



SULFATREAT DFS

SULFATREAT* DFS scavenger is a chemically engineered additive for drilling fluid that quickly and effectively removes deadly hydrogen sulfide (H₂S) gas.

Under proper conditions, it can absorb up to 2,000 mg/L of dissolved sulfide per pound of product. SULFATREAT DFS H₂S scavenger works exceedingly well at low and neutral pH, and less so at pH 9 and above. When used in water-base fluids with pH greater than neutral or in non-aqueous fluids (NAF), it should be used in conjunction with zinc- or organic-base scavengers to assure a complete treatment range.

Typical Physical Properties

Physical appearance	Black granular
Specific gravity	4.4 - 4.5
Solubility in water	Insoluble
Bulk density	1,800-2,100 kg/m ³ (110-130 lb/ft ³)
Dry screen analysis, passing 300 mesh.....	>90%

Applications

SULFATREAT DFS scavenger is an iron-oxide scavenger that can be used in combination with zinc- or organic-based scavengers to provide high H₂S scavenging capacity with minimal impact on fluid properties. It can be used in both water and NAF systems. One pound per barrel removes approximately 2,000 mg/L of dissolved sulfides under ideal conditions.

An initial treatment of 20 lb/bbl is recommended for most mud systems to be used in sour gas service. Lower concentrations may be used where encountering H₂S is less likely. Because of its high density, SULFATREAT DFS scavenger will add to the density of the mud. Use MUDCALC or PCMOD to assure proper formulation. Aside from increasing density, the product has minimal impact on rheology and fluid loss control in most water and NAF systems. Pilot test before first use.

When H₂S is encountered, treat the system with enough SULFATREAT DFS scavenger so that the flow line returns contain at least half the level of unreacted product measured in the suction pit. If soluble sulfides are still present, then apply a zinc or organic scavenger. Contact Technical Services for a field method to monitor SULFATREAT DFS product concentration.

SULFATREAT DFS scavenger can be readily mixed into drilling fluid. In emergency situations, it can be added to the mud pits and then stirred into suspension hydraulically or mechanically. It is not necessary to mix through the mud hopper.

SULFATREAT DFS scavenger is less than one-half as abrasive as barite by API test method. The product has a porous, honeycomb structure that collapses and deforms rather than abrades.

Advantages

- SULFATREAT DFS scavenger is iron-base, and is not a heavy metal like zinc
- The product has little effect on most ecological toxicity tests, unlike zinc and organic scavengers
- SULFATREAT DFS scavenger has little effect on NAF (SBM and OBM) rheology and fluid loss, and can easily be added at 5 lb/bbl as insurance against large kicks
- Unlike zinc, the product has little effect on clay- or xanthan-viscosified WBM

Limitations

- SULFATREAT DFS scavenger reacts with H_2S when the pH drops to 7 or below, as happens when large acid gas influxes enter the drilling fluid system. It is much less reactive at higher pH. This can be problematic at pH 11, the value recommended for mud systems used in sour gas service. Because of this pH sensitivity, the product should be used in conjunction with zinc- or organic-base scavengers. Proper zinc scavengers include zinc carbonate or zinc oxide. Organic, triazinebase SAFE-SCAV HS scavenger also works well.
- SULFATREAT DFS scavenger is denser than barite, and should not be used in unviscosified and non-suspending systems. Normally a mud that will support barite will support the product. Settling may be a problem in low-viscosity systems.
- SULFATREAT DFS scavenger is easily removed by desilters and desanders because of its density.
- SULFATREAT DFS is magnetic and may interfere with magnetic instruments. The product will also cling to permanent and electromagnets.

Toxicity and Handling

Bioassay information is available upon request.

Handle as an industrial chemical, wearing protective equipment and observing the precautions described in the Material Safety Data Sheet (MSDS).

Packaging and Storage

SULFATREAT DFS scavenger is packaged in 23 kg (50 lb) paper sacks.

SULFATREAT DFS scavenger can be kept for an indefinite period of time under normal storage conditions without loss of effectiveness. It can be stored outside if protected from direct weather elements. No special handling or environmental inventory is required because the product is nonhazardous and non-toxic.



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