

# Lithium Carbonate Purification

## We deliver:

- High process performance
- Enhanced process safety
- 80% carbon dioxide re-use
- Rapid return on investment



## The Industry Challenge

High-purity lithium carbonate (99.999%) is a critical raw material to produce lithium-ion batteries for the automotive industry. More than ever, as demand grows, manufacturers need reliable and efficient solutions to control the costs of their operations

If you're looking for low-CAPEX opportunities to save costs while reducing your environmental impact, we offer you a truly effective solution.

## The Nexelia Solution

A comprehensive gas solution designed for your specific needs, **Nexelia for Lithium Carbonate Purification** combines the best of our gases, application technologies and expert support. As with all solutions under the Nexelia brand, we work closely with you to pre-define a concrete set of goals, and we commit to delivering them.

**Nexelia for Lithium Carbonate Purification** is an all-in-one gas solution, which applies to lithium carbonates produced by acid or basic routes from either brines or mined rocks. Carbon dioxide is used in a three-step process:

- It dissolves lithium carbonate from slurry
- Solid impurities are filtered out
- When heated up, dissolved lithium carbonate precipitates and releases carbon dioxide

The solution then captures the released carbon dioxide in this third precipitation phase and re-uses it in the dissolution phase.

## Your Advantages

### • Process expertise

We've developed capabilities to demonstrate the performance of lithium carbonate dissolution prior to filtration.

### • Turn-key solution

You benefit from a comprehensive system that includes the pressurized dissolution reactor as well as the carbon dioxide recirculation pump.

### • Cost savings

You reduce carbon dioxide by up to 80% compared to traditional non-recycling methods.

### • Rapid ROI

Capturing and recycling carbon dioxide pays the capex back in less than one year.

### • Eco-responsible operation

Re-using carbon dioxide dramatically reduces the carbon footprint of your purification process.

# Core Features

Nexelia for Lithium Carbonate Purification consists of:

• **Carbon dioxide (CO<sub>2</sub>) supply:**

from bulk storage vessels with liquid carbon dioxide CO<sub>2</sub> vaporization and control equipment.

• **Expertise:**

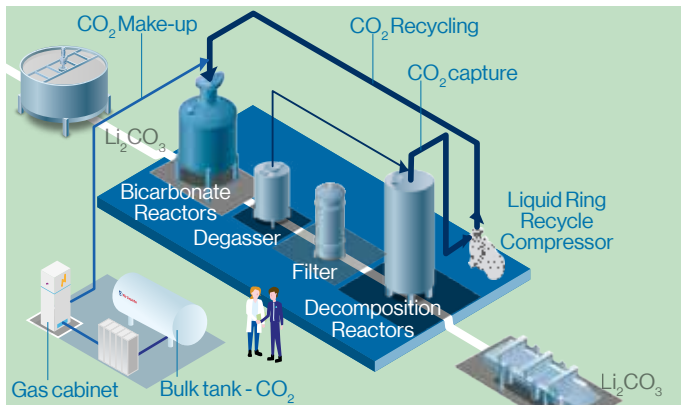
Leveraging our expertise in gas-transfer efficiency, we help you implement the ideal gas-operating conditions for a cost-competitive and efficient solution. Our **Nexelia for Lithium Carbonate Purification** offer includes a thorough audit of your current process (either on-site for existing facilities or in laboratories) as well as scaling-up/sizing services.

• **Application technologies:**

A dynamic mixer designed by Air Liquide, the **PRESSURIZED REACTOR** uses a self-aspirating turbine, ensuring powerful suction and a strong diffusion of the gas present in the headspace.

Originally designed to oxidize white liquor in the pulp and paper industry, these reactors were later used in many other applications involving gases and liquids.

The equipment offers a highly efficient transfer of gas with minimal hydraulic loss.



# Case Study

CASE STUDY #1: Preventing recovery shortfalls

• **Customer's needs:**

- Wet CO<sub>2</sub> recycling from re-precipitation unit to re-use in dissolution reactor
- CO<sub>2</sub> quantity: 120 tons per day

• **Our solution:**

- Engineering of a customized solution
- Two **PRESSURIZED REACTORS** along with a liquid ring compressor

• **Benefits:**

- 80% of CO<sub>2</sub> recycled (CO<sub>2</sub> supply: 25 tons per day)
- €5 million annual savings
- ROI in eight months

# Related Offer

- Nexelia for Gold Leaching
- Nexelia for Uranium In-Situ Leaching
- Nexelia for Lithium Carbonate Purification
- Nexelia for pH Control

## Contact us

Air Liquide USA LLC  
9811 Katy Freeway, Suite 100 /  
Houston, TX 77024, USA  
E-mail: [wwim-mining@airliquide.com](mailto:wwim-mining@airliquide.com)

[www.airliquide.com](http://www.airliquide.com)

