

RiLOCK™ Resin Sealant

GENERAL DESCRIPTION

RiLOCK™ Resin Sealant is the answer to the Oil and Gas Industry's most pressing well construction concern: establishing a durable, resilient barrier seal for reliable well integrity.

RiLOCK™ resin sealant is an engineered product that can be mixed and pumped into wells to harden into a sturdy flow barrier providing mechanical integrity, chemical resistance, and long term-thermal stability.

RiLOCK™ is an epoxy resin optimized for oilfield applications. It can be effectively designed for a temperature range of ranges of 40 to 350°F and densities ranging from 7 to 19 ppg.

FEATURES & BENEFITS

A solids-free formulation allows the resin to penetrate deeper into a microannulus, resulting in a stronger seal. Its low rheology ensures that the sealant can be easily mixed and pumped using conventional oilfield equipment, such as pumps, batch mixers, and dump bailers. The cohesive properties of the sealant maintain its stability under downhole conditions, while its ability to free-fall through water and re-form in the desired zone enhances its effectiveness. Additionally, the sealant can be drilled out with standard oilfield drill bits or withstand perforation. It outperforms conventional Portland cement in compressive strength, tensile strength, and shear bonding, and offers long-term durability due to enhanced mechanical properties, resistance to corrosion/contamination, and impermeable characteristics.



APPLICATIONS

- Create barriers for plug and abandonment operations.
- Seal gas leaks and leaking production packers.
- Plug control lines, valves and wellheads.
- Perform remedial squeeze jobs.
- Shut off water flows and consolidate gravel packs.
- Repair weak and permeable formations.

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EXTREME DURABILITY

The chemical stability of resins compared to Portland cement has long been recognized. In fact, studies comparing RiLOCK™ to Portland cement performance in completion brine has emphasized the need for increased durability. The pictures on the left and right show the effects of CaBr₂ brine @ 175°F exposure on the two sealants after just 60 days. Portland cement significantly deteriorated while RiLOCK™ has maintained its integrity.



Weighted RiLOCK™ Resin

16.4 ppg Class-H slurry

RiLOCK's Superior Bond

RiLOCK™ resin sealant demonstrates superior bonding in large casings even when tested at elevated temperatures. A mechanical shear bond of 1,200+ psi (maximum load that could be applied) was achieved by a RiLOCK™ resin system tested in a 1-ft long section of 9 5/8-inch casing cured and tested at 155°F.

RiLOCK™ vs Cement (Mechanical Properties & Bonding)

Testing at 175°F	Standard Slurry	RiLOCK™
UCS	6,167 psi	12,772 psi
YM	2.7E+06 psi	4.7E+05 psi
PR	0.30	0.46
Tensile	455 psi	4,364 psi
Water Wet Shear Bond	212 psi	3,922 psi
Oil Wet Shear Bond	132 psi	3,594 psi
Water Wet Hydraulic Bond	<50 psi	+1,000 psi
Oil Wet Hydraulic Bond	<50 psi	+1,000 psi

Table 1: RiLOCK™ vs Cement mechanical properties and bonding

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