

# RHEFLAT

## Rheological modifier

### APPLICATION

- Deepwater drilling

### ADVANTAGES

- Flat rheology with decreasing temperature for reduced low-temperature gelation and improved equivalent circulating density (ECD) control
- Shear-thinning rheological profile for improved ROP
- Optimized for use in synthetic-based fluids (e.g., isomerized olefins)
- Compatible with conventional invert-emulsion drilling fluid additives

### LIMITATIONS

- Cannot be added to VERSA\* oil-based drilling fluid systems unless the system contains organophilic clay or oil-wet active drill solids.
- Less effective at temperatures above 250 degF [121 degC]
- Should not be used in combination with any other polymeric rheological additives without first conducting a pilot test

RHEFLAT\* rheological modifier is used to enhance the flat rheological profile in the thermally stable RheGuard\* flat-rheology drilling fluid system while having a minimal viscosity increase when subjected to low temperatures. This property is highly desirable in cold environments or deepwater drilling applications.

A specifically engineered organic polymer, the RHEFLAT modifier develops viscosity efficiently and maintains a consistent rheological profile for deepwater applications from 40 to 250 degF [4 to 121 degC].

RHEFLAT modifier exhibits an excellent balance between dispersability for the initial viscosity required at the mud plant and tolerance to solidsloading while drilling. This enhances the ability to control ECD management and is a significant improvement compared with drilling fluids using conventional rheological additives.

The required concentration of RHEFLAT modifier is dependent on the synthetic to water (S:W) ratio and density requirement, as well as the concentrations of the emulsifier package. A system with a higher S:W ratio (90:10) requires more RHEFLAT modifier than one with a lower S:W ratio (70:30). A fluid with a higher density usually requires less RHEFLAT modifier compared with a lower-density fluid.

Typical concentrations of RHEFLAT modifier range from 0.5 to 2.0 lbm/bbl [1.4 to 5.7 kg/m<sup>3</sup>] for fresh-built fluids. The concentration varies depending on base oil used. Recommended treatments should be pilot tested at high shear in increments of 0.1 or 0.25 lbm/bbl [0.3 to 0.7 kg/m<sup>3</sup>] up to a maximum of 0.5 lbm/bbl [1.4 kg/m<sup>3</sup>].

RHEFLAT modifier can be added at the mud plant when building new mud or can be added directly to the mud pits when building volume while drilling. The modifier should not be used in combination with any other rheological additives without pilot testing.

### Toxicity and handling

Bioassay information is available upon request. Handle as an industrial chemical, wearing protective equipment and observing the precautions described in the SDS.

### Packaging and storage

RHEFLAT modifier is packaged in 55-galUS [208-L] steel drums and 264-galUS [1,000-L] totes. Store in dry, well-ventilated area. Keep container closed. Keep away from heat, sparks, and flames. Store away from incompatible materials.

### Typical Physical Properties

Physical appearance	Dark liquid
Odor	Slight
Solubility in water	Insoluble
Specific gravity	0.8 to 1.0 g/mL
Boiling point	302 degF [150 degC]
Flash point	170 to 180 degF [76 to 82 degC]