

QUALITY REMOVES.



QUALITY WORKS.

LANXESS
Energizing Chemistry

Bayoxide® E 33 – Drinking Water Quality Synthetic Iron Oxide Adsorber

Bayoxide® E 33 is an NSF Standard 61 approved, granular iron oxide media specifically designed for use in drinking water applications in which it serves as an effective selective filter adsorbent for removal of various species, with a focus on arsenic removal. It is a dry, crystalline nanoparticulate α -Ferric oxide hydroxide with a high surface area and adsorption capacity. At the same time, it also offers high abrasion resistance to the stream of water. Bayoxide® E 33 is utilized in a simple passive pump-and-treat system applying the technology of fixed-bed adsorption. In arsenic removal installations Bayoxide® E 33 provides a long-lasting, simple, and reliable solution.

Applications

- Arsenic removal from drinking water in which arsenate As(V) as well as arsenite As(III) are safely adsorbed below 5 $\mu\text{g/l}$ (municipal water purification, ground water remediation, bottled water, and beverages purification)
- Phosphate removal from well water and surface water, such as ponds, lakes, pools
- Phosphate and silicate removal from aquariums in case NSF-certified media is required
- Antimony, vanadium, and selenium removal from water
- Heavy metal removal from drinking water, e.g., copper, lead, nickel, and zinc

Benefits

- Arsenic removal safely below < 5 $\mu\text{g/l}$
- High adsorption capacity by improved surface area (150 m^2/g) and advanced adsorption kinetics
- Very high abrasion stability compared to standard media
- Specified metal content
- Simple once-through treatment system with low maintenance requirements
- No additional chemical requirements for regeneration
- Delivered as dry material
- Arsenic exhausted material disposable via non-hazardous landfill in some countries
- Wide operational pH range of pH 5.5 to 8.5

X Bayoxide®

Bayoxide® E 33 has been developed specifically for the removal of arsenic from drinking water and can also be used as adsorbent for various applications within standard water purification installations. Relative to conventional adsorbent media, **Bayoxide® E 33** has a particularly high capacity for arsenic removal, which results in a longer lifetime compared to conventional media. Since **Bayoxide® E 33** has a significant affinity for oxoanions, it is able to selectively bind those from solutions even containing other anions such as chloride, sulfate, or nitrate. It offers a high resistance against oxidants and affords very low backwash water volumes. The operating capacity and therefore life expectancy of **Bayoxide® E 33** for all applications depends on the quality and composition of water to be treated and factors such as pH value, temperature, and targeted effluent limit. **Bayoxide® E 33** selectively adsorbs oxoanions. Therefore, a detailed water quality analysis including a wide range of parameters should serve as the basis for the selection of the most appropriate adsorbent system and amount. The following information provides a basis for a standard **Bayoxide®** setup system. Before each implementation, prior small scale and pilot testing is recommended. For this rapid small scale column tests (RSSCT) are preferable.

Specifications

- Certified under NSF/ANSI Std 61 “Drinking Water Systems Components – Health Effects”
- Specified in the List of Preparation Substances and Disinfection Processes in compliance with § 11 German Drinking Water Ordinance 2001, DIN EN 15029 (valid throughout Europe)

Proper and safe handling of spent media is tested in accordance with US EPA's Toxicity Characteristics Leaching Procedure TCLP RCRA (40 CFR 261) and, therefore, can be treated as non-hazardous waste. This is especially relevant for the removal of hazardous materials, such as arsenic, from water.

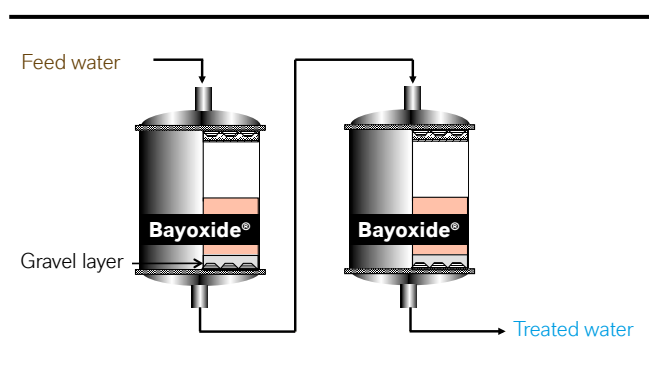


Figure 1: Standard technical setup of Bayoxide® E 33

Standard recommendations

- Gravel underbedding
- Simplest configuration contains two adsorbent filters with parallel flow, treatment of higher contaminant feed concentrations requires two or three adsorbent filters in series flow configuration
- Contact time (EBCT¹) between 3 to 5 minutes, for high contaminant feed concentrations (> 2 mg/l) EBCT is increased to ≥ 5 minutes
- Periodic backwash for dirt and fines removal and for media fluffing for maximum capacity utilization

Technical conditions

- Filter arrangement: lead-lag, merry-go-round
- Operation mode: downflow
- Flow rate: 10–20 BV/h, 12–20 m/h (min. 2.5 m/h)
- Freeboard: 100%
- EBCT¹: 3–5 min.
- Backwash velocity: 22–27 m/h, ≥ 30% bed expansion

¹ Empty bed contact time.

We are happy to support your business. Please contact us for additional information: visit www.lpt.lanxess.com

LANXESS
Energizing Chemistry

LANXESS Deutschland GmbH
Liquid Purification Technologies
Kennedyplatz 1
50569 Cologne, Germany
Phone: +49 221 88850
E-mail: lewatit@lanxess.com

Health and Safety Information: Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling the LANXESS products mentioned in this publication. For materials mentioned which are not LANXESS products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be followed. Before working with any of these products, you must read and become familiar with the available information on their hazards, proper use and handling. This cannot be overemphasized. Information is available in several forms, e.g., material safety data sheets, product information and product labels. Consult your LANXESS representative in Germany or contact the Regulatory Affairs and Product Safety Department of LANXESS Deutschland GmbH or – for business in the USA – the LANXESS Corporation Product Safety and Regulatory Affairs Department in Pittsburgh, PA, USA.

Regulatory Compliance Information: Some of the end uses of the products described in this publication must comply with applicable regulations, such as the FDA, BFR, NSF, USDA, and CPSC. If you have any questions on the regulatory status of these products, contact – for business in the USA – the LANXESS Corporation Regulatory Affairs and Product Safety Department in Pittsburgh, PA, USA or for business outside US the Regulatory Affairs and Product Safety Department of LANXESS Deutschland GmbH in Germany.

The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by us. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information.

Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent. All trademarks are trademarks of the LANXESS Group, unless otherwise specified. Status 07/2023