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Lewatit® MDS TP 208 – Significant Cost Savings Offered by Chelating Resin with Special Small-sized Monodisperse Beads

New approach

Lewatit® MDS TP 208 is a new macroporous, monodisperse IDA-chelating resin with very small particle diameter (approx. 0.39 mm) used for brine purification. Compared to the standard Lewatit® TP 208 and Lewatit® MonoPlus TP 208 it provides clear economic benefits by cost savings in energy, maintenance, and brine purification. Due to its higher total capacity, faster kinetics, and improved osmotic and mechanical stability, the following advantages arise:

- Up to 100% higher operating capacity enabling
  - Longer cycle times
  - Significantly decreased chemical costs
  - Lower labor costs
  - Less wastewater
  - Longer resin lifetime
- Lower leakage levels and thereby improved protection of electrolyzer membranes
- Removal of barium and notably strontium is considerably improved

Operating conditions and results

Recommended typical operating conditions for Lewatit® MDS TP 208 in brine purification are as follows:

- SV = 20 BV/h
- Bed depth approx. 1 m
- T = 60 to 75°C, pH = 8.5 to 10.5
- Backwash: < 4 m/h (@ T < 20°C)
- Regeneration: 150 g/l HCl, 80 g/l NaOH
- Operating capacities up to 20 g Ca^{2+}/Mg^{2+} per liter of resin
- Leakage levels below 5 ppb Ca^{2+}/Mg^{2+} attainable

Figure 1: Microscopic image of Lewatit® MDS TP 208 and Lewatit® MonoPlus TP 208. Monodispersity and the difference in bead size can be clearly seen.
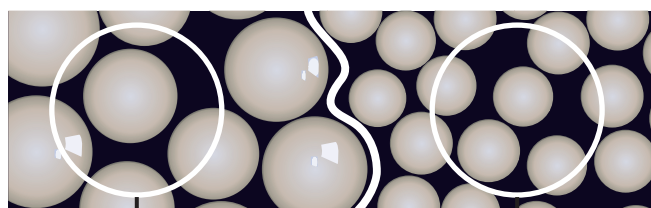
Lewatit® MonoPlus TP208
(Ø = 0.65 mm)

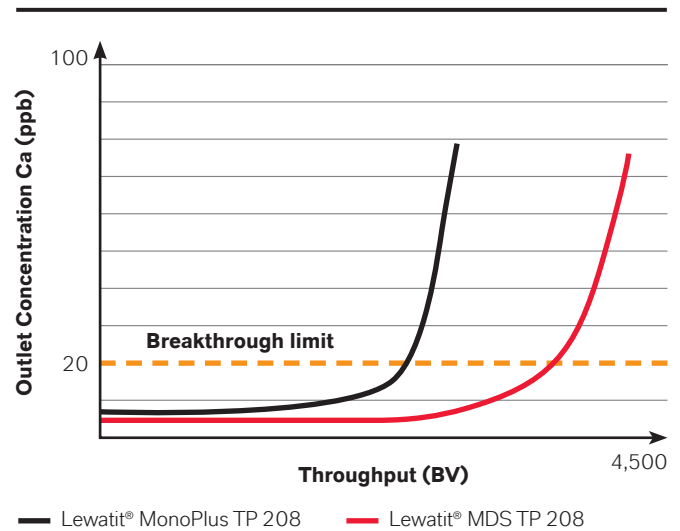**Lewatit® MDS TP208**
(Ø = 0.39 mm)

Application recommendation

Due to the smaller beads of Lewatit® MDS TP 208 there are a few things to consider before use – especially if it is planned to equip an existing filter with the new type of resin:

- Strainer nozzles with 0.3 mm slits can be used but 0.2 mm is preferable
- Freeboard = 100 % BV
- Backwash linear velocity needs to be reduced by a factor of 2.5 compared to the standard
- Backwash duration increased by a factor of 2 to 3
- Suspended solids load of filter bed should be limited to < 2 g $Fe(OH)_3$ per liter of resin and cycle
- Upflow conditioning with 4 % NaOH to be carried out with LV = 3 m/h, depending on column size downflow conditioning preferred in order to avoid fluidization of resin bed

Contact

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Figure 2: Breakthrough curve of Lewatit® MDS TP 208 and Lewatit® MonoPlus TP 208 measured under comparable operating conditions. The difference in cycle time and Ca leakage can be clearly seen.

Legend: — Lewatit® MonoPlus TP 208 — Lewatit® MDS TP 208

Operating conditions at exhaustion cycle shown above:

Ca, feed:	5 ppm
NaCl, feed:	300 g/l
pH:	10
SV:	20 BV/h
T:	60°C
Breakthrough:	20 ppb calcium

Operating capacity found in exhaustion cycle above:

Lewatit® MonoPlus TP 208:	11.4 g Ca/l
Lewatit® MDS TP 208:	18.4 g Ca/l

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