

**12VAC5-590-883. Bag and cartridge filtration.**

A. Bag or cartridge filtration shall be limited to treating a surface water source, a GUDI source, or both with low turbidity.

B. A pilot plant study shall be conducted on the water to be treated before the installation of a bag or cartridge filter system.

C. Bag and cartridge filtration systems shall be granted removal credit for *Giardia lamblia* and *Cryptosporidium* in accordance with 12VAC5-590-401 E 6 a, provided that they meet the requirements of this section.

D. General design requirements.

1. All system components such as housing, bags, cartridges, gaskets, O-rings, and other components in contact with water shall be in accordance with 12VAC5-590-810. All cartridge filter housing shall be certified by the ASME certification program, or equivalent, for pressure vessels and stamped with the appropriate certification mark.
2. Indicating and recording turbidimeters meeting requirements of 12VAC5-590-770 B shall be provided for the source water and the CFE. The department may require indicating and recording effluent turbidimeters for each filter unit.
3. The maximum flux rate across the final filter shall not exceed 0.2 gpm/ft<sup>2</sup>.
4. Maximum differential pressure across the cartridge filter shall not exceed 20 psi.
5. Pressure gauges and sampling taps shall be provided before and after each bag or cartridge filter.
6. Provisions to accomplish filter-to-waste shall be provided.
7. Automatic start-up of bag or cartridge filters is prohibited.
8. An alarm system shall be provided that will report alarm conditions and shut down the treatment plant and entry point flow.
  - a. All alarms shall be reported to a location manned 24 hours per day or to a person on call and shall report alarm conditions audio-visually at the water treatment plant.
  - b. The following shall be monitored by the alarm system:
    - (1) Source water turbidity;
    - (2) Feed water flow;
    - (3) If applicable, filtrate turbidity from each unit exceeding operational control criteria;
    - (4) Combined filter effluent turbidity exceeding operational control criteria;
    - (5) Differential pressure at each unit; and
    - (6) Entry point disinfectant residual.
9. At least two filtering units shall be provided at plants having a rated capacity of greater than 100 gpm.

E. Operation and maintenance documents shall be provided for all bag or cartridge filter units and shall include:

1. Detailed description of the bag or cartridge treatment units and the control of each unit for optimal performance.

2. Procedural criteria, such as pressure differential, turbidity, and other parameters, and expected frequency of bag or cartridge filter replacement.
3. A preventative maintenance schedule.
4. Manual adjustment and override procedures for any automatic control features.
5. Troubleshooting guide for typical problems.

F. The owner shall require the equipment manufacturer to provide onsite start-up and follow-up training.