Responding to the Challenges of Renewable

SulfrZol® 54 Catalyst Sulfiding Agent

Lubrizol

Does sulfiding bring to mind a foul-smelling, potentially dangerous, difficult and environmentally unfriendly process?

For petroleum refineries converting production to sustainable fuels — including renewable diesel — SulfrZol® 54 from Lubrizol is your opportunity to specify a better sulfiding alternative to all the downsides of using dimethyl disulfide (DMDS).

Four ways SulfrZol® 54 responds to the challenge of renewable diesel:

Responsible, for renewable

A superior environmental profile compared to alternate chemistries.

Reassuring, for renewable

A reduced fire hazard and storage expense.

Refreshing, for renewable

Lower odor for a more friendly environment.

Reliable, for renewable

Substantial supply chain capabilities backed by Berkshire Hathaway.

The premium sulfiding choice where health and safety are non-negotiable.

In contrast to dimethyl disulfide (DMDS), SufrZol® 54 exhibits a superior environmental profile, improving the working environment for employees. SulfrZol 54 is not classified as toxic by the definitions provided under OSHA and DOT regulations. It poses less of an inhalation risk than DMDS because its lower vapor pressure reduces the theoretical maximum ambient vapor concentration. This greatly reduces both the probability of exposure and the level of exposure in your refineries.

Compared with dimethyl disulfide (DMDS), SulfrZol 54 is the safer, cleaner, more efficient solution for continuous sulfiding.

Physical Characteristics	DMDS*	SulfrZol® 54
Sulfur content, % by wt.	68	54
Sulfur content, lb/gallon (kg/liter)	6.0 (0.72)	4.9 (0.59)
Specific gravity @ 60°F (15.6°C)	1.063 (20°C)	1.09
Density, lb/gallon @ 60°F (15.6°C)	8.9 (20°C)	9.1
Thermal decomposition temperature (with catalyst)	392°F (200°C)	320°F (160°C)
Flash point (closed cup, ASTM D93)	61°F (16°C)	212°F (100°C)
Vapor pressure, psia @ 100°F (38°C)	0.5	0.15
Viscosity, cps @ 68°F (20°C)	0.62	14
Pour/freeze point	-121°F (-85°C)	-54°F (-48°C)
Odor description, provided by vendors	Foul; decaying cabbage	Low odor similar to gas/ oil
Decomposition by-products	Hydrogen sulfide, methane	Hydrogen sulfide, isobutane

*DMDS = dimethyl disulfide

A flash point of differentiation.
With a flash point of 212°F (100°C), SulfrZol 54 greatly reduces the risk of potential flash fires and eliminates the added expense and concern of storing flammable DMDS.

Easier handling that eases worries and delivery.
Classified by the U.S. Department of Transportation as nonhazardous for transportation, the comparative risk level of SulfrZol 54 is so low, refinery operators often inject it with portable, low-pressure pumps. Drivers can leave their trucks, simplifying the delivery process.

Low odor that makes you a caring employer and neighbor.
Part of the premium offering to SulfrZol 54 is its low odor compared to DMDS, which has an extremely unpleasant odor similar to decaying cabbage. In contrast, the use of SulfrZol 54 in continuous sulfiding results in a relatively mild diesel-like smell that can be virtually undetectable in an open-air environment.

Hydrogen utilization up, SOx emissions down.
Choosing SulfrZol 54 over DMDS can help you achieve more throughput out of your precious supply of hydrogen while also eliminating unnecessary SOx emissions. The hydrocarbon by-product of SulfrZol 54 is isobutane which normally exits the high-pressure separator with the liquid hydrocarbons, not diluting the hydrogen in the recycle gas. This molecular activity means less flaring and reduced SOx emissions as compared to DMDS, which can help you to better utilize your hydrogen supply.

The supply you demand.
Lubrizol and its parent company Berkshire Hathaway are committed to supporting the global sulfur platform essential to petroleum refinement. As a polysulfide technology leader, Lubrizol's global footprint is unmatched when it comes to delivering to your refineries, anywhere in the world.

A history of sulfiding expertise.
Lubrizol has been supplying the oil and gas industry with SulfrZol 54 catalyst sulfiding agent since 1997. A leading manufacturer and supplier of advanced chemical technology for more than 90 years, Lubrizol supports many of the world's largest petroleum manufacturers.

Look to the world's largest supplier of polysulfides, Lubrizol, for the deep technical expertise and support your engineers need when designing solutions for full chemical injection of your catalyst sulfiding agent.