



# MATHESON

## Nanochem® GuardBed™

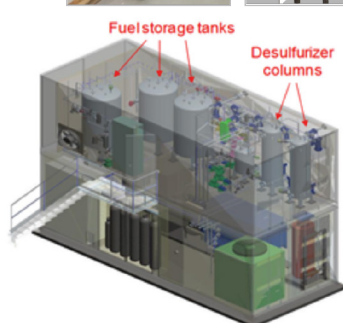
Manufactured for Nippon Sanso Matheson by  SulfaTrap™

## Products For Liquid Fuels

Nippon Sanso Matheson offers a number of sorbents for desulfurization of liquid hydrocarbon fuels, such as logistics fuel (e.g., JP-8, JP-5) and diesel. Our sorbents remove sulfur either directly from the liquid stream or from the reformat gas to sub-ppm levels. Additionally, widely available liquid fuels can present an array of sulfur species with varying concentrations. For example, Ultra-Low-Sulfur-Diesel is limited to 15 ppm sulfur while JP-8 may contain as high as 3000 ppm. Combined with a wide variety of hydrocarbon compositions, the situation can overwhelm typical desulfurization systems. **Nanochem® GuardBed™** materials have been designed to overcome these challenges and provide desulfurized fuels under nearly any process condition.

**Nanochem® GuardBed™-D1** can be operated as an expendable bed for low sulfur fuels (e.g., ultra low sulfur road diesel), or as a regenerable bed by applying a mild temperature swing for high sulfur fuel such as jet fuel.

**Nanochem® GuardBed™-WG** and **Nanochem® GuardBed™-HRG** can either be used as stand-alone desulfurizers or in combination with the **Nanochem® GuardBed™-D1** sorbent as a polisher to enhance fuel cleanliness. With high temperature operation, these sorbents excel downstream of reformers with no slippage or moisture dependence.



### FEATURES

- **High selectivity** and removal efficiency to all sulfur species **Nanochem® GuardBed™-D1** reduce sulfur levels to less than 40 ppbv in liquid fuels
- **Nanochem® GuardBed™-WG** and **Nanochem® GuardBed™-HRG** reduce sulfur levels to less than 5 ppbv in the reformat gas
- **High capacity**
  - **Nanochem® GuardBed™-D1** achieves ~5 mL/mL capacity in regenerable operation and greater than 12 mL/mL capacity during expendable operation
  - **Nanochem® GuardBed™-WG** removes 48 g sulfur per mL of sorbent
- **Regenerable operation** - oxidizing, reducing, or inert gases can be used for regeneration

Product	Application
<b>Nanochem® GuardBed™-D1</b>	Liquid-phase desulfurization sorbent
<b>Nanochem® GuardBed™-WG</b>	Warm gas desulfurization, 200-650°C
<b>Nanochem® GuardBed™-HRG</b>	Hot reformat gas desulfurization, 500-800°C

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