

# G-Seal

G-SEAL\* graphite is a coarse-sized plugging agent used in water-, oil- or synthetic-based drilling fluids to bridge and seal permeable and fractured formations. When drilling depleted zones exposed to high differential pressures, the bridging and plugging capabilities of G-SEAL additive can reduce the potential for stuck pipe. G-SEAL is chemically inert and thermally stable, and will not affect rheological properties when used at recommended concentrations. It can lower the potential for lost circulation and reduce torque and drag in many drilling applications.

### Typical Physical Properties

Physical appearance .....	Dark grey-to-black powder
Specific gravity.....	2.19-2.26
Solubility in water @ 68°F (20°C) .....	Insoluble
Median Particle Size (d50)** .....	300 – 350 µm

### Applications

G-SEAL additive is designed to be used in any type of drilling fluid to bridge and seal permeable and fractured formations, thus controlling lost circulation and reducing the possibility of differential sticking. G-SEAL can also be used to decrease the coefficient of friction (CoF) of drilling fluids.

The recommended treatment for seepage losses (< 10 bbl/hr or 1.6 m<sup>3</sup>/hr) is 15 to 20 lb/bbl (43 to 57 kg/m<sup>3</sup>) in spotted pills or sweeps. G-SEAL can be incorporated into the entire system at a total concentration of 5 to 10 lb/bbl (14 to 29 kg/m<sup>3</sup>). However, this may require using coarser shaker screens. If changing screens is impractical, pills returning to the surface can be diverted to a standby pit, reconditioned and re-used as spots or sweeps.

The recommended treatment for partial losses (10 to 100 bbl/hr or 1.6 to 16 m<sup>3</sup>/hr) is 20 to 50 lb/bbl (57 to 143 kg/m<sup>3</sup>) in spotted pills. Very high permeability formations such as fractured carbonates and conglomerates may require additional pills in combination with other lost circulation materials of appropriate particle size distribution.

Torque and drag may be reduced by incorporating G-SEAL spots and sweeps into the active system up to a total concentration of 10 lb/bbl (29 kg/m<sup>3</sup>). Initial treatments for the active system may be applied in 2 lb/bbl (5.7 kg/m<sup>3</sup>) increments while monitoring torque and drag.

G-SEAL may require additional wetting agent when used in an oil- or synthetic-based mud system.

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## Advantages

- Effective bridging and sealing agent for a wide range of formations and severity of losses
- Controls seepage losses, thereby reducing the possibility of differential sticking
- Decreases the CoF to reduce torque and drag in all mud systems
- Inert material with no adverse effects on mud rheology and compatible with all mud systems
- Temperature-stable to more than 500°F (260°C)
- One-sack product that is easily mixed and dispersed into any fluid system
- May be used in combination with other additives, particularly lost circulation materials.

## Limitations

- Can be removed from the circulating system by shale shakers and other solids-control equipment. Requires close monitoring of the shale shakers.
- Non-acid-soluble material may not be suited for open-hole completions in which acid solubility is required

## Toxicity and Handling

Bioassay information is available upon request.

Handle as an industrial chemical, wearing protective equipment and observing the precautions described in the Material Safety Data Sheet (MSDS).

## Packaging and Storage

G-SEAL additive is packaged in 25-kg (55.1-lb) multi-wall, paper sacks and does not require special storage. Store in a dry, well-ventilated area. Keep container closed. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking

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