CO₂ Capture Process Using Phase-Change Absorbents
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Program Strategy

Absorbent Development
A series of aminosilicone and organic liquid amines will be appraised for their solidifying ability as well as their reaction rates, capacity, volatility, and thermal stability. To accelerate reaction of the absorbent with CO₂, known catalysts will be investigated. Selective removal of SO₂ through the addition of an SO₂ absorbent will also be investigated.

Reversible formation of GAP-0 carbamate

Core and Functional Options for Phase-Change Absorbent

Technology Impact
Phase changing absorbents with high CO₂ capture capacity (17%) allow for reduced compression cost, lower capital cost, and low process energy, reducing parasitic power load to <10% ($24/ton) at 90% capture. Retrofitted capture at low COE promotes domestic coal use across 310 GW of current power production.

Options for Solids Transfer

Team
Joint development between GE and University of Pittsburgh