Technical Data Sheet

Pileman® - BH
(Brine & Hard)

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^3	0.85

General description:
Pileman® - BH is a custom-made Bentonite support system which adopts 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

Rheology chart of the slurry in 5000ppm hard water @ $50kg/m^3$ concentration

Fann Viscosity		
@600	rpm	32
@300	rpm	23
@6	rpm	11
10s Gel Strength	lb/100ft2	9
Filtrate Loss (As per API after 30min)	ml	25

This product is designed to be used in the following ways:

- Directly mix in brackish water hardness upto 5000ppm
- Hydrate in fresh water and drill in seawater

Dosage:
In the range of 50-60kg/m^3 depending upon the soil conditions.

Mixing procedure:
Pileman® - BH is a single bag system and water hardness up to 5000 ppm can be used for making slurry.

Product design:
There are two typical extreme conditions which such slurry a 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.

The slurry shows no signs of sedimentation

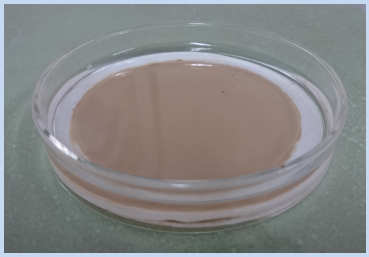
The slurry can only perform if such conditions are encountered without loss in Rheology and ability to form impermeable filter cake.

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.

Diluted slurry with 30% seawater. No sedimentation.



The 30% seawater diluted slurry is further used to form a filter cake and again exposed to sea water (35000 ppm total hardness). Under the effect of sea water, the filter cake remains to be stable.

Rheology chart of the slurry after dilution with 30% seawater

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

AMRFEO Private Ltd

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ISO 9001 : 2015 Quality System

Corporate & Marketing Office :
32A,Chittaranjan Avenue, Calcutta 700012, India
Ph: +91 33 4007 2855 | Mobile: +91 9831013136
Email: amrfeo@amrfeo.com or amrfeo@gmail.com
Web : www.amrfeo.com

Bentonite Processing plant :
Survey no: 583/1 plot 2-6, Bhuj Bacaho Road
Kutch – Gujarat , India