



## ADSORBSIA™ GTO™ Arsenic Removal Media Loading and Start Up Procedures

ADSORBSIA™ GTO™ media is a single use media that is typically operated in down-flow configuration. Systems using ADSORBSIA GTO media should be loaded according to these procedures.

### Media Loading

#### **Before loading the media, make a detailed inspection of the empty vessel:**

- Remove all debris from previous materials or foreign material.
- Clean up distributors and collectors, and inspect all laterals and splash-plates for damage or plugging.
- Inspect the nozzles, check that they are in good shape, clean and tight, and gaskets are intact and in place. Whenever possible, replace with new ones if older than 5 years.
- Whenever possible, check the pressure loss of the empty vessel at nominal flow rate and observe the flow patterns for uniformity.

#### **Loading of the Underfill:**

- Dow recommends using an underfill covering the bottom lateral to a depth of at least 1 - 2 inches (2.5 - 5 cm) above the bottom laterals. Any particle size between 50 mesh (300 micron) and 8 mesh (2,000 micron) is acceptable, but a fine mesh material is preferred. A graded bed of two or more sizes of underfill can also be used if needed to prevent entrainment of underfill and/or ADSORBSIA media into bottom distributor. A high density underfill (>75 lbs/ft<sup>3</sup> or 1.2 kg/L), such as garnet, sand or stone should be used. Additional underfill can also be used to raise the height of the bed, so that there is only enough freeboard sufficient for 50% bed expansion above the media.
- Fill the vessel with water to at least six inches (15 cm) above the height of the subfill before loading the underfill to avoid damaging the lower distributor. Other standard methods for loading underfill may be acceptable.
- After loading the underfill, drain the vessel.
- **WARNING: ADSORBSIA GTO MEDIA MUST BE KEPT DRY. DO NOT LOAD ADSORBSIA GTO MEDIA UNTIL YOU ARE READY TO BACKWASH THE UNIT AND PLACE IT INTO SERVICE.**

#### **Load ADSORBSIA GTO Media**

- Make sure vessel is drained.
- Load the dry media into the vessel by dumping from the top of the vessel or physically transferring the media.
- Use appropriate personal protective equipment while loading the media. A particulate filter (respirator or dust mask), safety glasses, and body covering clothing are specified for use while transferring the dry media. (Refer to MSDS for detailed safety information.)
- Keep media dry until initial backwash is performed.

## Backwashing

### Initial Backwash and Start-up:

- Fill tank from bottom and begin backwashing at slow flow rate (1 - 2 gpm/ft<sup>2</sup> or 2 - 5 m/h) for 15 minutes.
- Increase backwash flow rate until bed is expanded by 20 - 40%. This should require a rate of 3 - 5 gpm/ft<sup>2</sup> (7 - 12 m/h). Be careful to avoid excessive backwash flow rates resulting in media loss.
- Check the drain for evidence of full size media particles (10 - 60 mesh). The presence of fine particles (<60 mesh) in the drain is normal.
- Continue this backwash for 15 - 25 bed volumes or until the water runs visibly clearer (<100 NTU). Some cloudiness may still be present.
- Begin service flow to drain for 5 - 10 bed volumes at the maximum designed service flow rate. Water should be clear at the end of this rinse. If not, repeat the backwash.
- Reduce to normal service flow rate and bring vessel into service.
- Note the pressure through the vessel under normal flow rates in order to benchmark your system. At normal service flows (6 - 14 gpm/ft<sup>2</sup> or 15 - 35 m/h) the pressure drop should be about 1 - 4 psi/ft (0.2 - 1 bar/m) of media depth. If the pressure drop is higher than this, backwashing should be repeated.

### Periodic Backwashing:

- Periodic backwashing is not necessarily required. However, the bed may filter particulate material from the feed water. A backwash is suggested when the pressure drop increases more than 10 psi (.69 bar) and/or flow restrictions necessitate.
- Backwash at a rate to expand the bed by 20 - 40%, or 3 - 5 gpm/ft<sup>2</sup> (7 - 12 m/h)
- Backwash for 5 to 10 bed volumes. Backwash water may be turbid.
- Run service flow to drain for 3 - 5 bed volumes, or until water runs clear.
- Check that service pressure has returned to normal operating level. If pressure drop across the bed is high, repeat backwash procedure.
- Return vessel to normal service.

**ADSORBSIA™ Titanium-based Media**  
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