



## DRILSMOOTH: Mixed Metal Oxides Drilling Fluids System



### A stable, shear-thinning fluids approach

Anchor USA's DRILSMOOTH\* system is a proprietary mixture of aluminum and magnesium oxides that when combined with bentonite, produces a thermally stable, shear-thinning fluid with high yield and fragile gels for a variety of fresh and saltwater systems. Some advantages of the fluids system include strong rates of penetration (ROP), high return permeabilities, high temperature rheology control, optimum cuttings transportation, and stabilization of unconsolidated formations.

### System Components & Additives

**Bentonite Premium**, a high-purity, high-surface area untreated bentonite, is specified for use with MMO products. When an DRILSMOOTH product is added to a Bentonite Premium slurry, a unique cationic complex is formed which produces a very high yield point fluid with extreme shear-thinning characteristics.

**DRILSMOOTH** is a single package proprietary mixture of metal oxides and pH buffers that when added to Bentonite Premium produces a complete DRILSMOOTH system. DRILSMOOTH provides exceptional shear-thinning properties in Bentonite Premium fluids, with excellent dynamic and static carrying capacity.

**MMO FLR** is a fluid loss reducer for DRILSMOOTH. It consists of a modified starch that reduces fluid loss without negatively impacting system performance or rheology.

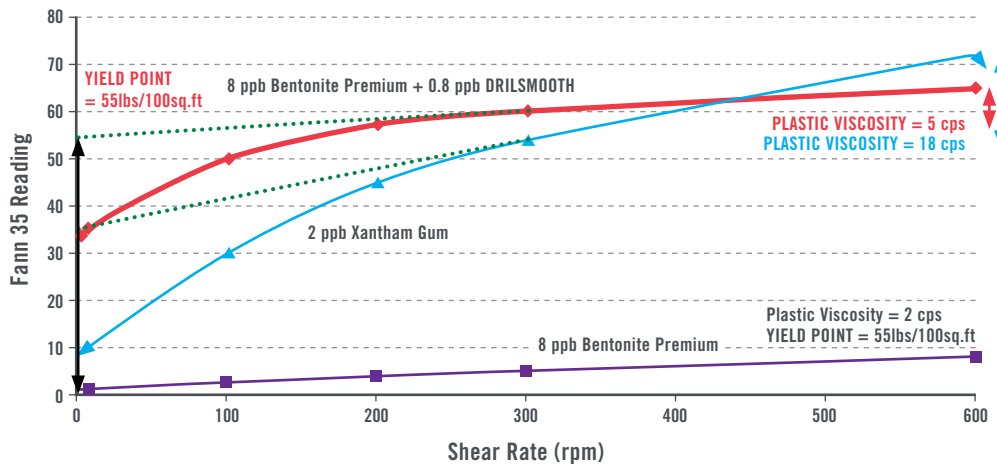
**MMO AS** is a concentrated cationic liquid which neutralizes organic anionic drilling fluid contaminants. Previous mixed metal systems experiencing organic anion contamination required displacing and replacing with fresh drilling fluids but adding MMO AS to DRILSMOOTH restores the rheological properties after the fluids become contaminated with negatively charged organic material. In addition, the use of MMO AS improves fluids temperature stability.

\*f/k/a Anco Primo MMO System

**BENEFITS**

- High penetration rates, return permeability
- High temperature rheology control
- Optimal cuttings transportation
- Stabilization of unconsolidated formations
- Higher yield with faster hydration and swelling
- Excellent shale inhibition
- Reduced bit balling
- Able to drill in any lithology
- Bore hole stabilization
- Use in 100% saltwater systems
- Improved thermal stability
- Minimized disposal costs

Rheological behavior of DRILSMOOTH system compared with a bentonite and a xanthan gum slurry



DRILSMOOTH – Formulations		
Product	Function	Concentration (ppb)
Water	Continuous Phase	As Required
Soda Ash	Hardness Control	0.5 - 1.0
Bentonite Premium	Viscosifier	8.0 - 12.0
DRILSMOOTH	MMO - Viscosifier	0.8 - 1.2
MMO FLR	Fluid Loss Reducer	2.0 - 5.0
MMO AS	Charge Neutralizer	As Required
Caustic Soda	Alkalinity Control	As Required

DRILSMOOTH – Fluid Properties		
Properties	Typical Range	Min/Max Recommended
Mud Weight (ppg)	8.8 - 12.5	< 12.5
Plastic Viscosity (cP)	ALAP	ALAP
Yield Point (lb/100ft <sup>2</sup> )	30 - 45	< 70
Gels 10"/10' (lb/100ft <sup>2</sup> )	20/30 - 30/50	As Required
pH	9.5 - 10.5	9.8 - 10.5
API Fluid Loss (ml/30min)	10.0 - 12.0	< 15.0
Calcium (mg/l)	80 - 150	< 100
MBT (ppb-eq)	0 - 15.0	< 15.0

**We Deliver, No Excuses**