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Lava Rock vs. Synthetic Foam For H₂S Removal

1. Both have large surface areas to support the life of several species of acidithiobacillus and other sulfur oxidizing microorganisms. However, lava rock at low pH releases iron ions to help support a large colony of ferroxidans, thereby enhancing the removal rate of H₂S considerably. The low pH contributes to an active lava rock surface chemistry where Fe³⁺ and/or Fe²⁺ are released. This chemistry, or a ferroxidan colony, is not possible with synthetic material.¹
2. Lava rock is the most efficient operating in the low pH range. The low pH operation allows for recirculation of sump liquid. For long life the foam media must be operated at a neutral pH. Thus, a once-through process must be utilized.
3. Lava rock has an almost indefinite media life in *neutral* pH, whereas synthetic media is only guaranteed for 10 years under the same circumstance. Lava rock is guaranteed for 10 years, or longer, in a *low* pH environment, whereas it has been documented that the synthetic media begins to break-up in a low pH at approximately 3 years.
4. The recovery time when there is a mechanical failure affecting the die-off of microorganisms is much faster in the lava rock media vs. the synthetic foam. This enables the system to return to performance levels much quicker.
5. Lava rock media surface openings are not through-andthrough; therefore, eliminating any increase in static pressure or cleaning requirements over time due to plugging or compaction.
6. Lava rock being a heavier material will require a containment structure built to accommodate its additional weight.

¹ Li, Hebi; Lueking; Mihelcic, James R.; Peterson, Karl (March/April 2005) Biogeochemical Analysis of Hydrogen Sulfide Removal by a Lava-Rock Packed Biofilter. *Water Environment Research*, **Volume 77**, **Number 2**, pp 179.