

# Technical Data Sheet

## Pileman<sup>®</sup> - BH (Brine & Hard)

### General description:

**Pileman<sup>®</sup> - BH** is a custom-made Bentonite support system which adapts to drilling in extreme formations soaked with sea water or any carbonate hardness. Its formulation comprises with the enhancement of Basic bentonite clay to adapt select polymer and additives depending upon usage.

### Product features:

- Produces thixotropic Gel
- Shear thinning fluid
- Ensuring optimum cutting carrying capacity
- Excellent fluid loss property
- Resists bacteria attacks
- Max resistance up to 10,000 ppm total hardness

### Dosage:

In the range of 45-60kg/m<sup>3</sup> depending upon the soil conditions.

### Mixing procedure:


Pileman<sup>®</sup> - BH is a single bag system and water hardness up to 200 ppm can be used for making slurry.

### Product design:

There are two typical extreme conditions which such slurry is likely to encounter:

1. Contamination with solid ground containing Chlorides, carbonates and Sulphates Sabhka or similar formation found in Saudi Arabia.
2. Direct mixing with sea water.

### Explanation:

	Pileman BH slurry, hydrated in fresh water is exposed to 10,000 ppm chloride hardness.	<p><u>The slurry can only perform if such conditions are encountered without loss in Rheology and ability to form impermeable filter cake.</u></p>
	The slurry shows no signs of sedimentation	

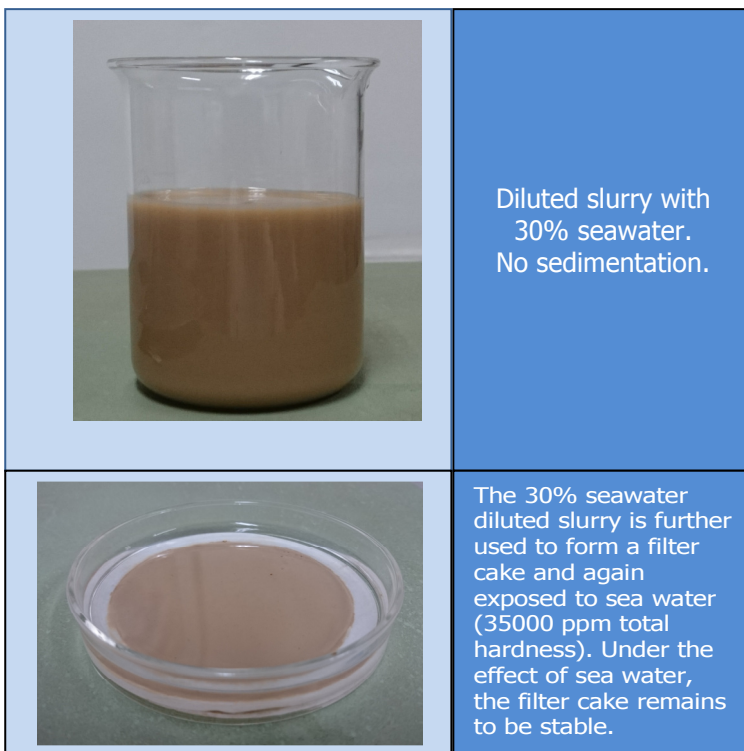
Physical Properties		
Parameter	unit	Results
pH (3% dispersion)	-	10-11
Moisture	%	12 max
Particle size (dry residue @ #200)	%	20 max
Loose Bulk density	t/m <sup>3</sup>	0.85±10%

Rheology in fresh water		
Concentration	Kg/m <sup>3</sup>	60
Marsh Viscosity	Sec/qt	50
Gel Strength	Pa	5
Yield	bbbl/sht	90

## CASE 2:

When the tunneling is taking place in the close proximity of the sea shore, there are often the chances of salt water stream flooding the tunnel under construction and getting mixed with the bentonite slurry.

**Pileman® - BH** is designed to withstand dilution with sea water upto 30% of its given volume inside the tunnel. Under such adulterated condition, the slurry would still perform both in maintaining the Rheology and formation of impermeable filter cake.



Rheology chart of the slurry after dilution with 30% seawater

Concentration	Kg/m3	60
<b>Fann Viscosity</b>		
@600	rpm	41
@300	rpm	38
@6	rpm	30
<b>Apparent Viscosity</b>	cPs	20.5
<b>Plastic viscosity</b>	cPs	3
<b>Yield Point</b>	lb/100ft2	35
<b>10s Gel Strength</b>	lb/100ft2	30
<b>Filtrate Loss(As per API after 30min)</b>	ml	19



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Only in-house production & process:  
Bentonite | Drilling Polymer & Cellulose | Drilling Foam | Bentonite Pellets | Super Absorbent Clay