

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 bound 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:

- » Removal of arsenic from drinking water
- » Removal of arsenic from ground water (ground water remediation) and waste water
- » Removal of arsenic 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 microgram/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.

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 (LPT).

General Description

Ionic form as shipped	Neutral
Functional group	FeO(OH)
Matrix	Crosslinked polystyrene
Structure	Macroporous
Appearance	Brown, opaque

Specified Data

	metric units	
Uniformity Coefficient	max.	1.1
Mean bead size	mm	0.30 - 0.38

Physical and Chemical Properties

		metric units	
Bulk density	(+/- 5 %)	g/l	765
Density		approx. g/ml	1.25
Water retention		wt. %	45 - 58
Stability	at pH-range		4 - 14
Storability	of the product	max. years	2
Storability	temperature range	°C	-10 - +40

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

Recommended Start-up Conditions*

(in drinking water and food applications only)

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

Recommended Operating Conditions*

		metric units	
OPERATION			
Operating temperature		max. °C	60
Operating pH-range			4 - 9
Bed depth		min. mm	800
Specific pressure drop	(15 °C)	approx. kPa*h/m ²	2
Pressure drop		max. kPa	250
Linear velocity	operation	max. m/h	30
Volumetric flow rate	exhaustion	BV/h	5 - 20
REGENERATION, CO-CURRENT			
Regenerant	type		NaOH + NaCl
Linear velocity		approx. m/h	4
Linear velocity	rinsing	approx. m/h	4
Rinse water requirement	slow / fast	approx. BV	10
Bed expansion	backwash (20 °C)	approx. % per m/h	10
Bed expansion	(20 °C, per m/h)	approx. vol. %	40
Freeboard	backwash	vol. %	100
CONDITIONING			
Conditioning agent	type		
Linear velocity	rinsing	approx. m/h	
Volumetric flow rate	rinse, slow / fast	approx. BV/h	5

* 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.

** Conditioning: To recover full operating capacity after every regeneration a further conditioning is strongly recommended. Therefore an additional tank with a volume equalling around 1 to 2 BV of the resin volume equipped with agitator and pH control is required. Water from this tank is recycled over the resin bed in upflow mode whereby resin is fluidized and resin bed is expanded by 40%. PH control is set at pH = 4.5. PH control to dose sulfuric or hydrochloric acid continuously into agitated tank to neutralize resin alkalinity. Process to be kept in operation for around half a day to one day.

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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.

This information and our technical advice – whether verbal, in writing or by way of trials – are given in good faith but without warranty, and this also applies where proprietary rights of third parties are involved. Our advice does not release you from the obligation to check its validity and to test our products as to their suitability for the intended processes and uses. The application, use and processing of our products and the products manufactured by you on the basis of our technical advice are beyond our control and, therefore, entirely your own responsibility. Our products are sold in accordance with the current version of our General Conditions of Sale and Delivery.

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