

EXISTENT

Adsorbents to unlock and accelerate net-zero industry

Existent Sorbents Inc. | www.existentsorbents.com

About Existent

Existent is a Canadian cleantech company specializing in advanced adsorbent materials for economical gas separation, including CO₂ capture. Our solutions, built on benchmark metal-organic framework (MOF) sorbents, help industries decarbonize without the complexity of traditional process designs or the risks of legacy technologies that rely on toxic chemicals and produce hazardous waste.

Our portfolio includes proven, user-ready adsorbents. **Kilogram-scale supply available starting Q2 2026.**

The Problem

Industrial separations account for 10-15% of global energy consumption and are at the frontlines of global CO₂ emissions, yet decarbonizing these processes has remained technically and economically challenging. For carbon capture, process complexity, high energy demands, and management of toxic adsorbents escalates costs and limits scalability.

Existent's Breakthrough: CALF-20 Advanced Adsorbent

Existent has commercialized Calgary-Framework 20 (CALF-20), a robust, non-toxic advanced adsorbent uniquely capable of selectively capturing CO₂ even in the presence of water. Traditional solutions absorb water first, requiring costly dehydration steps before CO₂ separation. By eliminating this need, CALF-20 can reduce both capital and operating costs by up to 50%, while delivering high-purity CO₂.

Our technology has been validated through multiple full-scale pilot demonstrations, confirming commercial readiness across diverse applications, including:

- Power generation, combined heat-power
- Petrochemical production
- Electric-arc steel production
- Hydrogen production
- Biogas upgrading
- Cement manufacturing

The materials chemistry behind CALF-20 was highlighted in the 2025 Nobel Prize in Chemistry as the leading example of a metal-organic framework (MOF) with proven industrial utility.

Tech Specs

Feature	Existent CALF-20	Zeolites, Molecular Sieves	Activated Carbons	Amine Chemical Adsorbents
CO ₂ Selectivity	High	Moderate to High	Low	High
Water Tolerance	Excellent	Excellent	Moderate	High
Capture in wet gas	Excellent	Minimal	Minimal	High
Energy Efficiency of Regeneration	High	Low to Moderate	High	Low
Stability (Cycles)	High	Variable	Variable	Low to Moderate
Scalability	High	Moderate	High	High

Shaped CALF-20 is available as pellets, granules, extrudates, beads, hollow fiber membranes, monoliths, or as coatable formulations. Contact Existent for application opportunities. **Contact Us:** info@existentsorbents.com

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