

# MOD

## OBM Rheology modifier

### Product Description

MOD organic gelling agent is a liquid rheology modifier used in oil-base mud systems. It increases low-shear-rate viscosities (LSRV) and gel strengths for improved hole-cleaning. The primary application for MOD 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. MOD additive, when used at proper concentrations, produces the highly shear-thinning rheological profile in oil mud systems.

### Typical Physical Properties

Physical appearance	Amber viscous liquid
Specific gravity	0.89 - 0.91
Pour Point	35°F (1.7°C)
Flash Point	175°F (79.4°C)

### Application

MOD additive is used to improve cuttings transport in large-diameter or directional wells, especially wells with diameters greater than 8 ½ 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.

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

### Advantages

- Improves the rheological profile and hole cleaning capacity of oil base mud
- 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 MOD additive may be reversed with treatments of THIN in all systems
- After the initial additions of MOD 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 MOD additive will be needed for the desired rheological properties. Low-brine-content muds which use high concentrations of MOD additive will become extremely viscous if the water content is increased, as with a saltwater flow.
- MOD 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. VIS OBM should be used to viscosify fluids at mixing plants for transportation to the well-site

Important Note: These suggestions and data are based on information we believe to be reliable. They are offered in good faith, but without guarantee, as conditions and method of use of our product are beyond our control. We recommend that the prospective user determine the suitability of our material and suggestions before adopting them on a commercial scale.

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### Recommended Treatment

Normal concentrations range from 1 to 4 lb/bbl (2.85 to 11.4 kg/m<sup>3</sup>), depending on the brine content. Less MOD additive is needed in muds with higher brine contents. Typical initial treatments are 1 to 2 lb/bbl (2.85 to 5.7 kg/m<sup>3</sup>) 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.

MOD additive is activated by calcium, shear and temperature. Generally, 1 lb/bbl (2.85 kg/m<sup>3</sup>) lime should be added and maintained for every 1 lb/bbl (2.85 kg/m<sup>3</sup>) MOD additive used in a system. MOD 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 over-treat with MOD additive until the fluid is actually circulated through the well.

### Packaging and Storage

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

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