

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 µg/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.

Lewatit® FO 36 has been approved according to AUS / Standard 61 and has got the WRAS approval, too..

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 |

Specified Data

| | | | |
|-----------------------------|-------------------------------|--------------|---|
| | | 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 |
| Column Capacity | min. to 1 megmohm*cm endpoint | eq/l | 1.5 (30 BV/h 0.1 mg/l As(V); 6 ppm SiO ₂ + 60 ppb PO ₄ -P |

Physical and Chemical Properties

| | | | |
|-----------------|-------------------|--------------|-----------|
| | | metric units | |
| Bulk density | (+/- 5 %) | g/l | 765 |
| Density | | approx. g/ml | 1.25 |
| Water retention | | wt. % | 53 - 58 |
| Stability | at pH-range | | 4 - 14 |
| Storability | of the product | max. years | 2 |
| Storability | temperature range | °C | -20 - +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 | |
|-------------------------|-------------------------------|------------------------------|---|
| Operating temperature | | max. °C | 60 |
| Operating pH-range | | | 4 - 11 |
| Bed depth | | min. mm | 1000 |
| Specific pressure drop | (15 °C) | approx. kPa*h/m ² | 1.97 |
| 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** |
| Linear velocity | regeneration | approx. m/h | 5 |
| Rinse water requirement | slow / fast | approx. BV | 5 |
| Co current regeneration | level | approx. g/l | 40 + 40 |
| Co current regeneration | concentration | approx. wt. % | 2 + 2 |
| Linear velocity | rinsing | approx. m/h | 5 |
| Linear velocity | rinsing | approx. m/h | 4 |
| Regenerant | type | | HCl / H ₂ SO ₄ |
| Regenerant | | | upflow, 12 h, pH min. 4 |

* 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.

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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and must be read in its entirety.