RITEKS
CASE STUDY

RiLock Resin

Mitigating Gas Migration in Low-Temperature Canadian Well Conditions

Overview

A legacy well located in Eastern Canada exhibited gas migration along the exterior of a 20-inch casing string. The casing had been driven to approximately 40 meters without cement in the annular space.

Due to the well's location in a residential area, the remediation solution needed to minimize surface equipment requirements while delivering a high-integrity, long-term seal. The system was engineered using Riteks' proprietary exotherm control technology (W-325) to lengthen and reduce overall exothermic reaction while mixing and placing RiLOCK Resin.

Problem/Challenge

Gas migration was identified along the outside of the driven 20-inch casing, creating a loss of annular isolation. The absence of cement in the annulus allowed a flow path to develop, compromising well integrity.
Key operational constraints included:

- Low surface and bottom-hole temperatures 50°F (10°C).
- Limited access due to residential location (no pump truck used to mix or pump).
- Requirement for minimal surface footprint
- Need for reliable long-term sealing performance in one application

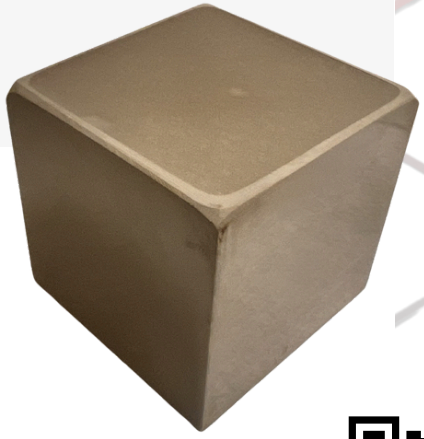
The remediation required a solution capable of penetrating micro-annuli and irregular void spaces formed during casing installation.

Solution

The selected remediation approach utilized **RiLOCK epoxy resin** to re-establish annular sealing around the 20-inch casing.
RiLOCK's low viscosity and strong bonding properties enabled deep penetration into micro-annuli and void spaces. The resin system was deployed via gravity fall, followed by a squeeze operation to ensure full coverage within the open annular region.
This approach created a continuous, pressure-tight barrier designed to eliminate the identified gas migration pathway while restoring zonal isolation.

Result

Upon curing, the RiLOCK system formed a rigid, chemically resistant seal capable of long-term exposure to wellbore conditions. The treatment successfully eliminated gas migration and restored well integrity, ensuring a reliable and permanent barrier for abandonment.
Laboratory testing confirmed controlled exothermic behavior and predictable curing performance under low-temperature conditions, supporting reliable field application.



Technical Highlights

- Effective sealing of micro-annuli and irregular voids
- Optimized curing performance at low temperatures 50°F (10°C)
- Minimal equipment requirements for sensitive locations
- High-integrity, pressure-resistant barrier formation
- Long-term chemical and mechanical stability

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LAB REPORT RiLOCK Resin Squeeze — Well Setup & Testing Results

LAB TESTING PARAMETERS

BASED ON WELL SETUP

BHCT	BHST	Time to Temp.	Start Pressure	Final Pressure
55–60°F	55–60°F	5 min	0 psi	350 psi

WELL PARAMETERS

FIELD CONDITIONS

MD	TVD	Mud Density
131 ft	131 ft	8.4 ppg

LAB TESTING RESULTS

STRENGTH (CRUSH CUBE)

Cure Temp.	Cure Time	10% Deformed	Max / 50% Def.
55–65°F	3 Days	Too Soft to Crush	
	1 Week	4425 psi, 10% deformation	6624 psi, 50% deformation

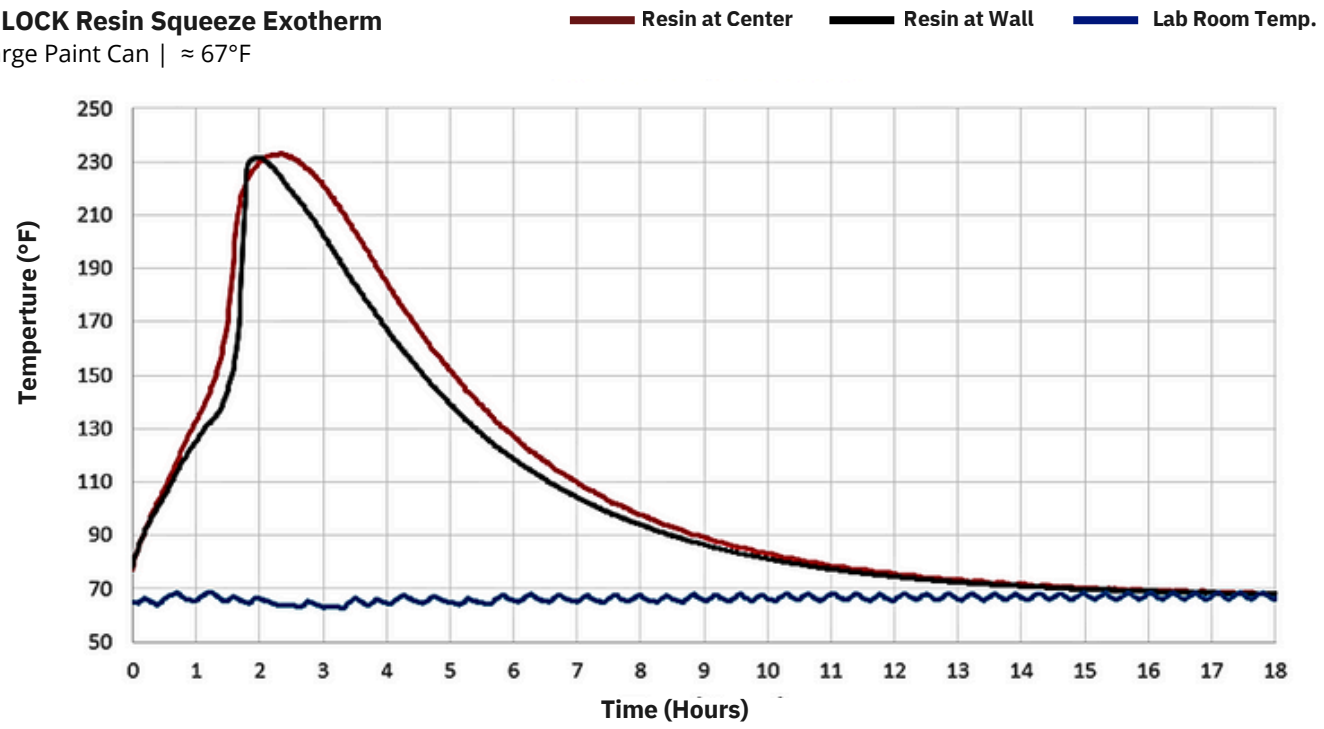
POT LIFE

Lab Room Temp.	Time
67°F	7:45

EXOTHERM — LARGE PAINT CAN (6.5" ID)

LAB ROOM TEMP.	MAX TEMP.	MAX TEMP. TIME
67°F	232°F	2:07

RiLOCK Resin Squeeze Exotherm
Large Paint Can | ≈ 67°F



Ritek's proprietary W325 product helps lengthen and reduce exothermic reactions

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