PRODUCT INFORMATION
LEWATIT® MK 51

Lewatit® MK 51 is a styrene-based macroporous weak base anion exchanger with polyhydroxygroups showing a very high selectivity for the removal of boric acid or borates from water. The high selectivity of the complex bond of borate to the resin allows a separation of boric acic from water and aqueous electrolyte solutions also of a high salt concentration.

Lewatit® MK 51 can especially be used for:

- the removal of boron from waste water
- the removal of boron from RO permeate
- the removal of boron traces in the production of ultrapure water or chemicals
- the purification of concentrated magnesium chloride solutions from boric acid

The resin is appropriately loaded at a flow rate of 10...20 m/h. The regeneration can be done with hydrochloric or sulphuric acid. To reach high capacity levels it is recommended to make a two stage regeneration using a sodium hydroxide solution for the second treatment.

The capacity for boric acid depends strongly on the specific flow rate, the total salt concentration of the treated medium and the feed concentration of boric acid. Exact values have to be determined by lab trials.

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	free base/Cl^-
Functional group	Polyalcohol
Matrix	crosslinked polystyrene
Structure	macroporous
Appearance	opaque

Physical and Chemical Properties

		metric units	
Uniformity Coefficient*		max.	1.7
Bead size*	> 90 %	mm	0.315 - 1.6
Effective size*		mm	0.44 - 0.65
Bulk density	(+/- 5 %)	g/l	710
Density		approx. g/ml	1.1
Water retention		wt. %	48 - 55
Total boron capacity*		min. g/l	6
Total swelling delivered	Cl^-	max. vol. %	15
Storability	of the product	max. years	2
Storability	temperature range	°C	-20 - 40

* Specification values subjected to continuous monitoring.

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Recommended Operating Conditions*

		metric units	
Operating temperature		max. °C	30
Bed depth		min. mm	600
Specific pressure drop	(15 °C)	approx. kPa*h/m²	1.4
Pressure drop		max. kPa	150
Linear velocity	operation	max. m/h	30
Linear velocity	backwash (20 °C)	approx. m/h	8 - 12
Bed expansion	(20 °C, per m/h)	approx. vol. %	10
Freeboard	backwash (extern / intern)	vol. %	100
Regenerant			1. HCl + 2. NaOH
Regenerant	level	approx. g/l	HCl 50 - 200 NaOH 60 - 120
Regenerant	concentration	approx. wt. %	HCl 5 - 10 NaOH 2 - 4
Linear velocity	regeneration	approx. m/h	3
Linear velocity	rinsing	approx. m/h	5
Rinse water requirement	slow / fast	approx. BV	5 - 10

* 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 data are to be found in our Technical Information Sheets.

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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.

LANXESS Deutschland GmbH
BU ION
D-51369 Leverkusen

www.lewatit.com
www.lanxess.com

This document contains important information and must be read in its entirety.

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