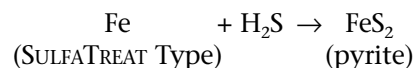


## The Use of SULFATREAT HP for the Removal of Hydrogen Sulfide and Light Mercaptans from Natural Gas and Vapor Streams

SULFATREAT HP utilizes the same basic principles as regular SULFATREAT but with improved reaction characteristics that allow the effective removal of hydrogen sulfide, methyl and ethyl mercaptans in a granular, fixed-bed process. The process utilizes proprietary iron compounds mixed with supplemental chemicals. The total load capacity of SULFATREAT HP is the same as for regular SULFATREAT. The following is based on our current experience with this process in the laboratory and field applications and should be used as a guide for the application of the product at this time.

### Removal of H<sub>2</sub>S in water-saturated gas streams

- A higher reaction constant can be used where the gas stream is fully saturated with water.
- Allows increased flow rates or improved removal rates with less contact time as compared to regular SULFATREAT where only H<sub>2</sub>S removal is required.



### Removal of H<sub>2</sub>S in water-under-saturated gas streams

- Improved reaction characteristics of SULFATREAT HP allow this product to be used in less than fully water-saturated gas streams.

- Streams that are at borderline saturation can be treated without water injection at the vessel inlet.

### Removal of methyl and ethyl mercaptans in fully water-saturated gas streams

- SULFATREAT HP will manageably react with methyl and ethyl mercaptans.
- Some reaction is observed with heavier mercaptans, but this cannot be reliably managed at this time.
- Resulting reaction of a combination of destruction and conversion on roughly a 50:50 basis.
- Conversion creates high molecular weight mono and di-sulfides that have a significantly reduced solubility and odor in gas and have shown a tendency to be further separated downstream with other liquids (water/liquid hydrocarbon), in a few cases.
- Total sulfur removal with higher levels of mercaptans, presence of heavier mercaptans, and/or of low levels of total sulfur in any form is the specification for treatment. Some other form of treatment, such as activated carbon, may be needed to polish or remove the remaining sulfur downstream of the SULFATREAT HP.
- Lowest maximum C1RSH and C2RSH outlet concentration that should be specified at this time should be 0.2 ppmv.



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### Application range (not limits)

Pressure	-4 to 4,000 psig	-0.3 to 276 barg
Temperature	34° to 210°F	1° to 99°C
Flow rate	0.0005 to 80 MMscf/day	0.6 to 94,000 Nm <sup>3</sup> /hr
H <sub>2</sub> S concentration	5 to 50,000 ppmv	7.7 to 77,000 mg/m <sup>3</sup>
H <sub>2</sub> S mass flow	50 to 1,400 lb/day	23 to 640 kg/day

### Major applications

- Produced and associated gas
- Petrochemical
- Geothermal
- Chemical
- Processing
- Waste water
- Biogas

### Availability

SULFATREAT HP is available in 50-lb sacks (40 per pallet) and in 2,000-lb bulk bags. Full truckload orders (40,000 lb) and 20-ft overseas containers are shipped from the main warehouse near St. Louis, Missouri.

Less-than-truckload orders may be economically shipped from more than a dozen conveniently located warehouses throughout the United States and Canada.



### SULFATREAT

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