

EFFECTS OF GRANULAR CHANNELING ON SAFETY AND VALUE

SpiraLith Ca

*An Evolutionary Advance in Carbon Dioxide
Absorbent Technology*

No Granules – No Channeling – No Dust

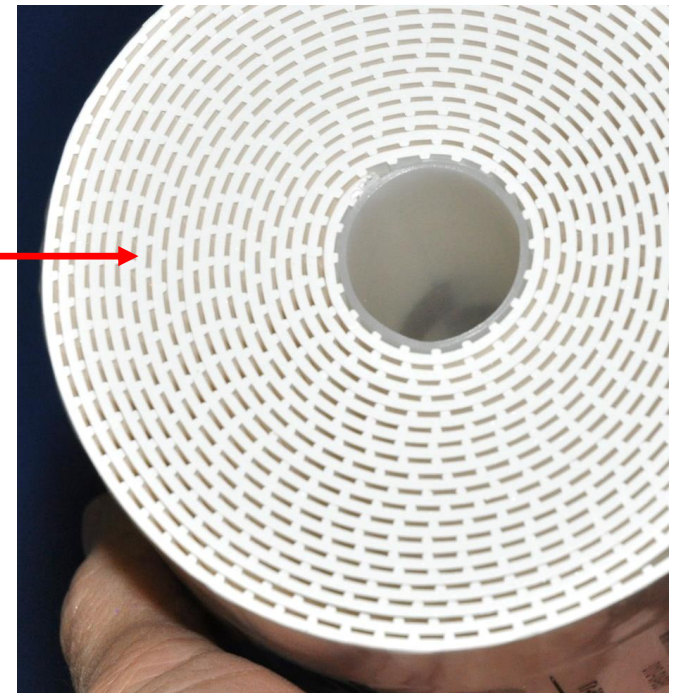


SpiraLith Ca - Micropore Inc.



The solid cartridge is engineered with uniform flow pathways

- Insures gasses contact all reactive surfaces
- Guarantees reliable and repeatable performance
- Minimizes wasted absorbent



Prototype cartridge in lab testing demonstrates uniform flow and optimal utilization of absorbent material



What is Channeling?

Channeling occurs when exhaled gas finds the path of least resistance through the granules bypassing reactive material

- Caused by random distribution/settling of absorbent during manufacturing, shipping, and use



Notice indicator change showing path of gas flow and unreacted absorbent

Effects of Channeling

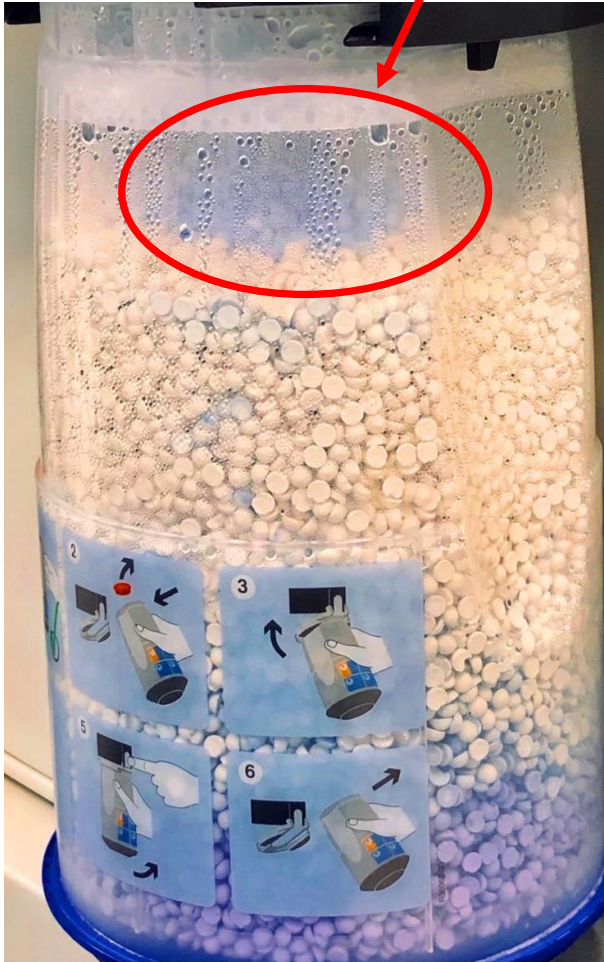
- Unreacted absorbent remains when absorbent is changed
- Indicator change may not be visible to the provider
- Potential for rapid CO₂ breakthrough with significant rebreathing, often without corresponding visual indication
- Unpredictable performance leading to exchanging absorbent earlier than needed and/or in the middle of a procedure
- More frequent exchanges
- Wasted absorbent/wasted money
- Adverse environmental impact of higher pH (unreacted absorbents) entering landfills

Forms of Channeling

- Random
 - Gas finds multiple paths through the absorbent bed
- Wall effect
 - Gas flows along the smooth wall of the canister, bypassing much of the absorbent available
- Core Channeling
 - Potentially dangerous since the center of the cartridge is completely consumed, often without a visible indication of exhaustion when viewed from the outside. Capnography will indicate rebreathing but the cause may not be obvious and is often missed

Examples – Core and Random Channeling

Core Channeling



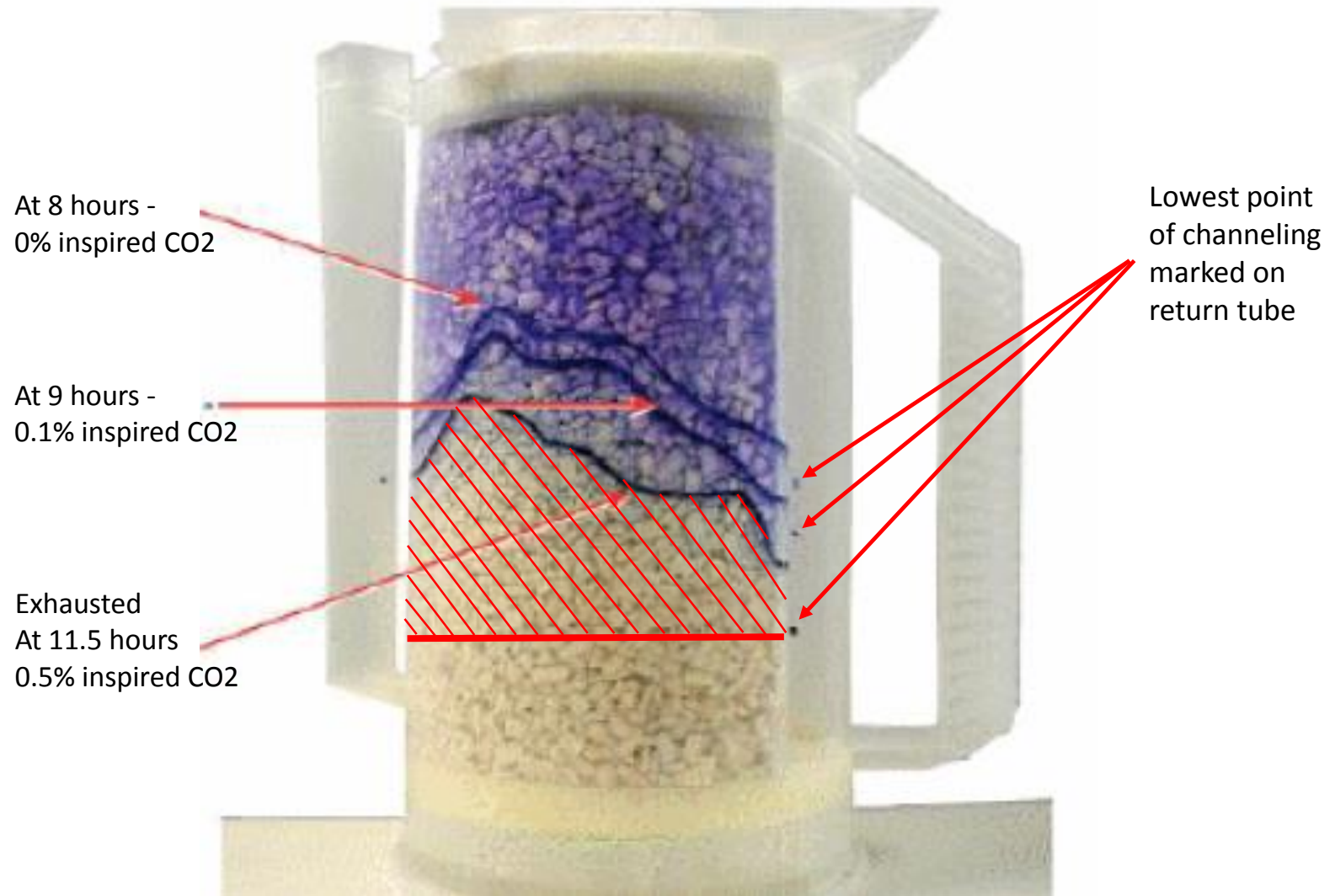
Random Channeling



Examples – Wall Effect Channeling

Area between 3 black lines = 0 – 4 mmHg inspired (CO₂ capnography)

Area in RED is wasted absorbent



Introducing The First Ever Color Indicator Window System

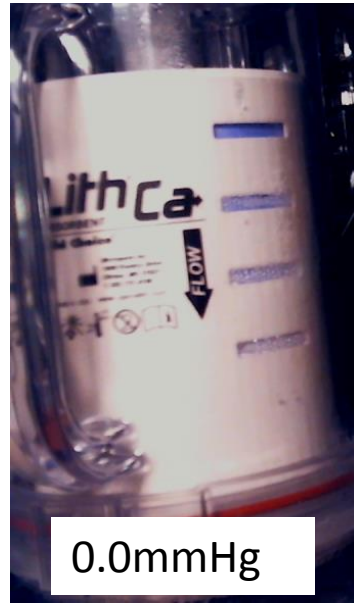
The Most Accurate and Easy To Interpret Color Indicator System

New Color Indicator Window

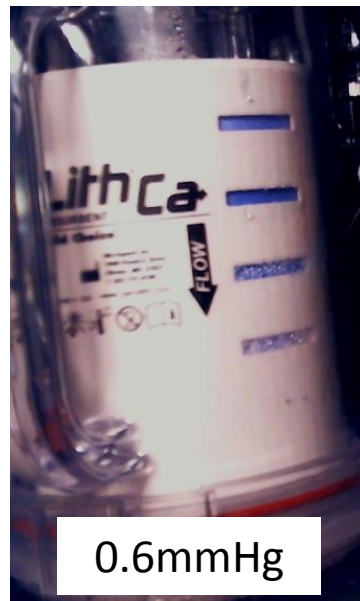
- Helps predict when inspired CO₂ approaches 0.5%
- Bold, fade-resistant color
- Uses 1000X less ethyl violet compared to granules



- Color Windows enable you to see inside the cartridge
- Our color indicator windows let you know when it is time to change out the cartridge



Note that inspired CO2 remains at or near zero until 3 bars have turned blue.



Advantages of Solid Cartridge™ Technology

Capacity

- No channeling of gases – all absorbent is exposed to exhaled gas
- Maximum surface area for reaction with carbon dioxide in exhaled gases
- Greatest volume of CO₂ absorbed per mass of absorbent purchased

Reliability

- Reliable and repeatable performance for every cartridge
- Unique window system is the most accurate and easiest to interpret color indicator available
 - Reliably shows progressive utilization and remaining absorbent

Safety

- No caustic dust
 - Easily handled with no risk to patients or staff
 - Does not contaminate ventilation equipment with dust
 - No restrictions on disposal
- Low flow formulation
 - No production of Compound A or Carbon Monoxide

Ecology

- Reduced environmental impact
 - Promotes safe use of reduced fresh gas flow rates
 - Less absorbent material is used
 - Lower pH due to reduction of unreacted material in waste stream

SpiraLith Ca by Micropore Inc.

An Evolutionary Advance in Carbon Dioxide Absorbent Technology

Vince Suddard
Product Specialist
Micropore Inc.
1000 Konica Drive
Elkton, MD 21921
443-245-4127
Vince.Suddard@SpiraLith.com
Gail.Feltham@Microporeinc.com
www.SpiraLith.com
www.MicroporeInc.com