

Lewatit® MonoPlus TP 208 is a weakly acidic, macroporous cation exchange resin with chelating iminodiacetic acid groups designed for the selective removal of alkaline earth cations.

The monodisperse, uniform sized beads of **Lewatit® MonoPlus TP 208** are mechanically and osmotically more stable than ion exchange resin beds with heterodisperse bead size distribution. Additionally they offer superior kinetic behavior which leads to faster uptake of cations and a better utilization of capacity. Due to its modified polymer structure and substitution grade it is particularly suitable for the adsorption of alkaline earth and heavy metal cations from diluted and concentrated brine solutions. Therefore

Lewatit® MonoPlus TP 208 is standardly used for following application:

- fine polishing of brine fed to chloralkali membrane cells, e.g. by removal of Ca^{2+} , Mg^{2+} , Ba^{2+} , Sr^{2+} ; also in the presence of Fe^{3+} ions

Aside from its major application in brine purification **Lewatit® MonoPlus TP 208** is used for the removal and recovery of heavy metals out of process, waste and potable water streams. Those metal cations are removed from neutralized waters in following order (decreasing affinity):

Copper > Vanadium (VO^{2+}) > Uranium (UO_2^{2+}) > Lead > Nickel > Zinc > Cadmium > Cobalt > Iron (II) > Beryllium > Manganese >> Calcium > Magnesium > Strontium > Barium >>> Sodium.

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

| | |
|------------------|--------------------|
| Delivery form | Na ⁺ |
| Functional group | Iminodiacetic acid |
| Matrix | Styrenic |
| Structure | Macroporous |
| Appearance | Beige, opaque |

Specified Data

| | | | |
|--------------------------------------|-----|-----------|-----------------|
| Uniformity coefficient | | max. | 1.1 |
| Mean bead size | d50 | mm | 0.65 (+/- 0.05) |
| Total capacity (H ⁺ form) | | min. eq/L | 2.5 |

Typical Physical and Chemical Properties

| | | | |
|---|----------|------------------|-----------|
| Bulk density for shipment | (+/- 5%) | g/L | 740 |
| Density | | approx. g/mL | 1.19 |
| Water retention (delivery form) | | approx. weight % | 58-64 |
| Volume change (Na ⁺ - H ⁺) | | max. approx. % | -30 |
| Stability pH range | | | 0-14 |
| Stability temperature range | | °C | 1-80 |
| Storability temperature range | | °C | -20 - +40 |

Operation

| | | | |
|--|-------------------|-----------------------------|------|
| Operating temperature | | max. °C | 80 |
| Operating pH range | during exhaustion | | 2-12 |
| Bed depth for single column | | min. mm | 1000 |
| Back wash bed expansion per m/h (20°C) | | % | 5 |
| Specific pressure loss kPa*h/m ² (15°C) | | kPa*h/m ² (15°C) | 1.0 |
| Max. pressure loss during operation | | kPa | 250 |
| Specific flow rate | | max. BV/h | 5-25 |
| Freeboard | during backwash | min. vol. % | 100 |

Regeneration

| | | | |
|--------------------------------------|---------------------|----------------|------|
| HCl regeneration | concentration | approx. wt. % | 4-10 |
| HCl regeneration | quantity co-current | min. g/L resin | 150 |
| Regeneration contact time | | min. minutes | 20 |
| Slow rinse at regeneration flow rate | | min. BV | 5 |
| Fast rinse at service flow rate | | min. BV | 5 |

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

Conditioning

| | | | |
|---------------------------------------|---------------------------|----------------|-------|
| NaOH conditioning | concentration | approx. wt. % | 4 |
| NaOH conditioning, di-Na ⁺ | quantity | min. g/l resin | 80-96 |
| Conditioning contact time | | min. minutes | 20 |
| Slow rinse | at conditioning flow rate | min. BV | 5 |
| Fast rinse | at service flow rate | min. BV | 5 |

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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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LANXESS Deutschland GmbH
Liquid Purification Technologies
Kennedyplatz 1
50569 Koeln
Germany

+49-221-8885-0
lewatit@lanxess.com

www.lanxess.com
www.lpt.lanxess.com

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