PRODUCT INFORMATION
LEWATIT® MonoPlus TP 260

Lewatit® MonoPlus TP 260 is a weakly acidic, macroporous cation exchange resin with chelating amino methyl phosphonic acid groups designed for the selective removal of heavy metal cations and alkaline earth cations.

The monodisperse, uniform sized beads of **Lewatit® MonoPlus TP 260** 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 for example suitable for use in:

- fine polishing of brine fed to chloralkali membrane cells, e.g. by removal of Ca^{2+}, Mg^{2+}, Ba^{2+}, Sr^{2+}; in the absence of Fe^{3+} ions
- fluoride (F) removal using aluminum (Al) doped **Lewatit® MonoPlus TP 260**
- antimony (Sb) and bismuth (Bi) removal from copper containing electrolyte
- uranium (U) removal from crude phosphoric acid
- titanium (Ti) removal from recycled battery acid
- aluminum (Al) removal from urea solutions
- lead (Pb) and strontium (Sr) removal from BF_4^- containing waste water out of PCB production
- removal of iron(II), nickel and zinc from 5 % gluconate containing liquid metal working

Heavy metal and alkaline earth cations are removed out of neutralized process and waste waters in following order (decreasing affinity):

Uranium (UO_2^{2+}) > Lead > Copper > Zinc > Nickel > Cadmium > Cobalt >> 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	Aminomethylphosphonic acid
Matrix	Styrenic
Structure	Macroporous
Appearance	Beige, opaque

Specified Data

Uniformity coefficient		max.	1.1
Mean bead size	d50	mm	0.63 (+/- 0.05)
Total capacity (H^+ form)		min. eq/L	2.4

Typical Physical and Chemical Properties

Bulk density for shipment	(+/- 5%)	g/L	720
Density		approx. g/mL	1.18
Water retention (delivery form)		approx. weight %	58-62
Volume change (Na^+ - H^+)		max. approx. %	-35
Stability pH range			0-14
Stability temperature range		°C	1-80
Storage temperature range		°C	-20 - +40

Operation

Operating temperature		max. °C	80
Operating pH range	during exhaustion		1-12
Bed depth for single column		min. mm	1000
Back wash bed expansion per m/h (20°C)		%	4
Specific pressure loss kPa*h/m^2 (15°C)		kPa*h/m^2 (15°C)	1.1
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	4

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	4

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.