



Handling Procedures for cg_4 and cg_5 Desulfurizer

1. **cg4** and **cg5** are non-hazardous, non-pyrophoric materials. Normal cautions and customary SOPs for handling material that can produce dust should be exercised.
2. **cg4 / 5** is provided in a one ton supersack with upper handles for equipment connections and an integrated pour spout on the bottom.
3. **cg4 / 5** can be poured, using the spout, into the upper manway of the vessel. If the vessel has a large diameter, the spout should be maneuvered such that the **cg4 / 5** material is spread evenly throughout the vessel (with a flat upper surface).
4. Some operators prefer to use a foam mat as a base for the material. When wide diameter vessels are used, a separate foam mat on the inlet end of the vessel also encourages wider gas distribution, which reduces the risk of channeling.

Operating Conditions

cg4 / 5 operates most effectively in a two-vessel lead-lag configuration, with a fully saturated stream, and at temperatures above ambient (but never in excess of 150°F). While these “ideal” conditions are not necessary, in some cases economics will justify adding vessel connections, heat, steam, or all three.

Changeout Procedures

Spent **cg4 / 5** is an iron sulfide, which is pyrophoric when exposed to air or oxygen in a dry state. It is also possible that hydrocarbons from the natural gas stream may be present or are deposited on the spent iron oxide. **It is therefore necessary to saturate the spent material with liquid water as it comes into contact with air or oxygen.** While each operator will develop their own most effective approach to changeout of spent **cg4 / 5** material, a number of our users follow the procedures below;

1. Before opening the manways, isolate the gas supply and bleed all gas from the tower.
2. After bleeding off the gas, open the top manway and use a steam hose to saturate the spent material in its entirety, until the contents of the vessel become a slurry.
3. Open the bottom manway and, with a vacuum hose, remove the spent **cg4 / 5** material.
4. Flush and remove all water out of the bottom of the vessel.
5. If there are contaminants from the gas stream present in the spent material that could inhibit the intended disposal, wash the spent material in a rig tank, removing those contaminants.
6. As there are no heavy metals in **cg4 / 5**, some jurisdictions allow land farming of the spent **cg4 / 5**, in which case the material should be kept wet, in a slurry format, until it is spread.
7. Spent **cg4 / 5** is black, which means that it is in a sulfide state and is pyrophoric. When the **cg4 / 5** is a rust color (which can be before it is used or after it has oxidized), it is not in a sulfide state and is not pyrophoric.
8. If the spent **cg4 / 5** is to be disposed in a landfill site, it should be allowed to oxidize gradually. If the material can be spread thinly (three inches deep and away from flammable materials), it will dry without self-heating. If it is left in large containers, it must be turned occasionally as the material dries. The amount of turning will be a function of ambient conditions and the wetness of the material. Keeping the material wet will delay oxidation and avoid any heating. When the material oxidizes and becomes a rust color, it is no longer pyrophoric, and may be hauled or stored in bulk containers.

ACP Technologies Inc.

www.acp-cg.com