

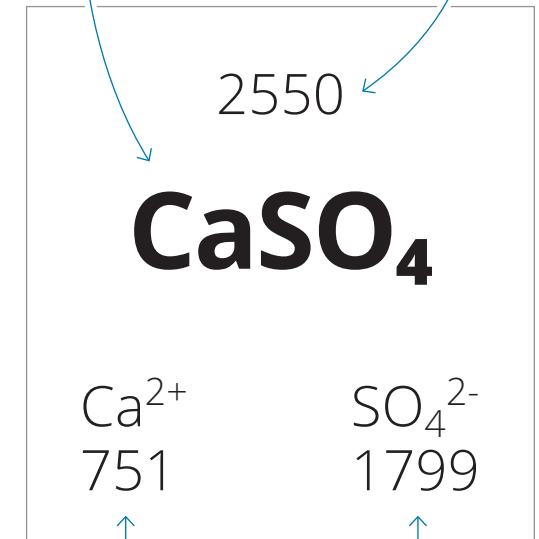
Periodic Table of Scaling Compounds



2550 CaSO₄ Ca ²⁺ 751 SO ₄ ²⁻ 1799				120 SiO₂ SiO ₂ 120 pH <10
15 CaF₂ Ca ²⁺ 7.7 pH >2 F ⁻ 7.3	6.17 CaCO₃ Ca ²⁺ 2.5 pH >5 CO ₃ ²⁻ 3.7	132 SrSO₄ Sr ²⁺ 63 SO ₄ ²⁻ 69	1.0 Al(OH)₃ Al ³⁺ 0.37 pH >3	9.6 Mg(OH)₂ Mg ²⁺ 4.0 pH >10
20 Ca₃(PO₄)₂ Ca ²⁺ 7.8 pH >5 PO ₄ ³⁻ 12.2	24 BaCO₃ Ba ²⁺ 17 pH >5 CO ₃ ²⁻ 7.3	2.45 BaSO₄ Ba ²⁺ 1.4 SO ₄ ²⁻ 1.0	1.43 Fe(OH)₃ Fe ²⁺ 0.75 pH >3	1.43 Mn(OH)₂ Mn ²⁺ 2.0 pH >3

How to Use This Chart

Scaling Compound Solubility of Compound in mg/L



Concentrations of the individual ions in mg/L at their solubility limits. If Ca²⁺ > 751 mg/L and SO₄²⁻ > 1799 mg/L in your water, then there is CaSO₄ scaling potential.

Tips

- These values are based on solubility at 20°C—no ionic effects and no antiscalants present
- Well-designed antiscalants can increase solubility of scaling ions to maximize system recovery

Example

The example provided is for reverse osmosis brine water chemistry. The Periodic Table of Scaling Compounds demonstrates that the RO Brine has CaSO_4 and $\text{Al}(\text{OH})_3$ scaling potential.

Does not meet condition for scaling potential

Meets condition for scaling potential



<p>2550</p> <p>CaSO₄</p> <p>Ca²⁺ 751 SO₄²⁻ 1799</p>	<p>All scaling conditions met. There is CaSO₄ scaling potential for this water.</p>				<p>120</p> <p>SiO₂</p> <p>SiO₂ 120 pH <10</p>
<p>15</p> <p>CaF₂</p> <p>Ca²⁺ 7.7 pH >2 F⁻ 7.3</p>	<p>6.17</p> <p>CaCO₃</p> <p>Ca²⁺ 2.5 pH >5 CO₃²⁻ 3.7</p>	<p>132</p> <p>SrSO₄</p> <p>Sr²⁺ 63 SO₄²⁻ 69</p>	<p>1.0</p> <p>Al(OH)₃</p> <p>Al³⁺ 0.37 pH >3</p>	<p>9.6</p> <p>Mg(OH)₂</p> <p>Mg²⁺ 4.0 pH >10</p>	<p>Not all scaling conditions met. There is no Silica (SiO₂) scaling potential for this water.</p>
<p>20</p> <p>Ca₃(PO₄)₂</p> <p>Ca²⁺ 7.8 pH >5 PO₄³⁻ 12.2</p>	<p>24</p> <p>BaCO₃</p> <p>Ba²⁺ 17 pH >5 CO₃²⁻ 7.3</p>	<p>2.45</p> <p>BaSO₄</p> <p>Ba²⁺ 1.4 SO₄²⁻ 1.0</p>	<p>1.43</p> <p>Fe(OH)₃</p> <p>Fe²⁺ 0.75 pH >3</p>	<p>1.43</p> <p>Mn(OH)₂</p> <p>Mn²⁺ 2.0 pH >3</p>	

Parameter (mg/L)	RO Brine
pH (in pH units)	7.5
Total Dissolved Solids	22500
Aluminum	0.5
Barium	0.2
Bicarbonate	375
Calcium	1020
Carbonate	<1
Chloride	4775
Fluoride	5
Hydroxide	<1
Iron	0.3
Magnesium	655
Manganese	1.5
Nitrate	20
Potassium	15
Phosphate	<1
Silica (as SiO ₂)	70
Sodium	5550
Strontium	22
Sulfate	9950