

Sorbster® Media Loading and Startup Guidelines

Users of Sorbster® media should read and understand the Sorbster® media SDS prior to handling. The best performance of Sorbster® media can be expected if proper procedures are followed for the storing and loading of the media.

Sorbster® media is a dry product shipped in water resistant packaging and must remain dry until loaded into a treatment vessel. Repackaging the media into alternate containers is not recommended, as this may generate heat through exothermic surface reactions during transfer. As an activated alumina product, Sorbster® media should be protected from the atmosphere to minimize the adsorption of atmospheric moisture. Adsorption of water will release heat and could affect the product integrity under extreme conditions.

Loading

- It is recommended that a layer of gravel be loaded into the bottom of each vessel underneath the Sorbster® media. This is done to provide a more uniform flow distribution and to help avoid any potential clogging of the distributor orifices by Sorbster® pellets or fines. The gravel should be a uniform size with a diameter of at least twice that of the largest distributor orifice. For most distributors, a 3/8" by 3/16" screened pea gravel will work well. Gravel should be added to a height of 1/2" to 1" greater than the height of the distributors.
- Sorbster® media should be loaded dry as received into the treatment vessel(s).
- The media will generate dust during dry-loading. As directed by your company's safety policy, proper PPE should be employed, including at minimum a dust mask (respirator optional), safety glasses, and gloves.
- The media has a sulfur odor. It is therefore recommended to load in a well-ventilated area.
- A loading method should be selected that is least likely to generate fines while minimizing the exposure to atmospheric, humid air and providing a sufficient loading rate. Pneumatic and other high energy forms of conveying the media into vessels are not recommended due to the increased amount of dust/fines that will be generated and enhanced heat generation.
 - Heat is generated by exothermic surface reactions with air during media transfer.
 - This heating will cease and dissipate once the media is settled into the vessel. Immediate rinsing/backwashing of media AFTER loading is complete is the preferred method for dissipating heat generated during loading.
 - A steady addition rate should be maintained. Allowing a large quantity of media to suddenly drop during loading should be avoided.

Backwashing/Rinsing

In order to remove fines and condition the surface of the media, Sorbster® recommends that any vessel being loaded with a new supply of Sorbster® media is immediately backwashed and rinsed. Backwashing and rinsing can be done with any potable or service water available on-site. If multiple vessels are being loaded with new Sorbster® media, each vessel should be backwashed and rinsed separately before the vessels are plumbed. This keeps fines from flowing into and plugging the next vessel in series.

Odorous and/or acidic vapors may occur as Sorbster® media contacts water for the first time. This phenomenon is short lived and dissipates after the media is entirely wetted during the backwashing process. The vapors that are emitted during backwashing should not be allowed to accumulate within a confined space.

1. After media loading is complete and the vessel is readied for water flow, the system configuration should be set for backwash (i.e., reverse direction of service flow), if possible, making sure that the particle filter on the effluent is not in place. Water should be introduced into the discharge end of the vessel to flood the media.

- For vessels and systems not configured to allow for backwashing, a thorough rinse in the direction of service flow should be done at 2-3 times the service flow rate.
- Initially, the water emerging from the vessel during backwashing will be dark in color and may be at a higher temperature than the influent. The temperature increase will be a function of water flow rate, with higher temperature increases for low flow rates and reduced temperature increases for higher flow rates.
- A backwash flow rate of at least twice the service flow is recommended, and this rate of water should be flowed continuously until the water exiting the vessel is cool, clear, and free of media fines.
- Both the temperature and dark color of the water during backwashing should return to near influent conditions within 2-5 empty bed volumes of water flow.
- If an unacceptable temperature rise is observed during backwashing, the flow rate can be further increased to three times the service flow rate (if possible). Failure to keep water flowing at a sufficient rate during the initial wetting of Sorbster® media can result in high temperatures in the vessel and enhanced generation of odorous and/or acidic vapors. If this occurs, sufficient water flow should be reestablished immediately.

2. After backwashing is complete, undertake a media fast rinse by resetting the system configuration in the direction of service flow. Water should be passed through the vessel in the normal operational direction at a rate of twice the intended service flow for 1 to 2 bed volumes or until the effluent water is again clear.

Startup (Putting the Sorbster® Media Vessels/System into Service)

- To start-up a system after Sorbster® media has been backwashed and rinsed, ensure that system is configured for appropriate flow direction and that (if applicable) all of the vessels are connected in series. At this time, the particle filter (if present; see note at the end of this document) should be put into place at the system outlet. Reset water flow rate from backwash/rinsing conditions to desired flow rate and begin wastewater treatment by Sorbster® media.
- Wastewater can be treated by Sorbster® media in batch or continuous mode. If used in batch mode, Sorbster® media should be kept wet and saturated with water when not in service, ensuring that the inlet and outlet valves of the vessel are closed.
- Because Sorbster® media has an acidic surface, a drop in the pH of the vessel outlet water may occur during initial treatment. This pH reduction diminishes quickly, with the pH of the effluent returning to the original pH of the influent water after several bed volumes of flow.
- During treatment, the surface of the Sorbster® media may oxidize to a red color. This color change is normal and has no impact on media performance.

Additional Notes:

Sorbster® recommends that the pressure drop across vessels containing Sorbster® media be monitored for signs of plugging by suspended solids. If plugging is observed, temporarily increasing the flow rate will typically flush out and remove trapped sediment.

A small pore size filter (i.e., 1 micron) is recommended on the effluent of any system employing Sorbster® media, in order to remove any fines that exit the system during normal operation after startup. These fines will contain bonded contaminants, which if not filtered will appear as total contaminant in the effluent water, even though the contaminant has actually been removed from the water. The used filters and the fines can be disposed of along with spent Sorbster® media at the next change-out of media, and since these spent materials will pass a TCLP test, both the media and filter can be disposed in non-hazardous landfills.

Water used for backwashing and fast rinse will contain some fines and have a reduced pH. In cases where the fines and pH reduction cannot be tolerated in the discharged effluent, many users of Sorbster® media find it convenient to recycle the water generated during backwashing and rinse to a point upstream in the water treatment process so that these effects are diluted.