Drilling Mud, Additives, Solidification & Testing Equipment

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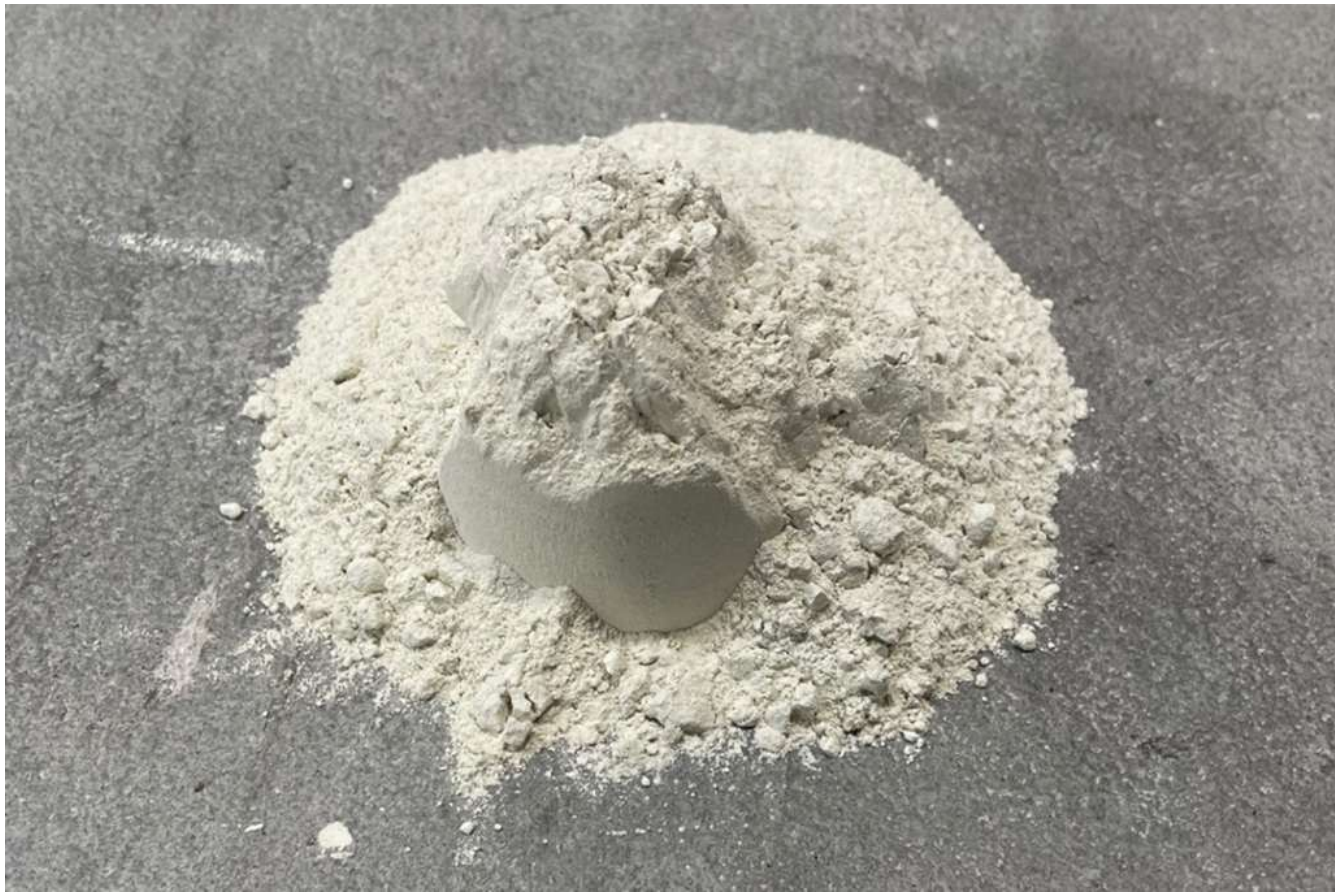
Track VII=HDD

Drilling Mud

- Aids drilling of boreholes
- Good mud: fast mixing; excellent viscosity, gel strengths, soil sealing, hole cleaning & lubricity

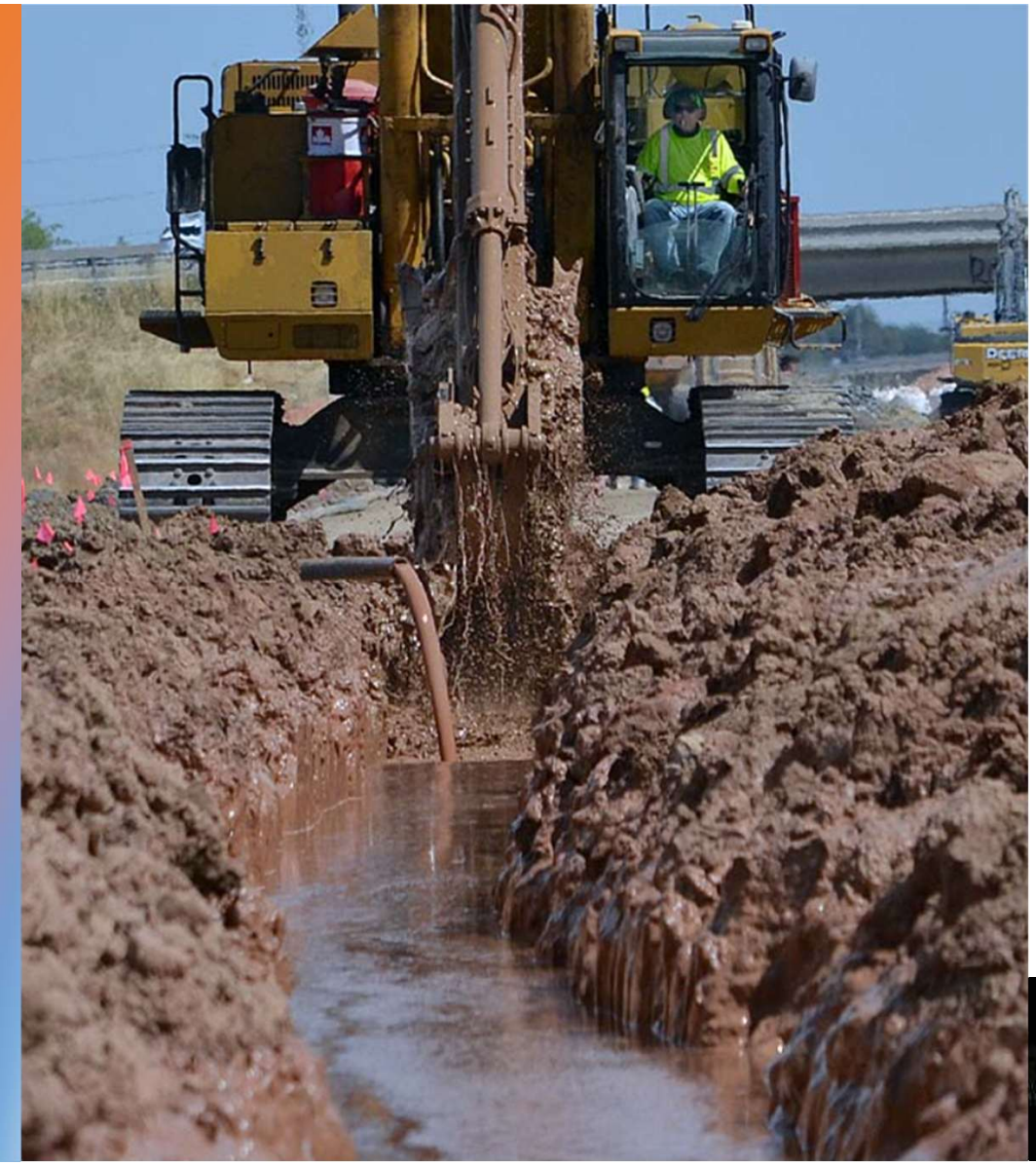


Types Drilling Mud

- Oil-based
- Synthetic-based
- Water-based=for HDD industry

Water-based Applications

- HDD
- Slurry wall & trenching
- Tunnel boring & bored pilings
- Soil sealing & pond lining
- Other hydraulic barrier applications



Advantages

- Easy to mix; yields multi-purpose, high-viscosity slurry
- Stable slurry; no separation for prolonged periods
- Compatible with drilling mud additives, cement and other construction additives

Drilling Mud Additives

- Improve performance of drilling fluids
- Efficiency, wellbore stability, and more

Functions of Additives

- Weighting agents
- Viscosifiers
- Alkalinity control
- Filtration control
- Corrosion inhibitors
- Biocides
- Defoamers
- Lubricants
- Surfactants/Emulsifiers
- Thinners & dispersants
- Shale stabilizers
- Wellbore strengthening materials

Additives Examples

- Fluid loss control/Polyanionic Cellulose-L
- Fluid loss control/Polyanionic Cellulose-R
- Clay control
- Drilling detergent
- Bore/mud lubricant
- Liquid PHPA (polymer)
- Soda Ash (pH Control)
- Xanthan Biopolymer
- Swelling LCM Polymer
- LCM: hole-sealing aid
- HDD One Sack

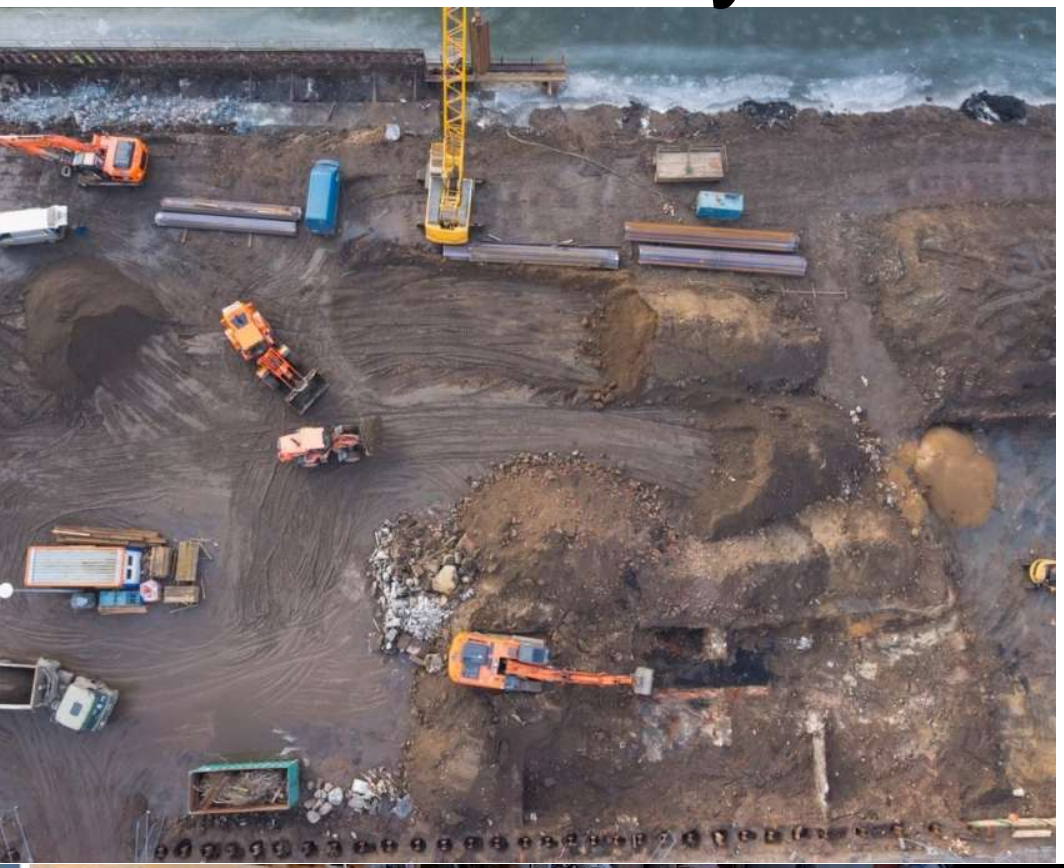
Solidification

- Turn used drilling fluids into solids that can be disposed of
- Cost-effective way to deal with liquid or semi-solid waste

How do they work?

- Bind liquid or semi-solid drilling fluids with another material
- More absorbent, the more effective
- Once absorbed, solid product is hauled off for disposal

Why are they useful?



- Easier disposal
- Prevent free water from leaking into surrounding soil
- Can help drillers avoid costs & time recovering, transporting spent drilling fluid

Mud Testing Equipment

Measure properties

- Density/Weight
- Viscosity/Gel strength
- Sand content
- Filtration characteristics

Purpose

Ensure it's functioning optimally; maintaining the necessary properties

- Remove abrasive cuttings from wellbore
- Stabilize the formation
- Protect drilling equipment

Common Components

- Mud balance: Measures density
- Sand content kit: Determines percentage of sand particles
- Marsh funnel: Basic viscosity & fluid loss testing

Questions?

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