

Versamod

Versamod* organic gelling agent is a liquid rheology modifier used in Versadril* and Versaclean* oil-base mud systems.

It increases low-shear-rate viscosities (LSRV) and gel strengths for improved hole cleaning. The primary application for Versamod additive is in large-diameter, high-angle, horizontal and extended-reach wells to increase cuttings-carrying capacity. This permits higher rates of penetration while maintaining wellbore stability. Versamod additive, when used at proper concentrations, produces the highly shear-thinning rheological profile found in Versaport* oil mud systems.

Typical Physical Properties

Physical appearance	Amber viscous liquid
Specific gravity	0.908
Flash point	175°F (79.4°C) (PMCC)
Pour point	35°F (1.7°C)

Applications

Versamod additive is used to improve cuttings transport in large-diameter or directional wells, especially wells with diameters greater than 8 S in. or deviations greater than 25°. It modifies the rheological profile of oil-base muds, increasing their shear-thinning and thixotropic characteristics without using additional clay-base additives.

Versamod agent can be used in the existing Versadril and Versaclean systems, as well as in freshly prepared mud, to prepare a Versaport system with increased LSRV and gel strengths. Sufficient shear is required to develop this increase in rheology, especially in freshly prepared muds.

Normal concentrations range from 1 to 4 lb/bbl (2.85 to 11.4 kg/m³), depending on the brine content. Less Versamod additive is needed in muds with higher brine contents. Typical initial treatments are 1 to 2 lb/bbl (2.85 to 5.7 kg/m³) for muds with oil:water ratios in the 75:25 to 85:15 range; above 85:15 the effectiveness is diminished. Pilot testing is recommended to determine the actual treatment required to obtain the desired result.

Versamod additive is activated by calcium, shear and temperature. Generally, 1 lb/bbl (2.85 kg/m³) lime should be added and maintained for every 1 lb/bbl (2.85 kg/m³) Versamod additive used in a system. Versamod material will not be fully activated by the shear and temperature exposure in a mixing plant or mud pit, care should be taken not to overtreat with Versamod additive until the fluid is actually circulated through the well.

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Advantages

- Improves the rheological profile and hole cleaning capacity of Versadril and Versaclean systems
- Produces a more shear-thinning rheology profile as compared to alternative oil-mud gelling agents
- Increases LSRV and gel strengths with minimal yield point and plastic viscosity changes; gels tend to be fragile and non-progressive
- Can be used in existing systems or in freshly prepared mud
- Rheological modifications achieved with Versamod additive may be reversed with treatments of Versathin* in all systems, or with Versacoat* in Versaclean systems
- After the initial additions of Versamod additive, daily maintenance treatments are very low

Limitations

- Becomes less effective as the oil:water ratio approaches 85:15. Above this level, increased concentrations of Versamod additive will be needed for the desired rheological properties. Low- brine-content muds which use high concentrations of Versamod additive will become extremely viscous if the water content is increased, as with a saltwater flow.
- Versamod additive is activated by shear and temperature. It does not generate significant viscosity at the mixing plant or mud pits until the fluid is actually circulated through the well. HRP* should be used to viscosify fluids at mixing plants for transportation to the wellsite.

Toxicity and Handling

Bioassay information is available upon request.

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

CAUTION! Avoid exposure. Versamod additive contains mineral oil which is an irritant to eyes, skin and respiratory system.

Packaging and Storage

Versamod additive is packaged in 55-gal (208-L) drums and 5-gal (18.9-L) cans.

Store in a 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.

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