

Barite Plug

A barite plug, properly mixed and placed, can seal off a high pressure zone which could otherwise be controlled only with great difficulty. The technique is particularly of assistance in controlling a high pressure zone below a potential or actual zone of lost circulation. In setting a plug, a barite slurry weighing 20 to 22 lb/gal. is mixed with fresh water and a phosphate to facilitate rapid settling. Some advantages of a barite plug are: increased hydrostatic head, low cost, ease of placement, minimum amount of hole loss with plug, ease of drillability, materials can be made readily available on location and the plug can be placed through a bit or through open ended drill pipe. Disadvantages are: requires special mixing and pumping equipment, salt water contamination will prevent settling, and improper spotting methods may plug the drill string.

Recommendations for mixing and placing a barite plug:

1. Mix barite slurry through cement hopper.
2. Calculate volume for a minimum of 150 feet of settled barite. Allow for hole washout. Remember that settled volume will be about half the slurry volume. Considering a 100% excess is not unreasonable; i.e., a calculated length of 300 feet may result in only 150 feet of settled barite.
3. Mix 0.7 lb. SAPP per barrel fresh water in mixing tank.
4. Adjust pH of fresh water with caustic soda to 9. (Estimated requirement: 0.25 lb. caustic soda per barrel of water.)
5. Mix barite at 20 to 22 lb/gal.
6. Underdisplace to avoid contamination.
7. Quickly pull string up above slurry and circulate if possible for several hours. (Plug should be settled in less than one hour.)