QUALITY DETOXIFIES.

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LANXESS
Energizing Chemistry

Efficient Removal of Mercury with Lewatit® MonoPlus TP 214 Ion Exchange Resin from Industrial Wastewater

Lewatit® MonoPlus TP 214 is a macroporous chelating ion exchange resin, that is highly efficient for the removal of mercury (II) from wastewater. Additionally platinum, rhodium palladium, indium gold, and silver can be recovered by using this chelating resin.

Resin Properties

The monodisperse bead size distribution of our product facilitates the very efficient removal of ions resulting in low leakage in the effluent and high operating capacities. Therefore, customers benefit from savings due to less frequent resin exchange and refill. At the same time, the wastewater discharge limit of 10 ppb can be safely met.

- Total capacity: 1 eq/l
- Macroporous
- Bead size: d50 0.55 mm
- Water content: 54 – 60%
- Uniformity coefficient: max. 1.1

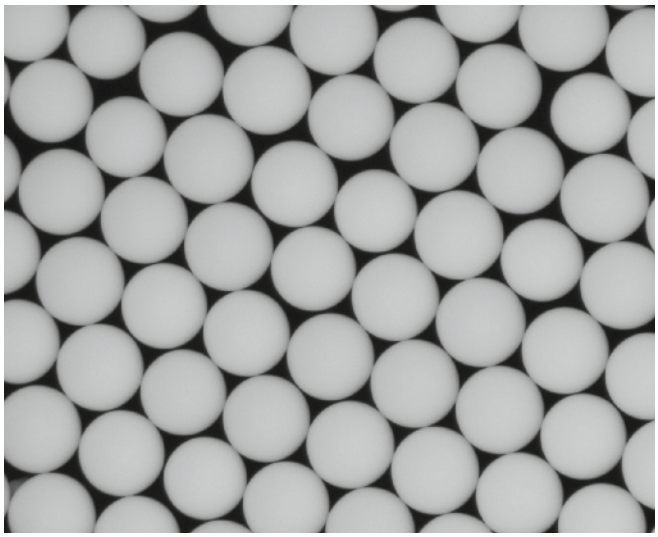
Applications

Mercury is a toxic water contaminant causing harmful damage to the brain, liver, and kidneys and can cause neurological diseases. Contaminations originate from coal-fire power plants and incineration plants. Additionally, mercury is used in China as a catalyst for the production of vinyl chloride, which is the building block of one of the most important industrial polymers polyvinylchloride (PVC). Another contamination source results from the chlor-alkali process, where mercury is used as the cathode in NaCl brine electrolysis. Additional contaminations are caused by dental practice wastes from teeth filling amalgams, fertilizers, landfill leachate, paints, domestic waste inputs, groundwater infiltration, storm water drainage, and historical sources of mercury. Because of its high solubility in water and its persistent bioaccumulation, an efficient liquid purification technology is required to remove mercury from wastewater. In order to face this challenge, LANXESS has developed the ion exchange resin Lewatit® MonoPlus TP 214, which enables our customers to generate virtually mercury-free water.

Lewatit®

Benefits

- Safe mercury removal below the wastewater discharge limit of 20 ppb set up by the Environmental Protection Agency (EPA)
- Up to 80% higher mercury removal capacities compared to competitor resins
- Long resin lifetime provides savings on capital investment costs
- Legal requirements regarding discharge limits are fulfilled in a cost-efficient manner
- High mercury selectivity provides low leakage after operation and convenient disposal of the single-use resin
- The resin does not change the odor of the water
- The resin offers superior kinetic behavior, leading to a faster uptake, a remarkably low leakage, and a better utilization of capacity

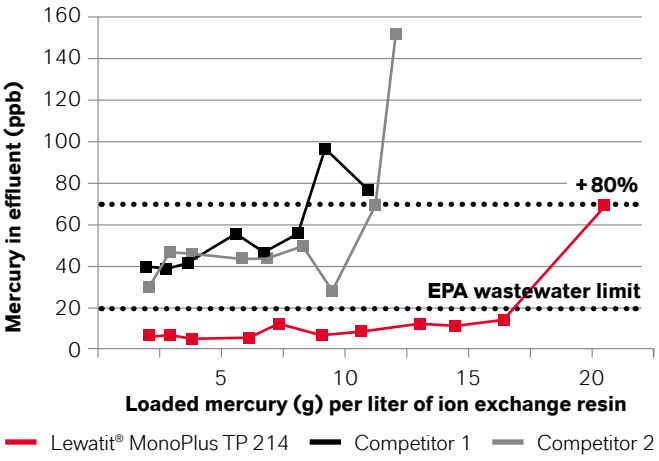


Performance

The wastewater limit of 20 ppb set by the EPA can be achieved by using Lewatit® MonoPlus TP 214. Competitor resins exceed the wastewater limit of 20 ppb.

Using a virtual limit of 70 ppb, Lewatit® MonoPlus TP 214 (red) can be operated 80% longer than the competitor resin (black). As a result, customers need to replace the ion exchange resin less frequently and thereby achieve savings on investment costs.

Figure: Breakthrough curves depicting the mercury concentration determined by inductively coupled plasma spectrometry in the effluent of the ion exchange column depending on the amount of mercury loaded on the resin.



Feed composition
[Hg^{2+}] = 400 ppb
[NaCl] = 40 g/L
pH = 9

Specific flow = 10 BV/h

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

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