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**Rama Gum Industries (I) Limited**

Manufacturer & Exporter of Guar Gum Split & Powder  
Government Recognized Export House Status

## Guar Gum Powder in the Oil and Gas Industry

Guar gum— a white powder derived from guar beans—is widely used to recover oil and gas from geological formations. Hydraulic fracturing is also known as fracture stimulation, is a technique used to enhance the extraction of oil and natural gas trapped deep within the earth's crust, especially in shale rock formations.

Grown and harvested primarily in India and Pakistan, the guar plant's beans are de-husked, milled and screened into a powder that quickly converts water into a thickening gel. It has been cultivated for centuries in these countries and surrounding regions as an agent to thicken sauces in various recipes. It is also used in processed foods such as ice cream and ketchup.

In the Oil and Gas Industry, guar gum has been adopted for use by Petrochemical companies for its thickening properties. These properties are used in drilling applications where high viscosity water is needed to extract oil and natural gas from shale rock formations. A large amount of guar slurry is needed by drilling companies for each stage of the hydraulic fracturing process.

Guar gum is used to thicken water that is pumped down to subsurface rock formations that are impermeable to fluids. Adding guar gum increases the fluids' viscosity and greatly increases the efficiency of high pressure pumping and the fracturing process.

Typically, sand is mixed into the water to help hold open the fractures which tend to close. Frac sand —the most common type of "proppant," — helps maintain the open fractures and improves the flow of gas and oil to the surface.



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**Oil field** is a place where oil is extracted from the earth by drilling wells and following a disciplinary approach to gain oil from these wells. Oil well drilling, stimulation and fracturing are some of tasks that are followed while extracting oil from the underground wells. The oil obtained from these processes is a form of crude oil containing various other things in it like water and other undesired particulates. This oil is further subjected to refining processes and transported to the refineries for extraction of pure oil suitable for use and selling.

Guar gum is one of the important substances used during the oil extraction process in an oilfield.

### **Guar Gum Additives for Oil Well Drilling**

Additives have an important role to play in the performance of drilling fluids during the bore well drilling process. The efficiency and precision of the drilling process is highly dependent upon the types of additives employed during the process. With the use of appropriate and good additives, the efficiency of the drilling process can be enhanced for improved productivity. Guar gum is used as a stabilizing, thickening and suspending agent in drilling fluids. As a viscosity enhancer, guar gum helps to balance the viscosity levels of the drilling mud. This helps the drilling fluids to move the drill waste from the deepest of holes while providing a smoother operation with reduced friction in the holes. Guar gum for oil well drilling helps in efficient process with minimized water loss.

### **Use of Guar Gum in Fracturing**

The main purpose of additives in fracturing fluids is to enhance the creation of fracture while minimizing the formation damage. Adding guar gum additives in fracturing fluids helps in maintaining high viscosities required

during the oil well fracturing process. The use of guar gum powder in oil well fracturing can improve the ability of the fracturing liquid to transport the proppant. The colloidal solids present in it make fracturing fluids more efficient to give out less filter product and therefore reduces the wastage.

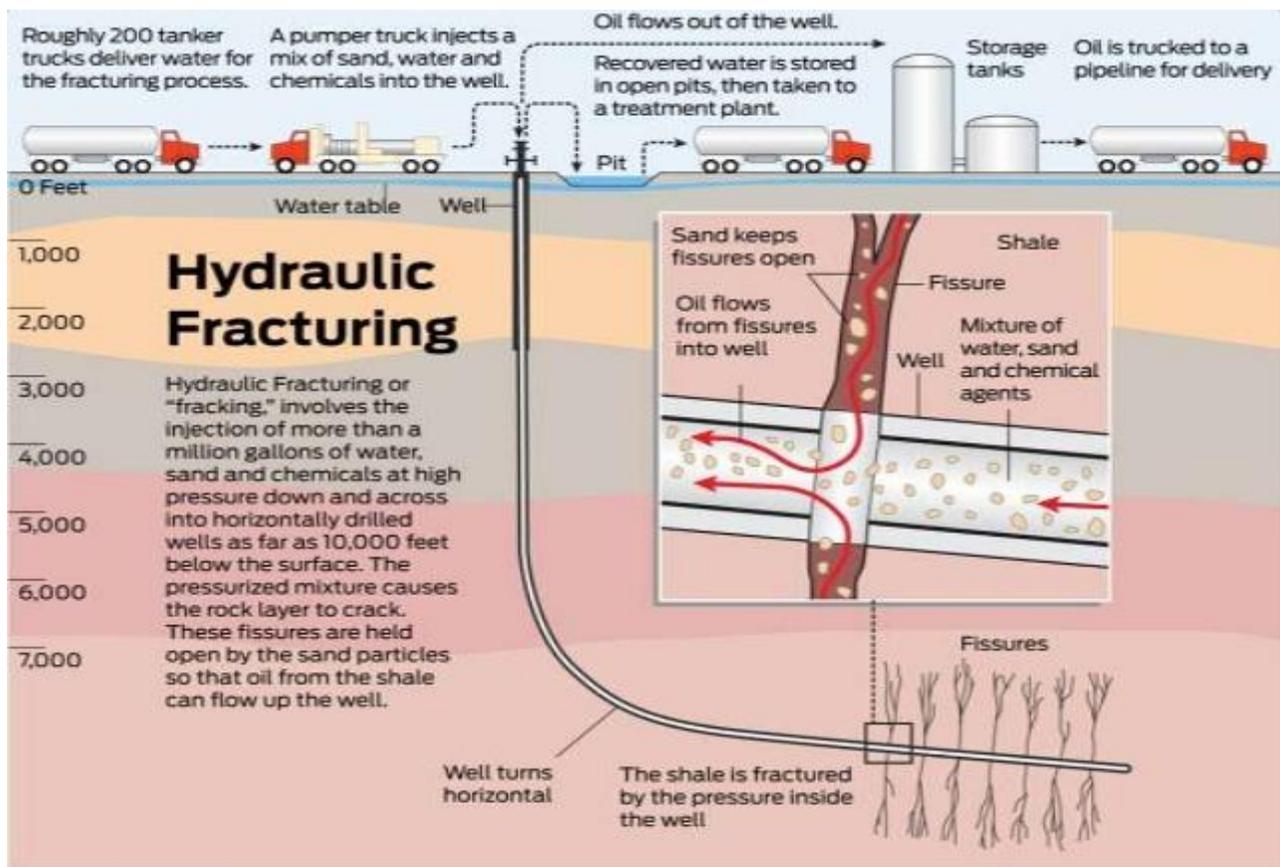


Figure: Hydraulic Fracturing Mechanism

### Why High-Viscosity Water is Needed

Enormous quantities of oil and natural gas are trapped in subsurface rock units that are so tight that fluids cannot flow through them. To liberate the oil and natural gas, drilling companies pump fluids down a well under



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pressures that are high enough to fracture the subsurface rock units. This process is known as **hydraulic fracturing**.

Adding guar bean powder (also known as guar gum) to this water increases its viscosity and makes high-pressure pumping and the fracturing process more efficient.

High-viscosity water is needed for a second reason. Sand grains or other tiny granules are mixed with the water that is used for the fracturing process. When fracturing occurs these granules, known as "**proppants**," are carried deep into the rock unit by the sudden rush of water that accompanies the opening of fractures.

When the pumps are turned off, water pressure within the fractures drops and the fractures close suddenly. If enough proppants have been carried into the fractures, they prevent the fractures from closing completely. These partially-closed fractures then become passageways that allow oil and natural gas to flow out of the rock and into the well.

**High-viscosity water is much more effective at suspending sand grains and carrying them into the fractures.**

#### **Conclusion:**

Therefore guar gum is an important product for oilfield processes. **RAMA GUM INDUSTRIES (INDIA) LTD** is a leading manufacturer and supplier of guar gum products in India and offers high quality guar gum powder and guar gum derivatives for applications in various industries. Visit [www.ramagum.com](http://www.ramagum.com) to know about our company/ products details.

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