



SP-3®

SP3 FAST MIX DRILLING FLUID SYSTEM

The solution for drilling ahead and reduce mud volumes during moderate to severe loss circulation events.

CHALLENGES

- Fractured carbonate formation
- Vugular formation
- Hole Instability
- Stuck Pipe
- Depleted zone
- Expensive oil base mud systems
- Cuttings Disposal

SP3 FAST MIX SOLUTIONS

- Chemical compatibility to allow fast mixing during drilling ahead in the loss zone section.
- Excellent thixotropic characteristics to reduce lost circulation volume into the formation.
- Adequate rheological properties to suspend and carry cuttings into the Surface.
- High inhibition for medium to reactive shales.
- Reduce fluid loss into the formation.
- Provides High lubricity and antiaccretion to improve ROP.
- Minimize formation damage.
- Environmentally friendly.

SP3 FAST MIX- SYSTEM COMPONENTS

- High quality 100% proprietary liquid components
- Environmentally friendly

Component	
Sea Water	Base Fluid
Proprietary Polymeric Blend	Rheologies and fluid loss control
Borehole Stabilizer	Shale inhibition & lubricity
Corrosion Control	pH control

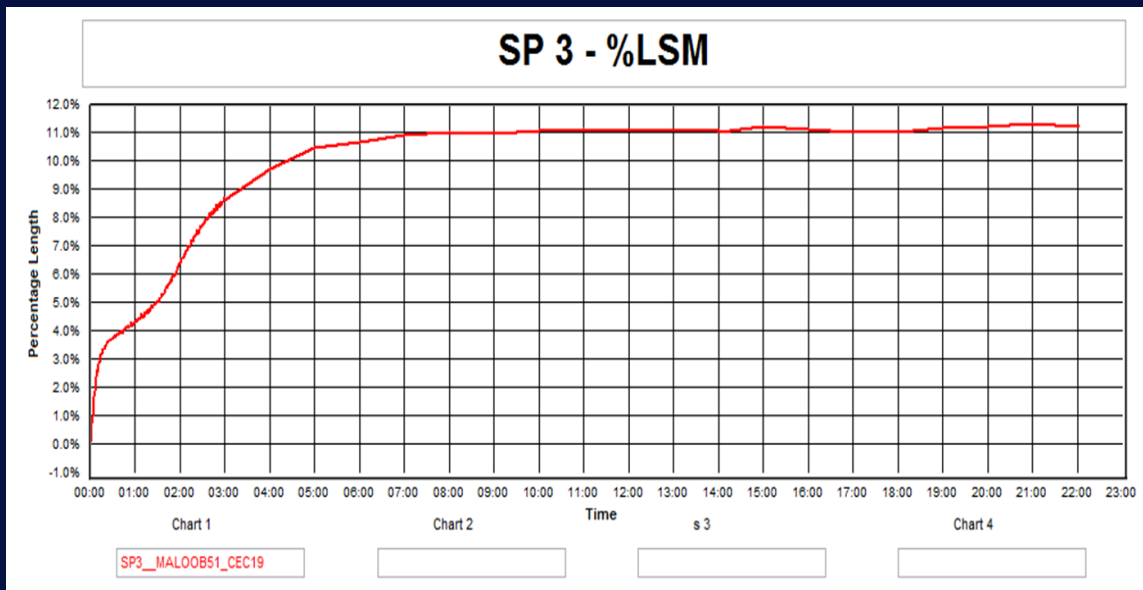


FLUID SYSTEM PROPERTIES

Physical and Chemical SP3 [®]		
Rheological Parameter	Unit of measure	After aging at 65 °C
L6	lb/100 ft ²	11
L3	lb/100 ft ²	9
Apparent viscosity	cP	24
Plastic viscosity	cP	11
Yield Point	lb/100 ft ²	22-28
Gels 10"/10'	lb/100 ft ²	10 / 15
API Filtrate	mL	7.0
pH		9.8
Marsh Viscosity	Seconds	85.0
Density	g/cm ³	1.03



LINEAR SWELLING AND DISPERSION TEST

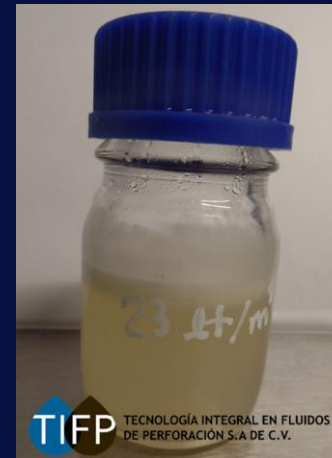


Shale-mud Interaction Test with Maloob 51 core			
Formation	CEC meq/100 g (shale reactivity)	Specification for Linear Swelling Test	% Lineal Swell SP3®
Lower Paleocene	19	25 % MAX	11.20
Formation	CEC meq/100 g (shale reactivity)	Specification for shale-particle disintegration Test	% Dispersion SP3®
Lower Paleocene	19	25 % MAX	1.79



HCL COMPATABILITY TEST

- Procedure:
 - Mix SP3 Fast Mix System with HCl 15%
 - Warm up the solution up to 80°C for 4 hours
 - Pour the solution through a 60 API sieve
 - Record the presence of retained particles
- Results
 - SP3 System components can be dissolved by HCl 15%.



BENEFITS

- High mixing rates (Up to 140 m³/hr) resulting in reduced downtime in lost circulation events.
- Drilling ahead during loss circulation events in vugular formations.
- NPT reduction due to stuck pipe or hole instability.
- Better performance than conventional high performance water base muds in only 3 components.
- Reduced formation damage due to the absence of solids in the system.
- Biodegradable and environmentally friendly.
- Proven 70% cost reduction when compared to OBM.