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Helpful Information for You and Your Pool

What is LSI or Langelier Saturation Index?

Your LSI is the overall state or balance of your pool water.

Water (in a pool) will always try to get back to its natural balance. Means if it has too much calcium (over saturated) or high positive LSI, it will deposit the excess calcium on the pool surfaces, until its back in balance, or with LSI of zero. So, if you see a scale forming this is the reason.
By comparison if the LSI is negative, or undersaturated, then its short of calcium and will do whatever it can, to find it. This can be the cement-based surfaces, (which it will eat) or if painted – fibreglass, will cause attack on metal fittings, in the pool and the plumbing – heating system. And the water being out of balance and having trouble finding enough calcium, loses its "buoyancy" and can no longer hold dissolved solids in suspension, and they drop out "overnight", leaving a dull grey – brown, dirty looking deposits on all pool surfaces. Often known as TDS dropout, (Total Dissolved Solids)

So, you want to know the LSI and to maintain a well-balanced pool keep it in the range of -0.3 to + 0.3 always.

How to understand the role of LSI and your pool chemistry.
To help you see how important the LSI is, consider when a house is built, there are skilled tradesmen like concreters, carpenters, electricians and plumbers etc. These are like the 4 key measurements a pool shop does with your pool water, such as: pH, Total Alkalinity, Calcium Hardness, and Stabilizer (CYA). They also check for free chlorine and some others also. The first 4 represent the separate skill sets to build your home successfully and the Project Manager oversees it all, to make sure it is done well and without conflicts etc. The LSI can be considered the Project Manager of your pool water chemistry, keeping an eye on all key aspects. So, it always provides a great overview and will know when things are going array. Meaning you can step in and prevent further problems before they become a real issue.

Using Your Pool Shop:
Getting your pool water tested regularly (at your pool shop) is the best way to keep it in tip top and balanced condition. Usually, you will want it tested every 2 weeks in summer and every 4 weeks in the off season. This will allow you to save money by not needing a huge dose of expensive chemicals to bring it back into balance, after being neglected for a while.
The Pool shop will test for pH, Chlorine, Calcium Harness and Total Alkalinity as minimum and may add Salt, Conditioner and metals and phosphates too.
The LSI is AUTOMATICALLY calculated from the first 4 items above and will be on your printout. Ask for advice if the LSI reading is outside of the range of -0.3 to +0.3. This is important and also describe any issues you see in your pool, like white or grey coating – powder on the pool surfaces.

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LSI in more detail: (with thanks to Orenda Technologies)
The LSI is the unbiased, holistic view of water chemistry. Proper pool care involves keeping your LSI balanced year-round. Temperature matters! Do you think the same chemistry parameters should be followed in both January and July? We don't. What about a pool in Adelaide compared to Gold Coast? The climates are very different, and so too should your water chemistry parameters.

But one thing is universal no matter where you go: the LSI.
How you maintain the LSI may differ, but the end result should always be LSI balance. Adelaide pools often have high mineral content and need much more calcium hardness awareness than pools in Gold Coast. Saltwater pools need less alkalinity and more calcium hardness than trichlor pools.

What LSI teaches us: The textbooks have taught us water chemistry ranges for decades. "pH should be 7.2 to 7.8, but ideally 7.4 to 7.6". Those are ranges. "Calcium should be 200-400 ppm." Another range. "Total alkalinity should be 80-120 ppm." Yet another range.

These standard parameters are what we at Orenda refer to as range chemistry. And they are not-so-standard in the first place. Different books and pool store software printouts have different ranges. So who is right? And more importantly, are these ranges appropriate for everyone, at all times of the year?
The better question is "what does water care about?" The answer to that is LSI balance.

Calcium Hardness is your friend: The LSI teaches us the importance of calcium hardness. It is a consistent foundation for our water chemistry strategy. Parameters like pH and alkalinity fluctuate, but calcium does not. Also, calcium hardness itself is not the leading driver of scale formation. Just because scale is calcium carbonate does not mean your calcium hardness is too high. Scale occurs when the LSI is too high. Usually it's from high pH and high water temperature and alkalinity. Crazy, right?

Cold water needs more calcium hardness, but hot water does not necessarily need less. You could instead use less alkalinity, as long as the LSI stays balanced. We could go on and on with countless examples of different nuances, but hopefully you get the point. The LSI reigns supreme.

Changing the way you think about water: Finally, the LSI offers a different way of thinking about water chemistry. Instead of focusing on maintaining chemistry ranges, (which can be physically impossible sometimes), focus instead on maintaining the LSI.

In summary, knowing your pools' LSI (from pool shop water tests) is going to help you maintain balanced pool water chemistry, far easier and for much longer.
So, ask for this LSI result each time you have the water tested and get them to detail what is happening with the water balance and what to do to keep it in balance, always. It will save you money, hassles and worry.

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