

QUALITY REMOVES.



Bayoxide® E IN 20 – Industrial Quality Synthetic Iron Oxide Adsorber

Bayoxide® E IN 20 is a granular iron oxide media specifically designed for use in technical applications in which it serves as an effective filter adsorbent for removal of various species. It is a crystalline nanoparticulate α -Ferric oxide hydroxide with a very high surface area and adsorption capacity. At the same time, it also offers high abrasion stability to the stream of water. **Bayoxide® E IN 20** is applied for purification of non-drinking water sources in a simple passive pump-and-treat system applying the technology of fixed-bed adsorption. When water from a source is pumped through a vessel or a series of vessels containing **Bayoxide® E IN 20**, it passes through a fixed bed of the media where the relevant species is adsorbed quickly and selectively.

Benefits

- High surface area (150 m²/g)
- High adsorption capacity (e.g., phosphate removal from fresh water aquaria: 65 g phosphate/l)
- Advanced adsorption and desorption characteristics (e.g., for arsenate, arsenite, phosphate, and silica)
- Robust mechanical properties due to high abrasion stability, which results in long media lifetime
- Simple once-through system
- Delivered as dry material

Bayoxide® E IN 20 can be used as an adsorbent for various applications within the chemical industry and standard water purification installations. Since **Bayoxide® E IN 20** 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.

Applications

- Phosphate removal from aquariums
- Silica removal from seawater and freshwater aquariums
- Phosphate removal from surface water, such as ponds, lakes, pools
- Phosphate removal from municipal and industrial wastewater treatment systems
- Arsenic removal from non-drinking water in which both, arsenate As(V) as well as arsenite As(III) are safely adsorbed below 5 µg/l. No additional peroxidation of arsenite required
- Antimony, vanadium, and selenium removal from non-drinking water
- Heavy metal removal from non-drinking water, e.g., copper, lead, nickel, and zinc
- Purification of mining water, process water, and streams (e.g., electroplating industry)

Features

- High resistance against oxidants (free chlorine up to 150 ppm)
- Bayoxide® E IN 20 is advantageous in the removal of arsenite As(III) without pre-oxidation
- Very low backwash water volume necessary

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. The operating capacity and therefore life expectancy of Bayoxide® E IN 20 for all applications depends on the quality and composition of the water to be treated and factors such as the pH value, temperature, and targeted effluent limit. Bayoxide® E IN 20 selectively adsorbs oxoanions such as arsenate, arsenite, and phosphate even during the presence of other anions such as chloride, sulfate, or nitrate. Therefore, a detailed water quality analysis including a wide range of parameters should serve as the basis for the selection of the most appropriate adsorber system and amount. The following information provides a basis for a standard Bayoxide® set-up system. Before each implementation, prior small-scale and pilot testing is recommended. For this, rapid small-scale column tests (RSSCT) are preferable.

Standard recommendations

- Gravel underbedding
- Simplest configuration contains two adsorber filters with parallel flow, treatment of higher contaminant feed concentrations requires two adsorber filters in series flow configuration
- Standard start-up requires backwash for fines removal, followed by soaking for 4 to 24 hours for wetting
- Downflow operation
- Contact time (EBCT) between 3 to 5 minutes, for high contaminant feed concentrations (>2 mg/l) EBCT is increased to ≥ 5 minutes
- Periodic backwash for dirt and particle 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
- Freeboard: 40–100 %
- EBCT¹: 3–5 min.

¹ Empty bed contact time.

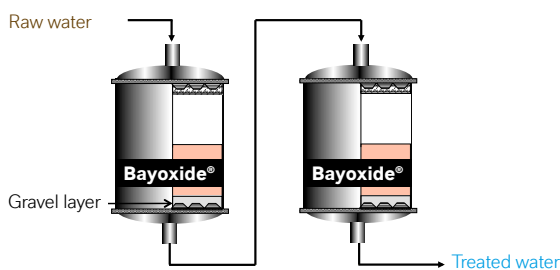


Figure 1: Standard technical set-up of Bayoxide® E IN 20

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