

Specification & General Usage

PAT stock and recommend the following products to meet the needs to drill most open holes in soft sedimentary material that borehole walls need support.

PAT High Yield Premium Bentonite

Approximate usage 5-10 Kg per 1000 litres make up water. Available 22.5Kg bags, 40 bags per shrunk-wrapped pallet

A high grade premium bentonite 200 mesh ground fine powder. When shear mixed in a water-filled mud pit , it will quickly build “yield” in 30 - 45 minutes to a suitable drilling viscosity. (30+ marsh funnel seconds),

This viscosity is further enhanced by continual pumping and circulation and, therefore, remains a stable fluid over the duration of a drilling operation of many days.

it is common practice to use bentonite as a base mix particularly on deeper, larger diameter holes anticipated to take more than 4-6 hours to complete.

A base mud should, in most ground conditions should be mixed to range of 35-50 Marsh Funnel seconds.

PAT Polymer Powder

Approximate usage 5 Kg /1000 litres make up water. Available 10 Kg pails

This can be used as single additive added to the mud pit and will yield viscosity in 30-45 minutes. Very good to use on holes that can be completed in a few hours circulation. However, in use viscosity will degrade and require building up by the addition of more polymer. Polymers in general perform well in clay formations keeping clay cuttings from sticking together.

It is also common practice to use in combination with a base bentonite mix of 36-40 Marsh funnel seconds in circumstances where the borehole is beginning to absorb water ie. Water loss from mud pits into borehole or needs extra viscosity to lift cuttings.



The polymer will rapidly build viscosity 40-60 seconds — then through time in use will gradually degrade returning the mud to nearer to its base viscosity.

It is good practice to manage to keep the mud pit viscosity lower than higher to promote good settlement of cuttings in the mud pit — clear from recirculating into the pump suction promoting internal erosion.

As general practice as borehole gets deeper and towards the aquifer zones it is good practice to have mostly a polymer mix than bentonite to reduce an impermeable wall cake to aid rapid well development.

Soda Ash Approximate usage 5 - 2 Kg per 1000 litres of make up water. Available in 25Kg Sacks

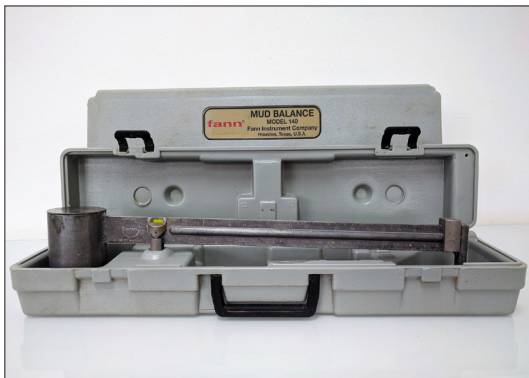
Both Bentonite and Polymer additives benefit from being mixed in an alkaline water with a PH of 9 - 9.5 They both will build better viscosity for the use of less product.

Use Soda ash to raise PH simply jetting powder into the drilling make up water. First measure (use pen type PH Meter) the PH of your make up water and estimate the volume of the mud pits. Mix a minimal amount to measure the range of raise obtained with which to base a final dosage rate per 1000 litres .

Objective to get above a PH of 9

As mud pits lower and more make up water is added it will be necessary to mix more Soda Ash appropriate to volume of water being added and the Soda Ash performance.

In addition to products above PAT Stock



Mud Balance (to measure mud weight)



PH Tester (Hach)



Marsh Funnel & Jug (to measure mud viscosity)

For mud drilling, follow the general setup & practice recommended in Chapter 2 **“Drilled Wells”** downloadable as pdf book from PAT web site.

http://www.pat-drill.com/wp-content/uploads/2016/04/Drilled_Wells.pdf

