



EXACT-S[®] Grade

Dimethyl Sulfide for Ethylene Plants

Bulletin # 204

Oct 2007

Coke formation within the tubular coils of an the ethylene furnace continues to be a challenge faced by engineers. Coke deposition increases fuel consumption, reduces the furnace throughput, and causes non-productive outages for decoking activities. Consequences of coking include:

- Continuously rising external tube skin temperatures can reach its maximum allowable values. This fact can limit the on-stream time of the unit.
- Pressure drops will increase with running time and can influence the process selectivity.
- Furnace thermal efficiency is progressively reduced.
- Reaction volume progressively declines.

Sulfur-based compounds such as dimethyl sulfide (DMS) have been traditionally dosed into the pyrolysis coils after a fresh decoke cycle or added to the feedstock . The sulfur compound converts the metal oxide sites on the tube wall surfaces into metal sulfides. Although the primary aim is to reduce carburization rate, it also reduces catalytic coking.

Select Exact-S[®] grade as your decoking agent. Exact-S[®] DMS is:

- The preferred decoking agent in North America due to its safety and operating advantages, environmental properties, and product reliability.
- The least toxic of commonly used decoking agents.
- Easily converted to usable sulfur and completely decomposes for effective decoking.
- Free of impurities that may be harmful to your process such as nitrogen, water, hydrocarbons and non-volatiles even with pressure and temperature changes.
- Is suited for pressure injection and is easily vaporized.

Gaylord Chemical Company, L.L.C. (GCC) is the world's leading provider of Dimethyl Sulfoxide (DMSO) solutions. Beginning in the early 1960's, GCC has been dedicated to the development of new uses for DMSO. In order to meet customer-specific needs, GCC has pioneered the development of multiple grades of DMSO, including DMSO USP.

Gaylord Chemical's solutions-based approach has contributed to the development and growth of industries including pharmaceuticals, hydrocarbons, electronics, polymers, coatings, agricultural chemicals, and industrial cleaners.

Gaylord Chemical's headquarters are located in Slidell, Louisiana with manufacturing, research, and development facilities in nearby Bogalusa, Louisiana. GCC remains the only producer of DMSO in the Western Hemisphere.

Gaylord Chemical Company, L.L.C.
Your Global Leader For DMSO Solutions!



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Representative Specification

Specification	Values
Assay, (% Min. by GLC)	99.2%
Water (% Max.)	0.07
Color, (APHA Max.)	10
Nitrogen, (ppm Max.)	20
Methyl Mercaptan, (ppm Max.)	500
Hydrogen Sulfide, (ppm Max.)	200
Carbon Disulfide, (ppm Max.)	20
Nonvolatile Residue, (ppm Max.)	10

This illustration does not constitute the specification. Specifications are available upon request.

EXACT-S[®] DMS at a Glance

Physical Parameter	Value
Molecular weight	62.134
Percent sulfur (mass %)	51.5%
Boiling point	37.34° C
Freezing point	-98.27° C
Density (20°C)	0.847 g / cc
Critical temperature	229° C
Critical pressure	42,664 mm Hg
Heat of vaporization ΔH_v (25°C)	106 Cal / g
Dielectric constant (20°C)	6.2
Flash point, closed cup	-38° C
Autoignition temperature	206° C

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Catalysts Decomposition Temperatures Hydrotreating Catalysts in Hydrogen Atmosphere		
	Catalyst	
Sulfur Agent	Nickel-molybdenum	Cobalt-molybdenum
EXACT-S [®] DMS	435° F	472° F

Note: The temperatures shown above have been observed in hydrotreaters in the field to release sulfur for the generation of H₂S. The catalyst determines the decomposition temperature for the spiking agent.

Regulatory

CAS:75-18-3 , EINECS:200-846-2

HMIS Hazard Ratings: Health -2, Flammability -4, Chemical Reactivity-0

NFPA Hazard Ratings: Health -1, Flammability -1, Chemical Reactivity-0

Packaging

45,000 lb Tank Truck

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