

Silane and Silicone Technologies for Post-Combustion CO₂ Capture

Silicones Membranes for Solid State Carbon Capture

Silicone elastomers are used in carbon capture membranes for their high CO₂ permeability, chemical resistance, and flexibility. While not highly selective alone, they serve as a middle layer in composite membranes—bonding a thin selective top layer to a porous support. This design enhances CO₂ separation efficiency, durability, and lowers energy use.

Suggested Products:

- Ex-Sil® 50
- Ex-Sil® 100
- Custom Synthesis options

Silane-treated Microparticle Sorbents (Adsorption)

Silane-functionalized microparticles are well-suited for advanced CO₂ sorbents due to their tunable selectivity, hydrophobicity, and stability. Their surface resists moisture allowing for excellent performance in humid gas streams, and their high surface area and porosity provide abundant adsorption sites. Additionally, the silane functionality enhances thermal and chemical stability ensuring reliable performance in industrial conditions.

Suggested Products:

- SIA0611.0:
3-Aminopropyltrimethoxysilane
- Custom Synthesis options

Multi-functional Amino-silicones (Absorption)

Multi-functional amino silicones are effective for carbon capture, combining high CO₂ affinity from amine groups with the thermal and chemical stability of silicone. Their tunable structure allows efficient capture and regeneration, while being less volatile and corrosive than traditional amines—making them safer and more durable.

Suggested Products:

- DMS-A11: Aminopropyl Terminated Polydimethylsiloxane
- AMS-1203:
(20-25% Aminopropylmethysiloxane) Dimethylsiloxane Copolymer
- Custom Synthesis options



Gelest Inc. | Morrisville, PA 19067 | (215) 547-1015 | www.gelest.com



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