PRODUCT INFORMATION
LEWATIT® TP 208

Lewatit® TP 208 is a weakly acidic, macroporous cation exchange resin with chelating imino-diacetate groups for the selective removal of alkaline earth cations. In comparison to **Lewatit® TP 207** and **Lewatit® MonoPlus TP 207** this resin has a modified polymer structure and also a modified subsitution grade of the immino-diacetate groups to make it especially suitable for the adsorption of earth alkali ions in the presence of alkali ions.

It is especially suitable for use in:

» final polishing of brine feed to chlorakali membrane cells (traces of alkaline earth ions are removed after their normal precipitation by carbonates in the pH-range 7-11)

The operating capacity of **Lewatit® TP 208** depends on the pH-value of the brine. At pH 11 it is approx. threefold that achieved at pH 7. At pH 9 and calcium content 2-20 ppm, the operating capacity is approx. 0.7. eg/l **Lewatit® TP 208** (volume of hydrogen form) is obtained. At a service flow rate of 20-30 BV/h, the residual calcium content of treated electrolysis brine is less than 0.02 ppm (20 ppb). Greater security can be achieved by operating two units of equal size in series (see our Technical Information SP IOW 4006e).

Lewatit® TP 208 has to be conditioned with caustic soda solution after every regeneration cycle/before every exhaustion cycle. After the conditioning it is in di-sodium-form for the final polishing of chlorakali brine feed.

Aside from its major application in brine purifcation **Lewatit® TP 208** can be used for the removal or recovery of heavy metals out of process and waste water streams especially in the absence of calcium and magnesium ions. Thereby, it removes heavy metal cations from neutralized aqueous solutions in the following order:
Copper > Vanadium (VO) > Uranium (UO_2++) > Lead > Nickel > Zinc > Cadmium > Iron (II) > Beryllium > Manganese > Calcium > Magnesium > Stronitium > Barium >>> Sodium.

Lewatit® TP 208 does not remove heavy metals from solutions containing EDTA or NTA respectively. Only cadmium is removed from solutions containing cyanides. For the extraction of those heavy metals which follow the uranyl oxide ion in the selectivity sequence as shown above. Before commissioning a **Lewatit® TP 208** unit, see our Technical Information OC/I 20343 e for laboratory tests.

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 Ion Exchange Resins.

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General Description

Ionic form as shipped	Na^+
Functional group	iminodiacetic acid
Matrix	crosslinked polystyrene
Structure	macroporous
Appearance	beige, opaque

Physical and Chemical Properties

		metric units	
Total capacity*	H-Form	min. eq/l	2.9
Uniformity coefficient*		max.	1.8
Bead size*	> 90 %	mm	0.4 - 1.25
Effective size*		mm	0.55 (+/- 0.05)
Bulk density	(+/- 5 %)	g/l	740
Density		approx. g/ml	1.17
Water retention		wt. %	55 - 60
Volume change	Na^+ --> H^+	max. vol. %	-35
Stability	at pH-range		0 - 14
Storability	of the product	max. years	2
Storability	temperature range	°C	-20 - 40

* Specification values subjected to continous monitoring.

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Recommended Operating Conditions*

		metric units	
Operating temperature		max. °C	80
Operating pH-range			2 - 12
Bed depth		min. mm	1000
Specific pressure loss	(15 °C)	approx. kPa*h/m²	1.1
Pressure loss		max. kPa	250
Linear velocity	operation	max. m/h	40
Linear velocity	backwash (20 °C)	approx. m/h	10
Bed expansion	(20 °C, per m/h)	approx. vol. %	4
Freeboard	backwash (extern / intern)	vol. %	80
Regenerant			HCl
Co current regeneration	level	approx. g/l	140
Co current regeneration	concentration	approx. wt. %	4 - 10
Linear velocity	regeneration	approx. m/h	5
Linear velocity	rinsing	approx. m/h	5
Conditioning			NaOH Mono -Na / Di-Na
Conditioning	level	g/l	40 - 48 / 80 - 96
Conditioning	concentration	approx. wt. %	4
Linear velocity	conditioning	approx. m/h	5
Rinse water requirement	slow / fast	approx. BV	5

* The recommended operating conditions refer to the use of the product under normal operating conditions. It is based on tests in pilot plants and data obtained from industrial applications. However, additional data are needed to calculate the resin volumes required for ion exchange units. These are to be found in our Technical Information Sheets.

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Additional Information & Regulations

Saftey 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.

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