



Drilling Fluids, Inc.

## Commercial Chemical

### Description

BICARBONATE OF SODA ( $\text{NaHCO}_3$ ) is used to precipitate soluble calcium in water base drilling fluids. It is used primarily for treating cement-contaminated drilling fluids.

### Uses

BICARBONATE OF SODA is used to treat out calcium contamination after drilling out cement. Do not use BICARBONATE OF SODA to treat makeup water. BICARBONATE OF SODA requires the presence of hydroxyl ions ( $\text{OH}^-$ ) to treat out calcium by converting the bicarbonate ( $\text{HCO}_3^-$ ) to a calcium carbonate ( $\text{CaCO}_3$ ). Use SODA ASH for softening water.

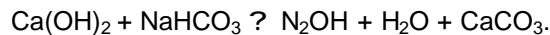
### Benefits

BICARBONATE OF SODA provides two basic functions: 1) removes soluble calcium and 2) lowers the pH of the drilling mud. BICARBONATE OF SODA is an inexpensive chemical for control of cement-contaminated drilling fluids.

### Treatment

Mix approximately 50 pounds of BICARBONATE OF SODA to treat one cubic foot of cement. When green cement is drilled, the treatment with BICARBONATE OF SODA should be doubled or even tripled. Treatment will result in a decrease in pH, allowing the calcium solubility to increase. Pre-treating will significantly reduce the required amount of BICARBONATE OF SODA required.

Over treatment with BICARBONATE OF SODA will result in carbonate and bicarbonate contamination, which will result in rheological and filtration control problems. BICARBONATE OF SODA should be mixed through the mud hopper. When used to treat cement contamination the reaction is as follows:



Multiply ppm hardness by .000457 to get pounds per bbl BICARBONATE OF SODA to treat out hardness.

Filtrate calcium can be reduced with BICARBONATE OF SODA by adding .0007267 per ppm.



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## **BICARBONATE OF SODA (cont'd)**

**Function**

BICARBONATE OF SODA provides a source of carbonate ions ( $\text{CO}_3$ ) to tie up free calcium as insoluble calcium carbonate. An external source of pH, such as cement, is required or the calcium carbonate will remain soluble.

**Typical Physical Properties**

Physical Appearance.....White, crystalline powder  
Specific Gravity.....2.2  
Bulk Density.....60lb/ft<sup>3</sup>  
Hygroscopic.....Slightly  
pH in Water.....8.2  
Solubility in water.....16.4% by weight at 140°F

**Safe Handling Recommendations**

Utilize normal precautions for employee protection when handling chemical products. Use of appropriate respirator, gloves, goggles, and apron is recommended for employee comfort and protection. See Material Safety Data Sheet (MSDS) for this product prior to use.

**Packaging**

BICARBONATE OF SODA is packaged in 50 pound multiwall bags.