



Langelier Saturation Index Calculator

This calculator helps you determine the scaling potential of the water by using the Langelier Saturation Index.

Give the values of your water analysis. All the fields with * are required.

Table 1: Input table

pH	<input type="text" value="7.5"/>	*
Conductivity / TDS	<input type="text" value="840"/>	* <div>mg/L</div>
[Ca ²⁺]	<input type="text" value="324.64"/>	* <div>mg/L</div>
[HCO ₃ ⁻]	<input type="text" value="573.4"/>	* <div>mg/L</div>
Water temperature	<input type="text" value="27"/>	* <div>degree C</div>

Calculate the Langelier Saturation Index

Erase input values

If you do not have a water analysis you can use the values in table 2. Click on a button at the bottom of table 2

Table 2 : Additional data

pH =	7.7	8	8.6	
TDS =	20	34483	273	mg/l
[Ca ²⁺] =	5	400	49	mg/l
[HCO ₃ ⁻] =	10	140	121	mg/l
T =	20	20	20	degree C

Example

Seawater

Tap water

Table 3: Results Langelier Saturation Index

pH _s	<input type="text" value="6.4"/>
LSI	<input type="text" value="1.1"/>
Indication based on Langelier (1936)	<div>Water is supersaturated with respect to calcium carbonate (CaCO₃) and scale forming may occur.</div>
Indication based on improved Langelier by Carrier (1965)	<div>Scale forming but non corrosive.</div>

The Langelier Saturation Index formula is

$$LSI = pH - pH_s$$

For an explanation of the formula click [here](#).

The indications for the LSI and the improved LSI by Carrier are based on the following values:

LSI Indication

- LSI<0 Water is undersaturated with respect to calcium carbonate. Undersaturated water has a tendency to remove existing calcium carbonate protective coatings in pipelines and equipment.
- LSI=0 Water is considered to be neutral. Neither scale-forming nor scale removing.
- LSI>0 Water is supersaturated with respect to calcium carbonate (CaCO₃) and scale forming may occur.

LSI (Carrier)	Indication
-2,0<-0,5	Serious corrosion
-0,5<0	Slightly corrosion but non-scale forming
LSI = 0,0	Balanced but pitting corrosion possible
0,0<0,5	Sligthly scale forming and corrosive
0,5<2	Scale forming but non corrosive

References:

- [1] : Kevin Rafferty, Scaling in geothermal heat pump systems, U.S. Department of Energy (july 1999)
- [2] : Metcalf and Eddy, Wastewater Engineering Treatment and Reuse 2003

Explanation of the Langelier Saturation formula.

Other calculators

Warning: Lenntech BV cannot be held responsible for errors in the calculation, the program itself or the explanation. For questions or remarks please contact us.

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