous solution and simultaneously concentrated on the ion exchange resin for further processing or recovery from wastewater streams.

Detailed information on the products of the LANXESS Liquid Purification Technologies business unit can be found on the Internet at <https://lanxess.com/en/products-and-brands/brands/lewatit> and <https://lanxess.com/en/products-and-brands/brands/lewatit/industries/mining-and-metallurgy>.

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Page 2 of 4

Image



To produce high-quality batteries, the battery metals used must be as pure as possible. The Lewatit MK 51 ion exchange resin from LANXESS is ideal for the selective removal of boron impurities.

Photo: LANXESS

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Page 3 of 4

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Page 4 of 4