PRODUCT INFORMATION
LEWATIT® MonoPlus TP 207

Lewatit® MonoPlus TP 207 is a weakly acidic, macroporous cation exchange resin with chelating iminodiaceticacid groups designed for the selective extraction of heavy metal cations from weakly acidic to weakly basic solutions. Divalent cations are removed from neutralized waters in the 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 monodisperse, uniform sized beads of **Lewatit® MonoPlus TP 207** are mechanically and osmotically more stable than ion exchange resin beads with heterodisperse bead size distribution. Additionally they offer superior kinetic behavior which leads to faster uptake of cations and a better utilization of capacity. Therefore it is suitable for use in the following applications:

- the selective removal of metal contaminants from processing baths
- the concentration, extraction and recovery or heavy metals from hydrometallurgical solutions
- the recovery of useful metals from electroplating rinse waters
- the selective trace removal of heavy metals from industrial metal surface finishing effluents, even in presence of high calcium concentrations
- the selective removal of heavy metals out of contaminated ground and waste water streams for potable water production and ground water remediation

The selective extraction of heavy metal cations by **Lewatit® MonoPlus TP 207** is also achieved in presence of complexing agents such as nitrogen compounds (e.g. ammonia, aliphatic and aromatic amines), multivalent carboxylic acids (e.g. citric, gluconic, tartaric, oxalic acid) and phosphates (e.g. sodium polyphosphate, tetrasodium diphosphate).

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	0.61 (+/- 0.05)
Total capacity (H^+ form)		min. eq/L	2.0

Typical Physical and Chemical Properties

Bulk density for shipment	(+/- 5%)	g/L	700
Density		approx. g/mL	1.14
Water retention (delivery form)		approx. weight %	55-60
Volume change (Na^+ - H^+)		typical approx. %	-25
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		1.5-9
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. %	80

Regeneration

HCl regeneration	concentration	approx. wt. %	4-10
HCl regeneration	quantity co-current	min. g/L resin	150
H_2SO_4 regeneration	concentration	approx. wt. %	10
H_2SO_4 regeneration	quantity co-current	min. g/L resin	210
HNO_3 regeneration	concentration	approx. wt. %	12
HNO_3 regeneration	quantity co-current	min. g/L resin	250
Regeneration contact time		min. minutes	20
Slow rinse at regeneration flow rate		min. BV	5
Fast rinse at service flow rate		min. BV	5

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

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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