

QUALITY PURIFIES.



QUALITY WORKS.

LANXESS
Energizing Chemistry

Lewatit® Ion Exchange Resins for the Recovery and Refining of Battery Metals

Lewatit® ion exchangers offer the fascinating possibility of binding specific metal ions selectively, such as lithium, copper, nickel, and cobalt that are suitable for use in batteries. Secondary constituents can also be separated, such as zinc from copper electrolytes or cobalt from nickel or copper salt solutions. In this process, the metal ions are removed from the aqueous solution and accumulated on the ion exchange resin, which greatly facilitates their further processing – or disposal, in the case of waste water flows. The use of ion exchange resins leads to highly efficient refining processes that can be used for the production of high-performance batteries with a good efficiency and water balance.

Applications and Benefits

Lewatit® ion exchange resins are crucial for many different metals processing applications. Three of most important applications and the benefits of our resins are described below.

1) Recovery of battery metals

The resin in pulp (RIP) technology is a very promising recovery approach, because battery metals can be extracted and concentrated from ore pulps, directly after leaching, without the need for CAPEX-intensive countercurrent decantation processes. To achieve high throughput within the continuous RIP process we developed our Lewatit® MonoPlus TP 209 XL. The resin shows the following benefits:

- High mechanical stability leads to savings on resin inventory
- Large bead size up to 0.9 mm allows high throughput in the metal loading cycle by efficient screening and sieving during resin-feed separation

2) Purification of battery metals

High-purity metal concentrates can be produced by the use of selective Lewatit® resins. Battery metal concentrates pass through the ion exchange resin bed, while impurities are loaded onto the resin, yielding pure concentrates that are needed for high-quality batteries. Benefits include:

- Up to two times higher cycle time compared to conventional resins allows savings on regeneration chemical costs
- Excellent exchange kinetics ensures contaminant removal down to trace levels and yields high battery metal concentrates
- High resilience of resins towards osmotic and mechanical stress results in longer lifetimes

3) Recycling

The growing demand for high purity battery lithium, nickel, cobalt and copper, requires access to new resources. The most economic and environmental friendly approach is the recycling of end of life batteries. Lewatit® ion exchange resins are crucial for many process steps in the hydro-metallurgical recycling flow sheets.

4) Waste water treatment

Waste water streams generated by battery metals processing plants, e.g., mining tailings, can be efficiently treated by Lewatit® MonoPlus TP 207. This resin selectively removes toxic heavy metals in the presence of high concentrations of other constituents of the waste water, e.g., hardness. Valuable heavy metals can additionally be recovered and recycled from the resin by selective regeneration. Benefits include:

- Up to 40% longer cycle time compared to conventional resins leads to low regeneration chemical costs
- Reliable and viable reduction of critical contaminants concentration well below required limit

Lewatit® Resins for Metal Processing Applications – Solutions for the Preparation of Critical Battery Materials

	Nickel and cobalt						Copper				Lithium		LiPF ₆
	Recycling	Fixed-bed recovery	Resin-in-pulp recovery	Concentrate purification	Separation	Wastewater	Resin-in-pulp recovery	Fixed-bed recovery	Wastewater	Concentrate purification	Brine purification	Recycling	Purification
Lewatit® MonoPlus TP 209 XL		■	■			■	■						
Lewatit® MonoPlus TP 207	■	■		■		■		■				■	
Lewatit® VP OC 1026	■			■									
Lewatit® TP 272	■			■	■								
Lewatit® MDS TP 220				■	■			■	■				
Lewatit® MDS TP 260	■			■		■		■		■	■	■	
Lewatit® MDS TP 208										■			
Lewatit® MonoPlus TP 214				■									
Lewatit® TP 308										■			
Lewatit® MP 62 WS				■									■
Lewatit® TP 108	■												
Lewatit® MK 51										■			
Bayoxide® E IN 30										■			

We will be happy to support your business. Please contact us for additional information: visit www.lewatit.com



LANXESS Deutschland GmbH
Liquid Purification Technologies
Kennedyplatz 1
50569 Cologne, Germany
Phone: +49 221 8885 0
lewatit@lanxess.com

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