**Clack Birm® is a granular filter media commonly used for the reduction of iron and/or manganese from water supplies.**

# Birm®

### ADVANTAGES

- Under the proper conditions, no chemicals to purchase for maintenance. Regeneration not required.
- Iron removal efficiency is extremely high.
- Negligible labor cost: only periodic backwashing required.
- Durable material with a long life and wide temperature range.
- Weighs only 44-50lbs./cu. ft.

### PHYSICAL PROPERTIES

**Regular Birm**

- Color: Black
- Bullk Density: 44-50 lbs./cu. ft.
- Mesh Size: 9 x 35
- Specific Gravity: 2.0 gm/cc
- Effective Size: 0.59 mm
- Uniform Coefficient: 1.96

**Fine Birm**

- Color: Black
- Bulk Density: 44-50 lbs./ cu. ft.
- Mesh Size: 10 x 40
- Specific Gravity: 2.0 gm/cc
- Effective Size: 0.48 mm
- Uniformity 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.) content must be equal to at least 15% of the iron (or iron and manganese) content.
- Bed depth: 30-36 in.
- Freeboard: 50% of bed depth (min.)
- Backwash rate:
  Regular Birm: 10-12 gpm/sq. ft.
  Fine Birm: 8-10 gpm/sq. ft.
- Backwash Bed Expansion: 20-40% of bed depth
- Service flowrate: 3.5-5 gpm/sq. ft. intermittent flow rates and/or favorable local conditions may allow higher flow rates
- Free chlorine concentration less than 0.5 ppm
- Hydrogen Sulfide should be removed prior to the Birm filter

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 $Fe^{++}$ to $Fe^{+++}$ and produces ferric hydroxide which precipitates and may be 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.

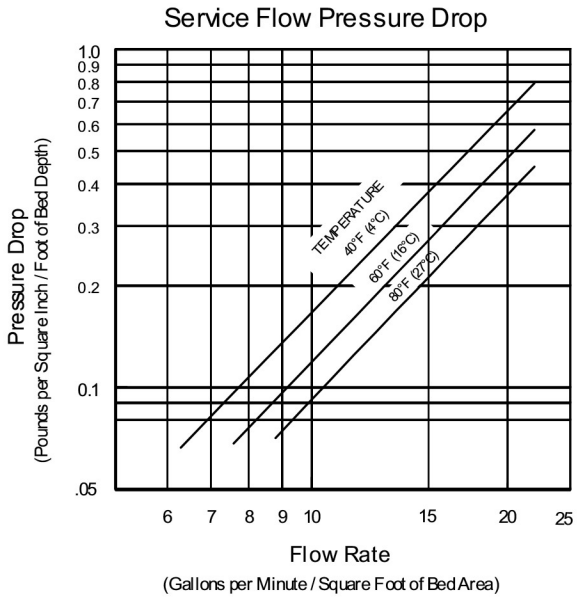
Other advantages of Birm include; long material life with relatively low attrition loss, a wide temperature performance range and extremely high removal efficiency. Negligible labor costs are involved because Birm does not require chemicals for regeneration, only periodic backwashing is required.

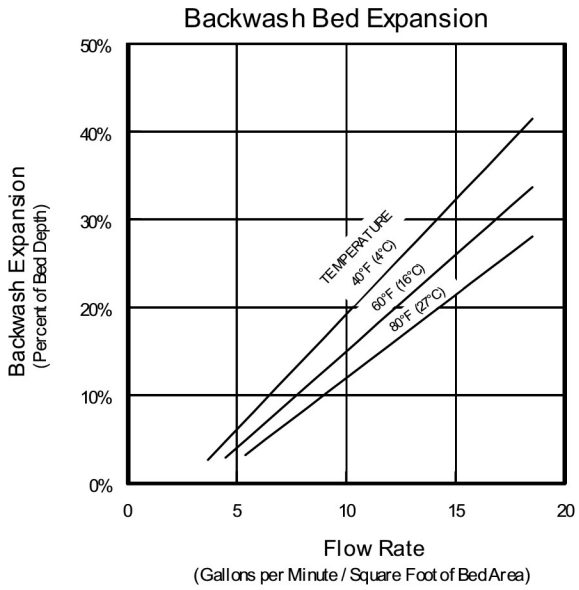
When using Birm for iron removal, it is necessary that the water: contain no oil or hydrogen sulfide, organic matter not to exceed 4-5 ppm, the D.O. content equal at least 15% of the iron content with a pH of 6.8 or more. If the influent water has a pH of less that 6.8, neutralizing additives such as Clack 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. Fine is recommended on domestic installations where backwash rates are limited.

Clack 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 water also contains iron, the pH should be below 8.5. High pH conditions may cause the formulation of colloidal iron which is very difficult to filter out. All other conditions remain the same for either manganese or iron removal.






Tested and listed under ANSI/NSF Standard 61 for Health Effects.

Drinking Water Treatment System Components Classified by Underwriters Laboratories Inc.® in Accordance with Standard ANSI/NSF 61-(1991)-57Y3

## ORDER INFORMATION

| Part No. | Description | Cu. Ft./Bag | Wt./Cu. Ft.* | Bags/Pallet | Weight/Pallet | Pallet Dimensions |
|---|---|---|---|---|---|---|
| A8006 | Birm® Regular | 1 | 44 lbs. | 40 | 1810 lbs. | 40″ x 48″ x 48″ |
| A8007 | Birm® Fine | 1 | 44 lbs. | 40 | 1810 lbs. | 40″ x 48″ x 48″ |

*Weight per cubic foot is approximate.

Clack Corporation
4462 Duraform Lane PO Box 500
Windsor, Wisconsin 53598-0500 USA
**Phone (608) 846-3010**
Fax (608) 846-2586
Sales Fax (800) 755-3010
www.clackcorp.com

Form No. 2350
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The filter medias listed in this brochure do not remove or kill bacteria. Do not use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

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