



Environmentally Friendly Emulsifier

A chemical used in preparation and maintenance of an oil or synthetic-base drilling fluid that forms a water-in-oil emulsion (invert emulsion). An oil-mud emulsifier lowers the interfacial tension between oil and water, which allows stable emulsions with small drops to be formed. Historically, oil-mud emulsifiers have been classified as primary and secondary. Secondary emulsifiers are generally not used alone to make a stable oil mud. These emulsifiers surround water droplets, like an encapsulating film, with the fatty acid component extending into the oil phase. Emulsifier molecules that cannot fit around drops form clusters (micelles) in the oil phase or adsorb onto solids. Oil-mud emulsion drops each behave like a small osmotic cell. The emulsifier around the drops acts like a semi permeable membrane through which water can move but ions cannot pass. Thus, oil muds have the special capability (which water muds do not have) to control water transfer to and from the drops simply by adjusting salinity within the water phase of the oil mud.

However, conventional OBMs have two drawbacks which cannot be ignored: One is their high costs, and the other is their adverse impacts on the environment. Since 1990s, environmental laws and regulations in many countries have been becoming stricter. This reduced the usage frequency of conventional OBMs sharply. As an appropriate response to this, **environmentally friendly emulsifiers** were developed. Not only can they provide operational performances like conventional OBMs, but also they have low toxicity and good biodegradability.

We manufacture a range of **green oil-mud emulsifiers** which have been classified as primary and secondary.

GSEMUL is a proprietary surfactant blend for use as a secondary emulsifier in invert drilling mud systems.

GSEMUL is a liquid blend of selected secondary emulsifier and wetting agent. It is used to emulsify water into oil in oil /diesel based drilling fluids .It provides excellent emulsion stability, acts as a wetting agent, gelling agent and fluid stabilizer in a mineral oil base. It is also used for filtration control and for temperature stability.

GSEMUL is a secondary invert emulsifier based on a chemically modified. **GSEMUL** is oil soluble, water dispersible and is compatible with most products employed in oil based drilling fluids.

GSEMUL uses diesel/alcohol solvent, but can be formulated in low toxic solvent for more environmental control and is coded as **GSEMULS**.

GSEMUL when used in conjunction with **PEMUL** will give stable invert mud that eliminates or reduces the need for additional fluid loss control additives.



GSEMUL emulsifier is both a secondary emulsifier and oil-wetting agent suitable for use in diesel oil based drilling fluid systems. **GSEMUL** emulsifier has minimal alkalinity requirements. When **GSEMUL** emulsifier is used in conjunction with **PEMUL** emulsifier, high temperature stable invert emulsions with low filtration rates can be obtained.

GSEMUL functions as a secondary emulsifier. Additional benefits include improved thermal stability and HTHP filtration control. **GSEMUL** wetting agent is effective over a wide temperature range, in the presence of contaminants, and is reducing the adverse effects of water contamination.

Typical Physical Properties

CHARACTERISTIC	STANDARD	Test Method
Physical appearance	Dark brown liquid	----
pH (100% solution)	1-2	ASTM D-1172
Sp.Gr @25 °C (g/ml)	1±0.03	ASTM D-1298
Pour Point (°C)	< -1	ASTM D-97
Flash Point (°C)	> 90 °C	ASTM D-92
Solubility in Water	Insoluble	----

Applications

GSEMUL is used as a secondary emulsifier providing excellent and very stable emulsion and oil wetting agent. It contributes to temperature stability and HTHP filtration control and is most effective over a wide range of temperatures and also in the presence of contaminants. It provides viscosity and filtration control and temperature stability.

GSEMUL is an excellent emulsifier for water in oil drilling fluids and may be used with a variety of brine emulsions. **GSEMUL** is designed to improve the stability of emulsions, aid in gel strength control and improve the fluid loss characteristics of drilling fluids.

GSEMUL exhibits excellent performance with regard to range of temperatures and contaminants.

GSEMUL can be employed as a single emulsifier, however it is usually recommended that it be used in conjunction with a primary emulsifier such as **GPEMUL** or a wetting agent.

GSEMUL is a concentrated secondary emulsifier used for formulating invert drilling fluids. It will provide high emulsification and good oil wetting properties **GSEMUL** is commonly used with primary mud emulsifier such as **GPEMUL**.



GSEMUL offers emulsion stability as well as high temperature tolerance and resistance to contamination. **GSEMUL** does not require lime, however the use of lime will enhance the emulsion stability and the HTHP Fluid Loss. Mix according to standard mixing procedure. A primary emulsifier is required to form a stable emulsion.

GSEMUL promote oil-wetting in invert emulsion systems.

GSEMUL improve electrical stability measurements.

GSEMUL Reduce flow properties of invert emulsions.

GSEMUL additive functions as the wetting agent and secondary emulsifier, when used in combination with the **GPEMUL**.

GSEMUL additive preferentially wets barite and drill solids to prevent water wetting of solids.

Secondary functions include: improves thermal stability, rheological stability, filtration control and emulsion stability as well as improves a system's resistance to contamination.

Advantages

- It improves emulsion stability.
- It has secondary wetting agent capabilities.
- It helps maintain HTHP fluid loss in a water-free state.
- It will enhance thermal stability and increase contamination tolerance of oil mud.
- It is multipurpose product which may be used in a wide variety of oil mud system.
- It improves emulsion stability and functions as a secondary wetting agent.
- Provides viscosity & filtration control.
- Improves thermal stability.
- Works effectively over a wide range of temperatures.
- Effective at low concentrations.
- Can be added directly to the system.
- Thermally stable at temperatures.
- Compatible with other oil-based mud additives.
- Aids in providing improved wetting of solids in the system.
- Tightens the emulsion and increases the thermal stability.
- Lowers fluid loss.
- Reduces risk of water in filtrate.



Features

- Excellent emulsion drops dispersion and system stability.
- Widely applied in many operation sections and obtain excellent reputation.
- It can provide operational performances like conventional OBMs, also they have low toxicity and good biodegradability

Packaging and Storage

GSEMUL is packaged in 220 Lit polyethylene or steel drums. Customized packaging is also available on request.

GSEMUL store in dry, well-ventilated area. Keep container closed. Keep away from heat, sparks and flames. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking. Keep in original container and tightly closed.

Shelf Life

GSEMUL has shelf life of at least six months from the date of manufacture when stored in the original sealed containers in a cool and dry place.

Safety and Handling

This product is not classified as a hazardous substance, **GSEMUL** must be handled as an Industrial chemical, wearing protective equipment and observing the precautions as mentioned in the MSDS.