STEELSEAL® 400
LOST CIRCULATION MATERIAL

Product Description

STEELSEAL® 400 lost circulation material is a highly resilient, angular, dual-composition carbon-based material that allows tightly packed particles under compression in fractures and pores to expand or contract without being dislodged or collapsed due to changes in differential pressures. This property is termed “resiliency” and results during manufacture by a proprietary furnace process. This process raises the carbon content as high as 99.9 and significantly reduces most heavy metals, such as iron, nickel and antimony, to very low levels – less than 10, 5 and 0.05 parts per million, respectively. During the high temperature purification process, graphitic properties are imparted to the petroleum coke feed stock. Resiliency, ranging from 100-115% at 10,000 p.s.i., is achieved in this process.

Applications/Functions

» Lost circulation treatments for moderate size induced and natural fractures
» Suspend bridging agents and weighting materials in aqueous based fluid systems
» Medium particle size resilient graphitic carbon for WellSET® treatments
» STEELSEAL 400 highly resilient lost circulation material is utilized to stop losses in porous and fractured formations in water-based, synthetic-based and oil-based drilling fluids
» In water-based fluids, it also performs as a solid lubricant for torque and drag reduction

Advantages

» Designed for lost circulation prevention in all fluids
» Minimal effect on viscosity
» High loadings without detrimental effect on Equivalent Circulating Density
» Exhibits a resiliency that allows it to remain closely packed within a fracture or pore throat
» Minimal effect on Equivalent Circulation Density when used as a background material
» Can impart resiliency to appropriately sized combinations of materials, that are themselves non-resilient, at pressures greater than 5,000 psi

Typical Properties

» Appearance: Solid black, angular material
» Specific gravity: 1.71
» Particle size d50: 400 +/- 50 microns
» Composition minimum: 99 to 99.9% carbon
» Solubility: Not soluble
Recommended Treatment

1. As a background concentration for seepage and lost circulation control, 15-25 lb/bbl (40-70 kg/m³).
2. LCM pill for spotting over thief zones or on bottom prior to trips, 50-100 lb/bbl (140-300 kg/m³).
3. For lubricity in water-based fluids, 3-10 lb/bbl (10-30 kg/m³).
4. WellSET® treatments use 20-50 lb/bbl (60-140 kg/m³) STEELSEAL 400 highly resilient lost circulation material with BARACARB® ground marble and other sized resilient graphitic carbon materials.
5. As a resiliency enhancer in combination with other appropriately sized materials, use STEELSEAL 400 highly resilient lost circulation material at 20 volume percent, or greater.

Packaging

STEELSEAL 400 highly resilient lost circulation material is packaged in 50-lb (22.7-kg) and 55.1-lb (25-kg) sacks and in 2000-lb (907-kg) bulk bags.