

SULFATREAT[®] H₂S Scavenger

What is SULFATREAT[®]?

SULFATREAT[®] is a batch process for removal of hydrogen sulfide gas (H₂S) from natural gas. SulfaTreat is different from other processes in that it is a dry material. No free liquids whatsoever are used with the SULFATREAT[®] process. This unique dry characteristic makes processing gas much easier and more predictable than with other products on the market, including iron sponge and the many liquid processes.

How is SULFATREAT[®] Used?

The process must be situated immediately after a gas/liquid separator and before the dehydration process. The preferable gas temperature is between 50°F and 120°F, and is water saturated. The process is not pressure sensitive and is not affected by the presence of any other constituent in the gas stream. The process is completely selective to H₂S, and no undesirable off gases are produced by the SULFATREAT[®] process.

A vertical pressure vessel, hollow on the inside except for a support tray near the bottom head seam, with loading and cleanout man-ways is all that is necessary for the SULFATREAT[®] process. In situations where a customer's vessel is not suitable, inexpensive modifications can easily be made.

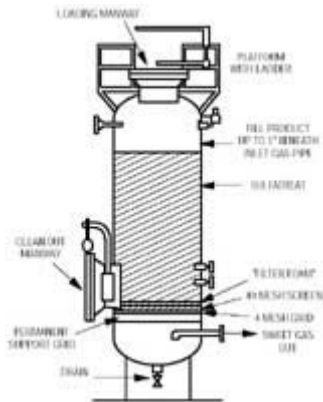
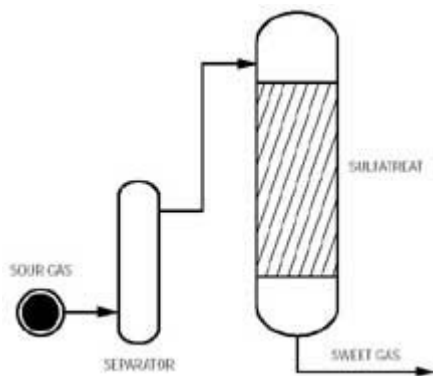
Why is SULFATREAT[®] Environmentally Safe?

SULFATREAT[®] begins as a safe and stable compound, and when it reacts with H₂S, it forms another safe and stable compound called "pyrite" also known as "fools gold". Reacted SULFATREAT[®] has passed every stringent environmental test and EPA regulation including: California's Title 22 Metals Analysis; Calwet Extraction Test; Fish and Shrimp Bioassay Tests for Toxicity; and the EPA's newest procedure – the TCLP (Toxicity Characteristic Leaching Procedure) which became effective September 2, 1990. Reacted SULFATREAT[®] was tested by a major California university, and the material was found to be beneficial to plant growth without changes in the pH or detrimental effects to the soil. No other products of its kind can match SULFATREAT[®]'s environmental record.

How Does SULFATREAT[®] Differ from Iron Sponge?

SULFATREAT[®] is black, granular, about the size of pea gravel and is uniform in shape and size. Iron sponge looks like red iron oxide impregnated on wood chips, and is uneven in shape and size. Chemically, SULFATREAT[®] has a different molecular structure than iron sponge. This unique molecular structure allows SULFATREAT[®] to remove approximately 2 to 3 times more sulfur than iron sponge, and thus SULFATREAT[®] lasts 2 to 3 times longer between change-outs. SULFATREAT[®]'s molecular structure also makes it non-pyrophoric, whereas reacted iron sponge is extremely pyrophoric when exposed to air. The uniform shape and size of the SULFATREAT[®] material will not allow gas to channel (i.e. rat hole) through the bed, as commonly occurs with iron sponge.

Other differences with iron sponge are that SULFATREAT[®] can be changed out in a fraction of the time that it takes wood chips to be changed out, and with less effort. SULFATREAT[®]'s gradual breakthrough of H₂S near the end of a batch allows for better planning and budgeting of change-outs, without shutting down because of off-spec gas. Iron sponge's break-throughs are sudden and dramatic.



SULFATREAT®

Non-pyrophoric

Long bed life

Safe to handle, and environmentally safe after reaction

Iron Sponge

Non-pyrophoric

Shorter bed life

Dangerous to personnel and listed as a generic hazardous chemical on SARA Title III

Why are Injection Chemicals Undesirable?

Because flow conditions vary greatly, operators must inject enough chemical to cover peak production periods and spikes in H₂S levels. This requires over-injection and wastes money. The effectiveness of the injection method depends on good dispersion of the chemicals into the gas and sufficient contact time, both of which are difficult to control. Most injection chemicals are hazardous and toxic, and are regulated under SARA Title III. Reports from the field indicate that chemical injection tends to result in solidification causing blockages in pipes and equipment. SULFATREAT® has none of these problems.

SULFATREAT®

No down-stream carry over

Non-hazardous/non-toxic

Constant efficiency over designed range of operating conditions

Lower cost

Injection Chemicals

Chemicals can solidify in pipeline and equipment

Hazardous/toxic

Inefficient if operating conditions fluctuate or if chemical dispersion is inadequate

Higher cost due to inefficiencies and over injection requirement

Dry (SULFATREAT®)

Cannot foam

Not affected by fluctuations in flowrate and pressure

Liquid

Foaming is common

Product carry over and reduced efficiency are caused by changes

Why is a Dry Process Better than a Liquid?

A dry process, such as SULFATREAT®, has few operating problems than a liquid process and thus, is more predictable and reliable. Foaming is a major problem with liquids. Foaming occurs when hydrocarbons condense in the liquid or as a result of variations in flowrate and pressure. Foaming causes carry over of the liquid which can affect downstream processes. To prevent foaming, de-foaming agents are used which can be hazardous and in some cases cancer causing. Product concentrations and liquid levels need to be checked continuously. Proper gas dispersion is a problem with liquid processes and is also dependent on flow rates and pressures which are rarely constant.

SULFATREAT®, by comparison, remains fixed and steady in the tower regardless of fluctuation in operating conditions. SulfaTreat's uniform shape and porosity naturally disperses the gas evenly across the bed, and SULFATREAT® can tolerate wide variations in flow rates and pressures.