GUARD proppant-delivered production assurance technology for gravel pack completions provides you with the capability to control gravel pack integrity from the wellbore to the reservoir. GUARD technology is a porous ceramic proppant infused with an effective chemical delivery mechanism. As the gravel pack settles, the infusion process continues, ensuring that the desired levels are maintained and the importance of gravel packing is not compromised.

FUSION proppant-packet consolidation technology allows you to create a highly efficient, high integrity gravel pack. This packet consolidation process provides you with the capability to increase gravel pack integrity to remove unnecessary injection or production rate limitation. FUSION proppant-packet consolidation technology incorporates CARBONRT technology into the substrate, providing high integrity gravel pack without closure scenarios the complete loss of the completion.

CARBONRT GP tracer technology allows identifying the absence of the CARBONRT technology in gravel pack completed wells. The technology is a highly efficient, effective and permanent way to protect your gravel pack and well from scale and problematic issues in a single treatment during gravel pack placement. CARBONRT GP helps evaluate gravel pack quality. CARBONRT cards zone coverage and identifies critical cards. CARBONRT GP technology is a premium and powerful tool used to complement gravel pack issues. The CARBONRT GP technology identifies all gravel packs that are connected to the wellbore. CARBONRT GP technology is used to detect the top of the gravel packs with 3 ½” base pipe wire wrapped screens and blanks in 7.0” casing.

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CARBONRT GP tracer technology allows identifying the absence of the CARBONRT technology in gravel pack completed wells. The technology is a highly efficient, effective and permanent way to protect your gravel pack and well from scale and problematic issues in a single treatment during gravel pack placement. CARBONRT GP helps evaluate gravel pack quality. CARBONRT cards zone coverage and identifies critical cards. CARBONRT GP technology is a premium and powerful tool used to complement gravel pack issues. The CARBONRT GP technology identifies all gravel packs that are connected to the wellbore. CARBONRT GP technology is used to detect the top of the gravel packs with 3 ½” base pipe wire wrapped screens and blanks in 7.0” casing.
CARBOTAG® gravel pack integrity evaluation for the life of the well

CARBOTAG® chemically-tagged traceable technology is designed to help E&P operators monitor gravel pack integrity for the life of the well. CARBOTAG® GP inert tracer technology for gravel pack fill evaluation is a unique and proprietary coating technology manufactured with a proprietary tracer uniformly infused in the ceramic proppant. This tracer is nonradioactive and non-toxic, and yet extremely durable, providing an unprecedented level of assurance that the gravel pack is properly and uniformly distributed to the desired depth. CARBOTAG® GP can be delivered in a pre-infused form or can be blended at the well site to create unique blends that can be mixed with any other proppant or fracpack to meet the unique needs of the job.

Evaluating gravel pack integrity is critical for Long Term Production assurance. GUARD technologies can be either delivered pre-doped with an effective chemical delivery mechanism. As the production flow past the screen, the technology releases the appropriate chemical to protect your gravel pack and well from future failure. Analysis of production samples would help you increase production and recovery.

CARBONRT® GP inert tracer technology for gravel pack failures can be identified by detecting the absence of the CARBONRT GP tracer. CARBONRT® GP helps evaluate gravel pack integrity. The constant celebration of the frac pack and the well production are key factors affecting the future of the gravel pack and the well. CARBONRT® GP tracer technology is used to detect gravel pack failures. The technology also provides improved carrier fluid chemistry throughout the gravel pack enabling a highly accurate evaluation of gravel pack integrity and assurance to frac packs.

The technology is a highly effective, efficient and environmentally friendly evaluation tool for gravel pack integrity. As production flow past the GP tracer, it releases the appropriate chemical to protect the gravel pack integrity and assure a clean environment. Features and benefits in gravel pack applications

- Helps highly reduce production decline caused by d amaging gravel pack failures.
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Create an ultra-high conductivity gravel or frac pack to maximize productivity

Ultra-high conductivity ceramic proppant

KRYPTOSPHERE 20, 25 and 35 approximate that of intermediate and high density ceramics proppant technology overview

Features and benefits in gravel pack applications:
• Exceptional strength and durability maintain the highest levels of permeability for the life of the well
• KRYPTOSPHERE LD can be manufactured in any required mesh size and with any required compressive strength
• Single-mesh KRYPTOSPHERE LD proppant particles create a more stable pack, with greater measurement and less rearrangement that may create a beneficial proppant pack.

Applications:
• Create a pack with more space to flow. More uniform pore throat distributions reduce the pack tortuosity resulting in lower non-Darcy and multiphase flow losses.
• The very low settling rate compared to sand, RCS and LDC results in a high-quality gravel pack at low fluid rates.
• Enhanced transport characteristics: 30%-40% slower settling rate compared to sand, RCS and LDC.

CARBOAIR/KRYPTOAIR Enhanced gravel pack placement in complex conditions

CARBO’s AIR Technology high transport, ultra-low density ceramic proppant technology overview

The lower rate and viscosity help lower the frac formation pressure window environments as well as lower pressure drop and required pump rate with a right size screen and pressure monitor.

Applications:
• Create a thin and safe space grade pack in vertical, deviated and horizontal wells
• Ideal for highly sensitive completion hardware
• Enhanced transport characteristics: 30%-40% slower settling rate compared to sand, RCS and LDC.