PRODUCT INFORMATION
LEWATIT® FO 36

Lewatit® FO 36 is a macroporous, monodispersed, polystyrene-based resin for the selective adsorption of oxoanions, such as arsenate or arsenite ions. It is a weakly basic ion exchange resin which is doped with a nano-scaled film of iron oxide covering the inner surfaces of the pores of the polymer bead. Oxoanions are bond by a specific, reversible reaction involving hydroxy-groups on the iron oxide surface. Other anions such as SO_4^{2-}, NO_3^-, Cl^-, HCO_3^- have a neglectable influence on arsenic absorption. Optimum pH is pH = 6.

Lewatit® FO 36 is especially suitable for use in the following applications:

- arsenic removal from drinking water
- arsenic removal from ground water (ground water remediation) and waste water
- arsenic removal from process solutions even in presence of high contents of neutral salts (e.g. >10% NaCl on Na_2SO_4)

In the purification of potable water arsenic can be removed down to rest concentrations significantly lower than 10 g/l which is the maximum contaminant level set in several countries.

Besides of arsenic containing oxyanions such as arsenate and arsenite **Lewatit® FO 36** is capable of selectively adsorbing other species as there are HPO_4^{2-}, $HSiO_3^-$, $HSbO_4^{2-}$, HVO_4^{2-}, SCN^- etc. Also it has to be considered that the weakly basic anion exchange group in the resin is still active and can react in the specific way basically known for this kind of functional group. Hence **Lewatit® FO 36** can also bind natural organic matter such as tannins, lignins, negatively charged uranium complexes, chromate and others.

Lewatit® FO 36 should never be exposed to solutions with pH lower than 4. Otherwise iron oxide will be dissolved and washed out and the resin will lose its dedicated functionality.

Advantages of polymer resin based ironoxide doped adsorbers compared to a basically inorganic adsorber are:

- regenerability
- no bleeding of fine iron oxide particles
- high mechanical strength and therefore easy to backwash or to pump in suspension
- no blocking of the resin bed due to build up of fines
- fast kinetics due to large surface area and optimised pore structure

When using **Lewatit® FO 36** to treat potable water special care should be given to the start up of the new resin. Please refer to the recommended start-up-conditions contained in this data sheet.

After a pre-treatment according to the recommended start-up procedure **Lewatit® FO 36** is in compliance with the European Resolution ResAP (2004)3 with regard to the substances to be used in the manufacture and Total Organic Carbon (TOC) release according to the AFNOR test T 90-601.

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.

General Description

Ionic form as shipped	neutral
Functional group	FeO(OH)
Matrix	crosslinked polystyrene
Structure	macroporous
Appearance	brown, opaque

Physical and Chemical Properties

		metric units	
Uniformity Coefficient*		max.	1.1
Mean bead size*		mm	0.34 - 0.38
Share of beads in the range*	Mean bead size +/- 0.05 mm	vol. %	> 90
Bulk density		kg/l	0.765
Density		approx. g/ml	1.25
Specific pressure drop	(15 °C)	approx. kPa*h/m²	1.97
Bed expansion	(20 °C, per m/h)	approx. vol. %	9.8
Water retention		wt. %	53 - 58
Stability	at pH-range		4 - 14
Storability	of the product	max. years	2
Storability	temperature range	°C	-20 - +40

* Specification values subjected to continuous monitoring.

Recommended Operating Conditions*

		metric units	
Operating temperature		max. °C	60
Operating pH-range			4 - 11
Bed depth		min. mm	1000
Pressure drop		max. kPa	250
Linear velocity	operation	max. m/h	30
Linear velocity	backwash (20 °C)	approx. m/h	4
Freeboard	backwash (extern / intern)	vol. %	100
Regenerant			NaOH + NaCl**
Co current regeneration	level	approx. g/l	40 + 40
Co current regeneration	concentration	approx. wt. %	2 + 2
Linear velocity	regeneration	approx. m/h	5
Rinse water requirement	slow / fast	approx. BV	5
Linear velocity	rinsing	approx. m/h	5
Conditioning***			HCl or H_2SO_4
Conditioning		pH, min.	4
Conditioning	flow direction		upflow
Linear velocity	conditioning	approx. m/h	4
Conditioning	duration	approx. h	12

* 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.

** A mixture of NaOH + NaCl with a mass-ratio of 1:1.

*** For conditioning it is recommended to circulate water from a seperate tank in upflow direction over the resin bed. The tank contains approx. 2BV of water and is equipped with an agitator and a pH control system. The pH control system is adjusted to pH = 4 and doses acid into the agitated tank. The process has to be operated for 12 hours in minimum.

Recommended Start-up Conditions*

(in drinking water and food applications only)

Linear velocity	approx. m/h	5
Rinse water requirement	approx. BV	20

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.

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For more information or a quote, please use the

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