

Kla-Stop

KLA-STOP* additive is a liquid polyamine shale inhibitor used in polymer-base drilling and drill-in fluids. Shale inhibition is achieved by preventing water uptake by clays, and by providing superior cuttings integrity. The KLA-STOP additive effectively inhibits shale or gumbo clays from hydrating and minimizes the potential for bit balling. The KLA-STOP inhibitor can be added directly to the mud system with no effect on viscosity or filtration properties.

Typical Physical Properties

Physical appearance	Clear, colorless liquid
Specific gravity	1.03–1.075
pH (5% solution)	9.2–10.2
Flash point	>200°F (PMCC)
Viscosity	80–120 cP @ 75°F (24°C)

Applications

The KLA-STOP inhibitor is a liquid additive that acts as a clay hydration suppressant by intercalating and reducing the space between clay platelets so that water molecules will not penetrate and cause shale swelling. The KLA-STOP additive provides outstanding shale inhibition and minimizes dilution rates.

KLA-STOP inhibitor chemistry additionally provides a buffered pH in the 9.0–10.0 range, eliminating any required additions of caustic soda or potassium hydroxide. The recommended concentration is 1–4% by volume, depending on shale reactivity and the amount of shale in the interval to be drilled. KLA-STOP inhibitor concentrations should be monitored using a filtrate amine titration method. Premix dilution rates should be based on the depletion rates and the polyamine inhibitor concentration in the premix.

For reservoir drill-in fluid applications such as in the FLOPRO* NT system, KLA-STOP inhibitor compatibility with the reservoir should be evaluated through formation damage testing and filtrate/formation fluid compatibility testing.

It is important to monitor the cuttings condition at the shakers during drilling operations. Cuttings should be firm and dry inside. Sticky and balled-up cuttings may indicate insufficient inhibition from a low KLA-STOP additive concentration. The initial mixture may contain more KLA-STOP additive than specified in the mud program to act as a buffer against high consumption (e.g., 4–5% v/v).

KLA-STOP additive can also be used as a shale inhibitor in gravel pack fluids to maintain wellbore stability during high-rate water packs. The concentration is usually 1–2% for this type of application.

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Advantages

- Provides excellent shale inhibition and limits cuttings dispersion
- Reduces accretion potential and consequently bit and BHA balling
- Proper concentration of the KLA-STOP agent will provide a buffered pH in the 9.0–10.0 range, eliminating any need for additions of caustic soda or potassium hydroxide.
- Tolerant to common contaminants such as: cement, hard water, CO₂, drill solids and crude oil
- Environmentally acceptable for both offshore and onshore applications
- Can be added to the active system without adverse effects on viscosity and filtration properties

Limitations

- May have reservoir formation or formation fluid incompatibilities—test for incompatibilities
- May precipitate some salts out of brine solutions—test for precipitation
- Do not use with aldehyde-base biocide

Toxicity and Handling

Bioassay information is available upon request.

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

Packaging and Storage

The KLA-STOP additive is packaged in 55-gal (208-L) drums. It is also available in bulk.

Store in dry, well-ventilated area. Keep container closed. Keep away from heat, sparks and flames. Store away from incompatibles.

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