

SAFE-CARB

Ground marble bridging agent

APPLICATIONS

- Controlling fluid loss, density, and bridging in a range of fluids
- Sealing of sand-control completion assemblies

ADVANTAGES

- Minimized formation damage through high-quality acid-soluble material design
- Effective bridging, especially when using OPTIBRIDGE* bridging agent selection software to design an optimized, application-specific blend
- Simplified method of identifying the approximate D_{50} of agent
- High-hardness ground marble makeup that resists particle-size degradation
- Essentially inert for minimized effect on fluid properties

SAFE-CARB* ground marble bridging agent is a high-purity, acid-soluble calcium carbonate used as a bridging and weighting agent in drilling, drill-in, workover, and completion fluids. Compared with limestone, the agent features higher hardness and purity, providing better acid solubility.

This calcium carbonate bridging and weighting agent can be used in fluids ranging from conventional drilling fluids to advanced drill-in fluid systems, including FLOPRO NT* water-base reservoir drill-in fluid, FAZEPRO* reversible invert-emulsion reservoir drill-in fluid system, VERSAPRO* invert-emulsion reservoir drill-in fluid system, and DIPRO* high-density, divalent brine-base reservoir drill-in fluid.

It can also be used with SEAL-N-PEEL* fluid loss control pill to seal the inside of sand-control completion assemblies. As a bridging agent and fluid-loss additive, normal concentrations are 10–50-lbm/bbl [29–143-kg/m³] range. Use OPTIBRIDGE software to select the optimal blend of SAFE-CARB agent to reduce fluid loss and minimize fluid and solids invasion.

The agent can also be added on a periodic basis for seepage control to limit losses to lost circulation and leak-off to high-permeability formations. It is particularly effective when drilling with high differential pressures caused by an overbalanced condition or when drilling depleted zones. Treatments range from 2 to 10 sacks per hour when used as a preventative measure. For depleted-zone drilling or induced-fracture applications, SAFE-CARB agent is most effect when used with G-SEAL* sized graphite bridging agent, G-SEAL PLUS* industrial carbon and graphite bridging agent, or G-SEAL PLUS COARSE* lost circulation and wellbore strengthening graphite plugging agent.

Product Name	Median Particle Size (d_{50}), um	Recommended Test Procedure
SAFE-CARB 2	1–4	Laser light scattering
SAFE-CARB 10	6–15	Laser light scattering
SAFE-CARB 20	16–29	Laser light scattering
SAFE-CARB 40	31–48	Laser light scattering
SAFE-CARB 140	130–150	Dry-sieve analysis
SAFE-CARB 250	225–300	Dry-sieve analysis
SAFE-CARB 500	430–520	Dry-sieve analysis
SAFE-CARB 600	550–650	Dry-sieve analysis
SAFE-CARB 750	655–800	Dry-sieve analysis
SAFE-CARB 1400	1,200–1,550	Dry-sieve analysis
SAFE-CARB 2500	2,100–2,700	Dry-sieve analysis

Median particle size (d_{50}) is reported as a size range due to variations in the manufacturing and grinding process. If a precise size distribution of a product is critical to a drilling operation, it should be measured with the appropriate recommended test procedure using samples that are representative of those expected to be used in that operation. Nominal d_{10} and d_{90} values are available upon request.

Imperial measurements

Volume of SAFE-CARB agent in lbm/bbl = $(980 [w_2 - w_1]) / (23.3 - w_2)$

where

w_1 = initial mud weight in lbm/galUS

w_2 = desired mud weight in lbm/galUS.

Metric measurements

Volume of SAFE-CARB agent in kg/m³ = $(2,800 [w_2 - w_1]) / (2.8 - w_2)$

where

w_1 = initial mud weight in relative density

w_2 = desired mud weight in relative density.

Typical Physical Properties

Physical appearance	White powder
Relative density	2.7–2.8
Solubility in water at 212 degF [100 degC]	0.0035 g/100 mL
Solubility in 15% HCl at 76 degF [24.4 degC]	≥97%

Toxicity and handling

Bioassay information is available upon request. No claim of personal safety is intended nor implied by the use of the name “SAFE” in this product. Handle as an industrial chemical, wear protective equipment, and observe the precautions as described in the material safety datasheet (MSDS).

Packaging and storage

SAFE-CARB agent is packaged in 50-lbm [22.7-kg], 55-lbm [25-kg], and 110-lbm [50-kg] multiwall paper sacks. Store in a dry, well-ventilated area. Keep container closed when not in use. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping, and stacking.

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