

**Lewatit® MonoPlus TP 214** is a macroporous resin with chelating thiourea groups designed for the selective removal of mercury, precious metals of the platinum group, gold and silver.

Cations are removed from neutral solutions in the following order (decreasing affinity):

$\text{Hg}^{2+} > \text{Ag}^+ > \text{Au}^{+3} > \text{Pt}^{2+/4+} > \text{Cu}^{2+} > \text{Pb}^{2+/4+} > \text{Bi}^{2+} > \text{Sn}^{2+} > \text{Zn}^{2+} > \text{Cd}^{2+} > \text{Ni}^{2+}$ .

The monodisperse, uniform sized beads of **Lewatit® MonoPlus TP 214** are mechanically and osmotically more stable than ion exchange beds with a heterodisperse bead size distribution. Additionally they offer superior kinetic behavior which leads to faster uptake of cations and a better utilization of capacity (up to 100 gHg/L of resin). Also it offers a remarkable low leakage according to the process conditions (low ppb range). Due to its excellent affinity and adsorption capacity **Lewatit® MonoPlus TP 214** is especially suitable for:

- the removal of mercury (Hg) in flue gas scrubbing processes
- fine polishing of brine fed to chloralkali membrane cells in plants using mercury process and within conversion to membrane process
- the removal of mercury from ground water
- metal separation and recovery in hydrometallurgy, e.g. for gold (Au), silver (Ag) and platinum metals (Pt, Pd, Ru, Rh)
- the recovery of platinum group metals from rinse water and exhausted process solutions
- recovery of palladium catalysts from organic process streams

A significant benefit is the resins odorless property which allows safe filling of filters.

The regeneration of **Lewatit® MonoPlus TP 214** is not possible with usually applied regenerant solutions. Incineration of resin is recommended either in order to recover precious metals or to dispose of mercury in accordance with the local regulations.

The special properties of this product can only be fully utilized if the technology and process used correspond to the current state-of-the-art. Further advice in this matter can be obtained from Lanxess, Business Unit Liquid Purification Technologies.

## Common Description

Functional group	Thiourea
Matrix	Styrenic
Structure	Macroporous
Appearance	Beige, opaque

## Specified Data

Uniformity coefficient		max.	1.1
Mean bead size	d50	mm	0.55 (+/- 0.05)
Silver capacity (delivery form)		min. g/L	110

### Typical Physical and Chemical Properties

Bulk density for shipment	(+/- 5%)	g/L	680
Density		approx. g/mL	1.1
Water retention (delivery form)		approx. weight %	54-60
Stability pH range			0-14
Stability temperature range		°C	1-80
Storage temperature range		°C	-20 - +40

### Operation

Operating temperature		max. °C	80
Bed depth for single column		min. mm	1000
Back wash bed expansion per m/h (20°C)		%	7
Specific pressure loss kPa*h/m <sup>2</sup> (15°C)		kPa*h/m <sup>2</sup> (15°C)	1.1
Max. pressure loss during operation		kPa	250
Specific flow rate		max. BV/h	5-20
Freeboard	during backwash	min. vol. %	80

This document contains important information and must be read in its entirety.

## Additional Information & Regulations

### Safety precautions

Strong oxidants, e.g. nitric acid, can cause violent reactions if they come into contact with ion exchange resins.

### Toxicity

The safety data sheet must be observed. It contains additional data on product description, transport, storage, handling, safety and ecology.

### Disposal

In the European Community ion exchange resins have to be disposed, according to the European waste nomenclature which can be accessed on the internet-site of the European Union.

### Storage

It is recommended to store ion exchange resins at temperatures above the freezing point of water under roof in dry conditions without exposure to direct sunlight. If resin should become frozen, it should not be mechanically handled and left to thaw out gradually at ambient temperature. It must be completely thawed before handling or use. No attempt should be made to accelerate the thawing process.

### Packaging

The experience has shown that the packaging stability for reliable resin containment is limited to 24 months under the storage conditions described above. It is therefore recommended to use the product within this time frame; otherwise the packaging condition should be checked regularly.

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