PRODUCT INFORMATION
LEWATIT® MK 51

Lewatit® MK 51 is a weakly basic, macroporous anion exchange resin with polyhydroxy groups designed for the selective removal of boric acid and borates from lithium concentrates. The unique selectivity of the resin for borate allows a separation of boric acic from water and aqueous electrolyte solutions even containing a high salt content.

Lewatit® MK 51 can especially be used for:

- the removal of boron from lithium concentrates, waste water and process water
- the removal of boron from RO permeate in purpose to produce water for irrigation
- the removal of boron traces in the production of ultrapure water and chemicals
- the removal of boron from high concentrated magnesium chloride solutions
- the adsorption of oxoanions of W, Mo, V, Ge, As, Sb from process streams

The operating capacity depends on the specific flow rate, the total salt concentration of the treated medium and the feed concentration of boric acid.

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	Free base
Functional group	Polyalcohol
Matrix	Styrenic
Structure	Macroporous
Appearance	Opaque

Specified Data

Range of size for >90 vol% of all beads		mm	0.315 - 1.6
Total capacity (delivery form)		min. eq/L	0.8

Typical Physical and Chemical Properties

Bulk density	(+/- 5%)	g/L	720
Density		approx. g/mL	1.1
Water retention (delivery form)		approx. weight %	45 - 51
Volume change (during exhaustion)		max. approx. %	15
Storage time (after delivery)		max. years	2
Storage temperature range		°C	-20 - +40

Operation

Operating temperature		max. °C	80
Operating pH range	during exhaustion		4-10
Bed depth for single column		min. mm	1000
Back wash bed expansion per m/h (20°C)		%	10
Specific pressure loss kPa*h/m² (15°C)		kPa*h/m² (15°C)	1.4
Max. pressure loss during operation		kPa	150
Specific flow rate		max. BV/h	20
Freeboard	during backwash	min. vol. %	100

Regeneration

HCl regeneration	concentration	approx. wt. %	5 - 10
HCl regeneration	quantity co-current	min. g/L resin	50 - 200
H_2SO_4 regeneration	concentration	approx. wt. %	10
Regeneration contact time		min. minutes	20
Slow rinse at regeneration flow rate		min. BV	5 - 10
Fast rinse at service flow rate		min. BV	5 - 10

Conditioning

NaOH conditioning	concentration	approx. wt. %	2 - 4
NaOH conditioning, di-Na^+	quantity	min. g/l resin	60 - 120
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 conditions
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.

Storage time
The recommended storage time for this product is explained in the technical document “Technical guidelines on the storage of Lewatit® ion exchange resins” available for download on our website. Please use the following link for more information: https://lanxess.com/en/products-and-brands/brands/lewatit/literature

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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