Interface FLUIDICS

Water Quality Matrix

Using this Reference Table: This table is provided as a reference when reading water reports. It is not intended to cover all situations and fluids, but to indicate where additional investigations may be required.

Total Dissolved Solids (TDS) OR Ionic Strength <5K~Fresh | >5K-<30K~Seawater | >30K~Produced Water/Flowback Water

Key Measurements	Scaling Risk	Polymer Compatibility	Fresh Water Baseline
pH	High	Frac Polymers like neutral fluids unless otherwise specified (~5.5-8) EOR polymers will have their own specified pH	6.6 - 8.0
Scaling Hardness & Alkalinity mg/L $CaCO_3$ (ppm)	Hardness + Alkalinity = scaling risk Many water analyses will report both hardness and alkalinity in unites of mg/L $CaCo_2$ >1,000ppm of both more concern if CO_3^{2-} or OH^- Most Risk: CO_3^{2-}, OH^-, PO_4^{3-} Moderate Risk: HCO_3^-, HPO_4^{2-}, $H_2PO_4^-$		Hardness: 130-260 mg/L $CaCO_3$ Alkalinity: 90-18 mg/L $CaCO_3$ From HCO_3^{2-} and CO_3^{2-}
Transition Metals (Fe, Mo, MN, etc.)	Subset of Hardness Represents scaling risk, and risk of catalytical degradation of chemical additives in some cases		Less than 1 mg/L FE
Permanente Hardness (Dissolved Solids that Cannot be removed by Softening)	Low risk unless approaching solubility limits	~1,000ppm Polymer viscosity will be impacted Loadings adjusted	~15 mg/L
Total Dissolved Solids (TDS) (Ionic Strength)	< 5,000 ~Fresh > 5,000 — < 30,000 ~Seawater >30,000 ~ Produced water/Flowback water		153 - 301 mg/L
Sulphide H_2S or Iron Sulphide	Sour wells Wells with Iron-bearing minerology require investigation		Not Present
Sulphates	Sulphate + Barium	Persulphate Breakers are NOT compatible with Barium Brines	37 - 95 mg/L
Dissolved Oxygen and Oxygen Agents	Water exposed to atmosphere have dissolved Oxygen. If dissolves Oxygen or oxidative breaker meets Fe2+, solids will form Waters exposed to atmosphere		Equilibrium with atmosphere About 8 mg/L
Acid Gas (H_2S, CO_2 Look for pH >6	H_2S increases scaling risk -Look for TM CO_2 reduces scaling risk because it forms a natural buffer with the HCO_3^-	Ensure the acid gas loading isn't driving down pH beyond compatible ranges for polymer	Surface waters typically contain less than 10 mg/L of Co_2