

IDCAP D

Polymeric shale inhibitor

The IDCAP D* polymeric shale inhibitor provides excellent cuttings encapsulation by adsorbing onto clay surfaces and forming a protective film that prevents cuttings from sticking to each other or to the shaker screens. The IDCAP D inhibitor limits dilution rates and low-gravity-solids loading by preventing clay solids from dispersing into the mud system. This product is effective in a wide range of base brines including seawater, saturated NaCl, and KCl, but should not be used in calcium brines. Typical concentrations of the IDCAP D inhibitor range between 0.5 and 4 lbm/bbl [1.4 and 11.4 kg/m³].

Due to the low molecular weight of this polymer, the mixing process requires less shear than polymers with higher molecular weights. The resulting fluid will pass through fine shaker screens without blinding. For best results, the IDCAP D inhibitor should be added to the mud system via premix to ensure proper hydration and shearing, but it can be added directly to the active system if needed.

The IDCAP D inhibitor concentration should be calculated by mass balance assuming an approximate depletion rate and observing the quality of the cuttings at the shakers. Cuttings that appear dry inside, but ball or stick to shakers, may indicate low encapsulator levels. Conventional ammonia extraction tests cannot be used to determine residual concentration because the IDCAP D inhibitor does not produce ammonia when exposed to elevated pH.

Dilution rates with premix should be based on the depletion rate of the IDCAP D inhibitor. IDCAP D inhibitor premix concentrations can range as high as 4 to 5 lbm/bbl [11.4 to 14.2 kg/m³], depending on the depletion rates.

Calcium hardness in makeup water should be treated out with soda ash before use. Maintain pH below 10 for optimal performance, where applicable. The IDCAP D inhibitor does not contain acrylamide, so hydrolysis with NH₃ release is not a problem.

Typical Physical Properties

Physical appearance	White powder
Specific gravity	1.4–1.6
pH (1% solution)	6.0
Solubility in water	Soluble

Applications

- Freshwater, seawater, and saturated NaCl and KCl applications
- High-pH fluids (silicates)

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Advantages

- Provides excellent cuttings encapsulation and limits cuttings dispersion
- Improves removal of drill solids by reducing dispersion tendencies
- Contributes only minimal viscosity to the system
- Adds easily to the active system through a premix
- Boosts shale stabilization
- Has a lower screen blinding potential, compared with higher molecular weight encapsulators
- Enhances control of highly dispersive shales (kaolinite and illite) in high-pH fluids

Limitations

- To avoid chemical precipitation by calcium ions, fluid systems containing the IDCAP D inhibitor should be pretreated with either citric acid or sodium bicarbonate before drilling cement.
- The IDCAP D inhibitor should not be used in systems with calcium content above 500 mg/L.
- Magnesium concentrations above 2,700 mg/L might diminish the inhibitor's performance.
- To avoid compatibility issues, the IDCAP D inhibitor should not be used in drilling fluid systems that contain KLA-HIB* or KLA-HIB NS* amine-based shale inhibitor. Shale recovery and hydration tests should be carried out to confirm performance before use.

Toxicity and handling

Handle as an industrial chemical, wearing protective equipment and observing the precautions as described in the Material Safety Data Sheet (MSDS). Bioassay information is available upon request.

Packaging and storage

The IDCAP D inhibitor is packaged in 25-kg [55.1-lbm] multiwall paper sacks. Keep away from open flames, hot surfaces, and sources of ignition. Keep containers tightly closed in a dry, cool, and well-ventilated place.

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