

### Drilling Fluids

#### WHAT ARE THEY?

Homogeneous mixture of solid additives, liquid and / or gases in water, flow capacity and that are in suspension.

#### WHAT ARE THEY USED FOR?

Helps drilling to be more efficient, faster, safer and more productive obtaining a more better information of each well.

#### HOW?

Fluids perform certain functions. For this to be achieved they must have certain properties:



#### Functions of Drilling Fluids

- Cleaning the Well.
- Suspend and Download cuts surface.
- Stabilize the Well (Training Punch).
- To control the formation pressure.
- Seal permeable formation and / or fractures.
- Cool and lubricate the drill bit and the drill.

- Support of the weight of the drill.
- Transmit hydraulic energy to the bit.
- Encourage Maximum Information Retrieval.
- Corrosion Control.
- Minimize Environmental Impact.
- CLEANING: Surface Transportation Cuts

### FACTORS INVOLVED

- Size, Shape and Weight Trim or Detritu.
- Fluid properties (rheology, density, viscosity).
- Parameters of Operation: WOB, Hydraulic Drilling



### Cleaning Functions





**SUSPENSION AND DISCHARGE OF CUTS**

Circulated and recirculated drilled solids, smaller particles are divided. They therefore need to be controlled:

**Settlement, decanting**



### Well Stability

- **mechanical** equilibrium implies stability (pressure and efforts), and **chemicals**.
- Unconsolidated sands require a good plaster and density.
- Clays require a combination of fluid density and inhibitory products.
- The instability is related with landslides, small hole, bridges.

### MECHANICAL EQUILIBRIUM

Loss of movement is one factor that contributes to the high cost of sludge.

- Other problems are:
- The instability of the well.
- Entrapment of pipe, etc.

### SEALING PERMEABLE FORMATIONS

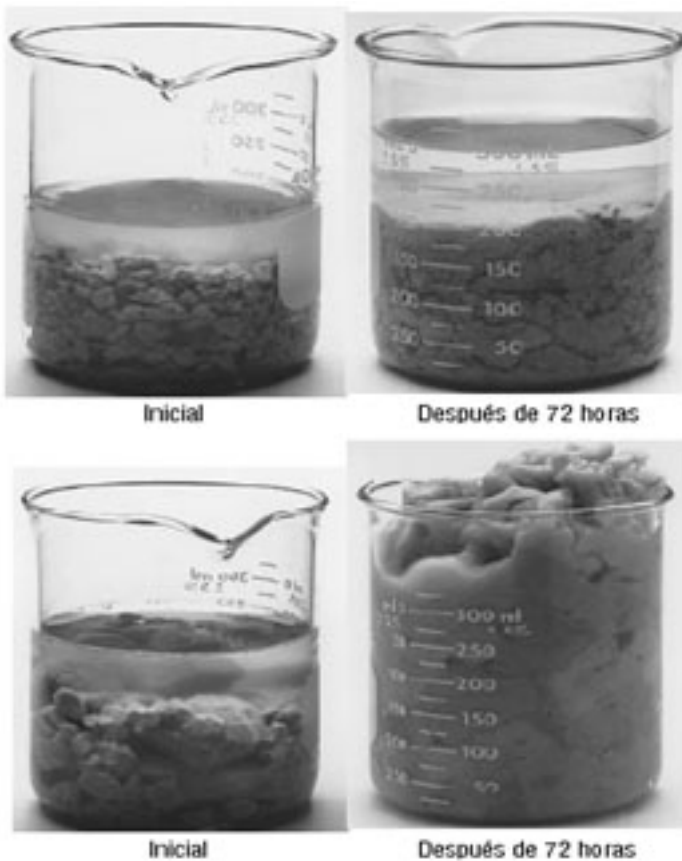
The pressure generated by fluid pressure counteracts the formation of land.  
The solids in the fluid form a wall that protects the formation of water invasion.

## TRAINING SEALING FRACTURES

Larger materials such as cotton pit, sawdust, paper, Poly Swell and the same bentonite seal cracks, fractures where you can lose mud. They are the LCM.

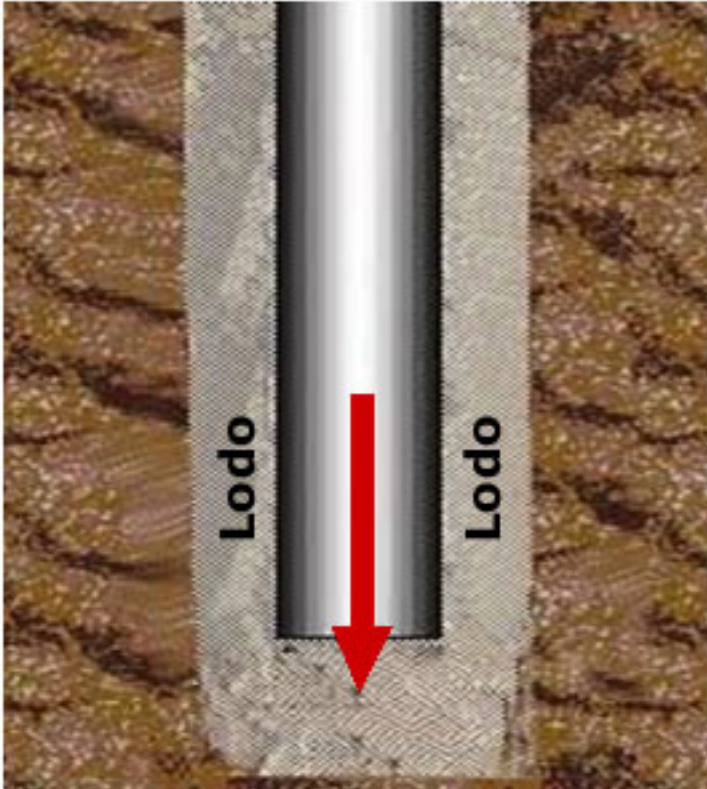
## CHEMICAL BALANCE

## HYDRATION OF CLAY



Coolings, lubricates and held together

The use of lubricants reduces  $\mu_k$  (coefficient of kinetic friction).



### **Prevent vibration**

1. Reduce possibility of unstable holes.
2. Preventing the collapse of pipe
3. Improve monitoring of drilling parameters.

### **MINIMIZE IMPACT ON ENVIRONMENT**

Drilling fluids, which can be disposed near the well are the most desirable. recoverable or biodegradable additives are the most requested.