

BIRM®

for reduction of iron/or manganese from water supplies

Birm is an efficient and economical media for the reduction of dissolved iron and manganese compounds from raw water supplies. It may be used in either gravity fed or pressurized water treatment systems. **Birm** acts as an insoluble catalyst to enhance the reaction between dissolved oxygen (D.O.) and the iron compounds. In ground waters the dissolved iron is usually in the ferrous bicarbonate state due to the excess of free carbon dioxide and is not filterable. **Birm**, acting as a catalyst between the oxygen and the soluble iron compounds, enhances the oxidation reaction of Fe^{2+} to Fe^{3+} and produces ferric hydroxide which precipitates and is easily filtered. The physical characteristics of **Birm** provide an excellent filter media which is easily cleaned by backwashing to remove the precipitant. **Birm** is not consumed in the iron removal operation and therefore offers a tremendous economic advantage over many other iron removal methods.

Other advantages of **Birm** include: long material life with relatively low attrition loss, a wide temperature performance range and extremely high removal efficiency. Negligible labor cost are involved because **Birm** does not require chemicals for regeneration, only periodic backwashing is required.

When using **Birm** for iron removal, it is necessary that the water contains no oil or hydrogen sulfide, organic matter not to exceed 4-5 ppm, the D.O. content equal at least 15% of the iron content with a pH of 6.8 or more. If the influent water has a pH of less than 6.8, neutralizing additives such as Clack's Corosex, Calcite or soda ash may be used prior to the **Birm** - Filter to raise the pH. A water having a low D.O. level may be pretreated by aeration. **Chlorination greatly reduces Birm's activity. High concentrations of chlorine compounds may deplete the catalytic coating.**

Birm is furnished in two grades, "regular" and "fine". Regular is generally recommended for industrial, municipal and most domestic installations where backwash rates are limited.

Clack's **Birm** may also be used for manganese reduction with the same dependability as iron removal. In these applications the water to be treated should have a pH of 8.0-9.0 for best results. If the waer also contains iron, the pH should be below 8.5. High pH conditions may cause the formulation of collidal iron which is very difficult to filter out. All other conditions remain the same for either manganese or iron removal.



ADVANTAGES

- Under the proper conditions, no chemicals to purchase for maintenance. Regeneration not required.
- Iron removal efficiency is extremely high
- Negligible labor costs: only periodic backwashing required
- Durable material with a long life and wide temperature range
- Weighs only 0,75 kg / dm³

PHYSICAL PROPERTIES

Regular Birm

- Color: black
- Bulk Density: 0,75 kg / dm³
- Mesh Size: 0,5 – 2,1 mm
- Specific Gravity: 2.0 kg / dm³
- Effective Size:: 0.59 mm
- Uniform Coefficient: 1.96

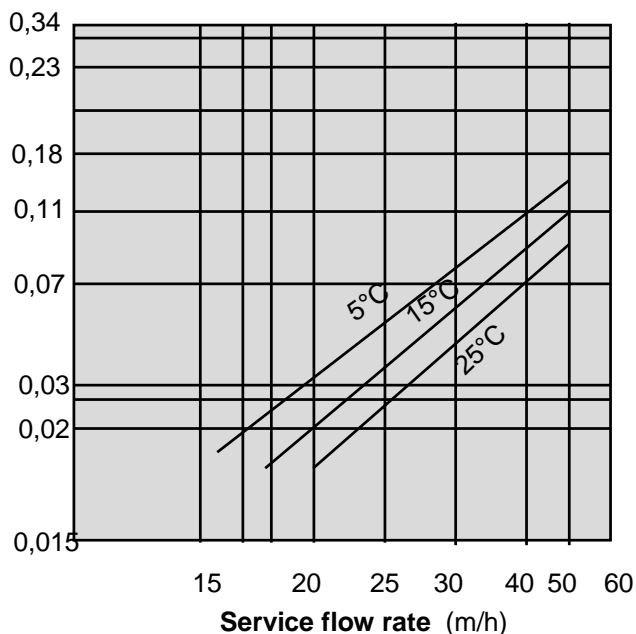
Fine Birm

- Color: black
- Bulk Density: 0,75 kg / dm³
- Mesh Size: 0,42- 2 mm
- Specific Gravity: 2.0 kg / dm³
- Effective Size:: 0.48 mm
- Uniform Coefficient: 2.71

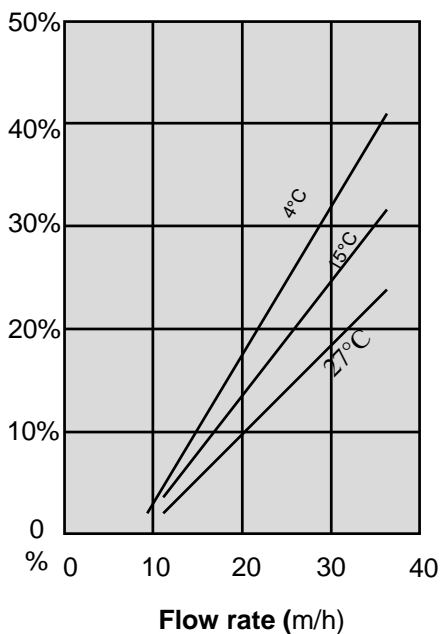
CONDITIONS FOR OPERATION

- Alkalinity should be greater than two times the combined sulfate and chloride concentration
- Water pH range: 6.8-9.0
- Dissolved Oxygen (D.O.): 15% of the iron (or iron and manganese)
- Bed depth: 750 – 900 mm
- Freeboard: 50% of bed depth (min.)
- Backwash rate:
 - Regular Birm: 25 – 30 m/ h
 - Fine Birm: 20 – 25 m/ h.
- Service flowrate: 8 – 13 m/ h
intermittent flow rates and / or favorable local conditions may allow higher flow rates
- Free chlorine (Cl₂) < 0.5 ppm
- Hydrogen Sulfide none

Pressure drop (bars / m bed depth)



Bettexpansion in %



Birm® is a federally registered trademark of Clack Corporation WS / USA

Birm® is tested and listed under ANSI / NSF and classified by UL INC. as drinking water treatment system components acc. to ANSI/NSF 61-(1991)-57Y3

Packing units. 28,3 Liter (1 ft³) Säcke

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