

TRAMFLOC, INC.

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Technical Information Bulletin

TRAMFLOC® GUAR GUM DRILLING FLUID ADDITIVES

Product Description

Tramfloc® Guar gum drilling fluid additive is produced in two viscosities, FANN 35-40 cps and 40-45 cps. Guar gum powder is the natural hydrocolloid obtained from milling ground endosperm of guarbean seeds. Guar gum seeds come from the annual plant known as *Cyamopsis Tetragonoloba*. It is made up of high molecular weight, anionic polymers of mannanopyranose backbone-linked to galactopyranose by glucosidic bonds. It is chemically described as carboxymethyl hydropropyl guar.

Drilling Uses

Tramfloc® guar gum products are used to reduce down hole friction and permit more effective drilling operations due to its excellent viscosity properties. Guar gum features very effective thickening, gelling, hydrating and particle suspension properties due to its unique viscosity characteristics. When viscous drilling mud is pumped under pressure to create and expand cracks in rock, guar gum prevents water loss. Guar gum is environmentally friendly because it's naturally reabsorbed or exhausted.

When guar gum beans are ground into a powder, this bean starch can provide a specific viscosity which makes it a technically efficient and cost effective additive for drilling fluids. Guar gum has a number of properties which make it highly advantageous to be included in the drilling fluid package. Guar gum provides the following benefits to the drillers: effective suspension of proppant material, coarse sand, bentonites, in the drilling mud; effective gelling and hydrating actions; provides lubricity and friction reduction; controls water loss; guar gum facilitates pumping of the drilling fluid into the soil; if the proppant material is suspended more effectively, then the driller can deliver more of it under pressure to create and expand rock cracks; guar gum prevents water loss from viscous drilling fluid; guar gum leaves minimal residual quantities after completion of gelling action and water washing; guar gum is environmentally friendly because it is naturally reabsorbed or exhausted in the drilling process.

Guar is less thermally stable at temperatures $> 100^{\circ}\text{C}$, however, this limitation may be overcome by the application of hydroxyl-propyl derivatives.

Physical Properties

Guar gum has the appearance and texture of odorless, white flour and is ground into 100, 150, 200 and 300 mesh sizes as preferred by the drillers. Our guar gum is manufactured from the purest available raw material in technical grade viscosities from 2500 to 7500 cps and in low viscosity technical grades from 100 to 1000 cps. Guar gum has an extremely fast wetting/hydration time.

Packaging

Tramfloc® 522 is available in 55.1# bags and in 2000# sacks.

Handling and Storage

A key feature of our guar gum is its rapid hydration. This is especially critical in cold climates such as the Bakken. Even at 40°F water temperatures, our guar gum goes into solution rapidly and remains stable. There is no need for added BTU with our guar gum formulations. It is reasonable to consider guar gum as a friction reducer similar to some of our polymers which modify viscosity. Shelf life on all guar gum products is > 2 years when stored in dry, room temperature conditions.

Safety and Health

Precautions should be taken to prevent powder from entering lakes or streams. Powder can be flushed with copious amounts of water and disposed of according to local regulations or treated with an absorbent material, then collected for subsequent legal disposal. Precaution should be taken to prevent inhalation, ingestion or contact with skin or eyes. Observing basic industrial hygiene precautions should prevent any health or safety hazards.

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