

CLAYTONE-SF

Ultra high efficiency rheological suitable for use in mineral oil and synthetic base fluids to increase the carrying capacity and hole cleaning capabilities. The product is also an effective suspension agent for polymer slurries.

Product Data

Composition

Alkyl quaternary ammonium bentonite

Typical Properties

The values indicated in this data sheet describe typical properties and do not constitute specification limits.

Sieve passing (200 mesh/74µm): 70 % minimum; 90 % maximum

Specific Gravity: 1.6

Loss on ignition (1 h, 1000 °C): 43.5 %

Bulk density: 30 lb/ft³/481 kg/m³

Supplied as: Free-flowing powder

Food Contact Legal Status

For the current food contact legal status, please contact our product safety department or visit www.byk.com for further information.

Storage and Transportation

Moisture sensitive. Pallet stacking should be no more than two pallets high in order to prevent compaction.

Applications

Oil-Based Drilling Fluids

Special Features and Benefits

- Minimal shear required
- Improves sag resistance
- High YP/PV ratio
- Wet processed, highly refined
- Secondary benefits include: filtration control and emulsion stability

Recommended Uses

CLAYTONE-SF is recommended for drilling fluids utilizing mineral or synthetic fluids as the base oil and where the bottom hole temperatures will not exceed 350 °F (175 °C). This product is well suited for mud plants with minimal mixing shear capability.

CLAYTONE-SF is useful as a suspension agent for concentrated polymer slurries, such as xanthan or guar gum.

Example formulation #1: 10.5 pounds/gallon 70/30 Internal Olefin C16-C18

	350 ml formulation	Multi-mixer at 11,000 rpm
Amodrill* 1000	207 ml	
CLAYTONE-SF	8 g	Mix 5 min.
Lime	3 g	Mix 5 min.
Emulsifier Package	10 g	Mix 5 min.
CaCl ₂ (25 % in water)	97 ml	Mix 20 min.
Barite	120 g	Mix 5 min.

* Amodrill 1000 is a product of Ineos
Silverson mixer at 6,000 rpm for 5 minutes after mixing.

figure 1

Lab results

Properties (at 150 °F)	Initial	After Hot Rolling	
		16 h at 150 °F	16 h at 250 °F
Rheological properties			
600 rpm reading	75	69	61
300 rpm reading	55	47	42
200 rpm reading	46	35	33
100 rpm reading	36	26	24
6 rpm reading	18	12	10
3 rpm reading	17	11	9
Plastic Viscosity (cP)	20	22	19
Yield Point (lb/100 ft²)	35	25	23
Electrical Stability	995	563	225

figure 2

Example formulation #2: 10.7 pounds/gallon 67/33 Mineral Oil

	350 ml formulation	Multi-mixer at 11,000 rpm
Destillat 822*	199 ml	
CLAYTONE-SF	2.3 g	Mix 5 min.
Lime	3 g	Mix 5 min.
Emulsifier Package	10 g	Mix 5 min.
CaCl ₂ (25 % in water)	97 ml	Mix 20 min.
Barite	130 g	Mix 5 min.

* Distillate 822 is a product of Gibson's Energy
Silverson mixer at 6,000 rpm for 5 minutes after mixing.

figure 3

Lab results

Properties (at 150 °F)	Initial	After Hot Rolling	
		16 h at 150 °F	16 h at 250 °F
Rheological properties			
600 rpm reading	61	74	61
300 rpm reading	42	52	42
200 rpm reading	31	43	32
100 rpm reading	22	32	23
6 rpm reading	8	15	11
3 rpm reading	7	14	10
Plastic Viscosity (cP)	19	22	19
Yield Point (lb/100 ft ²)	23	30	23
Electrical Stability	1,030	780	561

figure 4

Recommended Levels

A 2-8 lb/barrel (6-23 kg/m³) addition is typically used for most conventional oil-based invert drilling fluids. Actual CLAYTONE-SF usage will depend on the base oil, oil/water ratio, solids, and the emulsifier package.

The above recommended levels can be used for orientation. Optimal levels are determined through a series of laboratory tests.

Incorporation and Processing Instructions

CLAYTONE-SF requires low to moderate shear and temperature to fully yield. Full yield is typically achieved through one bit pass. A small stream of water can be used to reduce yield time. (The water phase of invert emulsions provides the polar activation).



Additive Guide



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