GYPSUM

Carbonate Contamination Remover

Product Description

Gypsum, is the common name for calcium sulfate ($CaSO_4.2H_2O$) and is the source of calcium ions used to prepare gyp/lignosulfonate muds.

Gypsum is also used to remove carbonate contamination in high-pH muds.

Typical Physical Properties

Physical appearance	Off-white powder
Specific gravity	2.32
Solubility in water	Slightly water soluble (2.4 g/L)

Application

Gypsum is used in gypsum/lignosulfonate or polymer muds as a source of calcium ions for inhibition and to convert bentonite to the calcium ion form. This avoids problems that might otherwise occur when anhydrite is drilled. It can also be used as an economical treatment for carbonate contamination in high-pH muds. The reaction is:

$CaSO_4 + CO_3^{2-} \rightarrow CaCO_3 + SO_4$

Advantages

- Widely available and economical source of calcium ions for inhibition
- Economical treatment to remove carbonate contamination

Limitations

- Impurities include $CaCO_3$
- (1.2%) and clays (3%), depending on product activity

Recommended Treatment

For gypsum/lignosulfonate muds, add gypsum until the calcium-ion concentration in the filtrate is between 600 and 1,200 mg/L. Usually 4 to 8 lb/bbl (11.4 to 22.8 kg/m^3) is needed for the initial breakover; however, this amount can vary. For polymer muds, a treatment of 2 to 4 lb/bbl (5.7 to 11.4 kg/m^3) normally supplies sufficient free calcium ions to inhibit clay dispersion; however, this amount can vary. Pilot testing prior to treatment is highly recommended.

Toxicity and Handling

Handle as an industrial chemical, wearing protective equipment and observing the precautions described in the Material Safety Data Sheet (MSDS).

Packaging and Storage

Gypsum is packaged in multi-wall paper sacks with plastic liners; packing container sizes vary based on local area of purchase.

Store at moderate temperatures in a dry, well-ventilated area. Keep in original container. Avoid handling that leads to dust formation. Provide good ventilation