

Unloading of Spent Adsorbent

PuriStar® R3-12 and Selexsorb® AS

The handling of spent PuriStar R3-12 and Selexsorb AS requires special care. The following indications describe typical methods for unloading these materials.

PuriStar R3-12 and Selexsorb AS are typically used for the removal of arsine (AsH₃), phosphine (PH₃), carbonyl sulfide (COS) and/or hydrogen sulfide (H₂S) from propylene containing streams.

When the adsorbent is at the end of its life and needs to be removed from the vessel in which it is used, care should be taken when handling this material.

Indeed, the adsorbent might have become partially reduced while in service and/or might have accumulated heavier hydrocarbons, e.g. in the form of green oil or coke. This could easily make it reactive to air.

To stay as safe as possible, after the adsorbent has been stripped hydrocarbon free as far as possible, the following procedures can be recommended:

- (a) Inert Unloading
- (b) Wet Unloading

The unloading of the adsorbent can be done by vacuuming or dumping via unloading nozzle.

Inert Unloading

- The adsorbent is removed under an inert blanket into drums or an open container (like an open dumpster).
- In the drums, the adsorbent is kept in inert conditions until it can be conditioned in an appropriate facility.

- In the dumpster, the adsorbent can then oxidize safely.
- It needs to be assured at all times that no air can come into contact with the adsorbent while it is removed into the drums or the dumpster.
- When putting the material into drums, it is good practice to make the drums inert by either flushing them with an inert gas or putting small lumps of dry ice (CO₂) into the drums and on top of the unloaded adsorbent.
- When putting the material into an open container, it is good practice to spray the material with water to soak it as far as possible.

Wet Unloading

- The adsorbent is flooded with water for a short time and allowed to soak up water (less than 30 minutes).
- After the soaking, the vessel is drained and the water sent to proper treating.
- The adsorbent is removed wet into drums or into an open container (dumpster) where it can oxidize safely.
- When wetting the adsorbent, it is required to unload the wet adsorbent directly after the wetting process as else the material will cake and can then only be unloaded with jack hammers.

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