Particle Size Distribution (PSD) — Quick Reference

PSD tells you what the solids actually are — and therefore which machine can remove them. Read the percentiles, match them to equipment cut points, and act on the trend.

The percentiles

Percentile	Meaning	Field significance
D10	10% of particles are finer	The colloidal tail — what dilution and chemistry must handle
D50	Median: half finer, half coarser	The single “cut point” most equipment claims refer to
D90	90% finer / coarsest 10%	What the shakers and cones must catch first
D100	Nothing larger passes — total separation	The RP 13C basis for shaker-screen labels (13E used D50)

Match the size to the machine

Particle size	Removal equipment	Note
> ~74 µm	Shale shaker (screen by API number)	API 200 ≈ 75 µm D100
~40–74 µm	Desander (6–12″ cones)	High volume, coarse duty
~15–40 µm	Desilter / mud cleaner (4″ cones)	On weighted mud: cleaner screen returns barite
~2–7 µm	Decanter centrifuge	The finest mechanical cut
< ~2 µm	No machine — dilution & inhibition	Colloids build PV/YP; prevent, don’t chase

Reading the curve — three rules

1) **Sharpness:** a sharp separation has D50 and D100 close together; a wide gap means coarse particles slip through even though the median looks fine. 2) **Trend the fines:** a curve creeping left (finer) with PV rising = grinding and regrinding — the removal train is losing. 3) **Claims:** a “2-micron centrifuge” is a D50 claim, not D100 — it does not remove everything above 2 µm.

Deep dives: scdrilltech.com/particle-size-distribution.html · /articles/d50-vs-d100-cut-point.html