

Drilling Mud Properties — Fann 35 Field Quick Guide

The API RP 13B-1 measurements every tour, the formulas behind them, and what each one is telling you about solids.

Rheology from the dial readings

Property	Formula (Fann 35)	What it tells you
Plastic viscosity PV (cP)	$R600 - R300$	Rises with fine-solids loading — the mechanical signal
Yield point YP (lb/100 ft ²)	$R300 - PV$	Inter-particle attraction — reactive clays / contamination
Apparent viscosity AV (cP)	$R600 \div 2$	Single-number check at 600 rpm
Gel strengths (10 s / 10 min)	Max 3-rpm reading after rest	Progressive gels = reactive fines building; sag risk
Low-shear YP (LSYP)	$2 \times R3 - R6$	Hole-cleaning & barite-sag indicator in deviated wells

Converting dial readings

Quantity	Formula	Note
Shear stress	dial reading $\times 1.066 = \text{lb}/100 \text{ ft}^2$	$\times 0.511$ for pascals
Shear rate	$\text{rpm} \times 1.703 = \text{s}^{-1}$	$600 \text{ rpm} \approx 1021.8 \text{ s}^{-1}$ · $300 \text{ rpm} \approx 510.9 \text{ s}^{-1}$
Power-law n	$3.32 \times \log \left(\frac{R600}{R300} \right)$	Flow-behaviour index
Power-law k	$R300 \div 511$	Consistency index

The solids tests that complete the picture

Retort (total solids vol% → split HGS/LGS by density balance) · **MBT** (reactive-clay content, bentonite-eq lb/bbl) · **API sand content** at the suction (trace only, <~0.5 vol%). Worked example: $R600 = 56$, $R300 = 35$ → $PV = 21 \text{ cP}$, $YP = 14 \text{ lb}/100 \text{ ft}^2$, $AV = 28 \text{ cP}$.

Full guides: scdrilltech.com/drilling-fluids-fundamentals.html · [/articles/plastic-viscosity-and-yield-point.html](http://scdrilltech.com/articles/plastic-viscosity-and-yield-point.html) · [/articles/gel-strength-and-thixotropy.html](http://scdrilltech.com/articles/gel-strength-and-thixotropy.html)