THE HOT TUB REPORT

DOWNLOADABLE WATER-CARE GUIDE

HOT TUB ALKALINITY

How to Test, Raise & Lower It

A clear, step-by-step guide to stable pH, accurate testing, and careful alkalinity adjustments.

INSIDE THIS GUIDE

- The difference between alkalinity and pH
- How to test and interpret your result
- How to raise low alkalinity safely
- How to lower high alkalinity gradually
- A troubleshooting checklist and test log

WHERE BETTER HOT TUBBING BEGINS

THEHOTTUBREPORT.COM

WATER CHEMISTRY MADE CLEAR

What Is Total Alkalinity?

Total alkalinity measures water's ability to neutralize acid and resist sudden pH change. In most hot tubs, that buffering capacity comes mainly from bicarbonate and carbonate compounds.

THE SHOCK-ABSORBER ANALOGY

Think of alkalinity as pH's shock absorber.

When alkalinity is in range, pH is easier to control. When it is too low, pH can swing quickly. When it is too high, pH may resist adjustment and drift upward.

Three Measurements, Three Different Jobs

TOTAL ALKALINITY

Buffering capacity

How strongly water resists pH change

pH

Acidic or basic

Where the water sits on the pH scale

CALCIUM HARDNESS

Dissolved calcium

How soft or scale-forming the water may be

A Practical Target

80-120 ppm

This is a common range for traditional chlorine and bromine spas. Your sanitizer system or manufacturer may specify a narrower or different target, so its instructions take priority.

IMPORTANT CORRECTION

Calcium and magnesium are primarily hardness minerals; they are not the main definition of total alkalinity.

TEST BEFORE YOU ADJUST

How to Test Alkalinity

Test water before adding an increaser or acid. Guessing is the fastest way to overshoot, chase pH, and turn one adjustment into several.

DROP KIT

Best precision

Count drops until the color changes, then calculate ppm using the kit instructions.

TEST STRIP

Fast and convenient

Use dry hands, dip exactly as directed, and compare the pad at the specified time.

STORE TEST

Helpful second opinion

Bring a fresh sample in a clean container when results seem inconsistent.

A Reliable Testing Routine

1. **Circulate first**
   Let the water mix so the sample represents the spa, not one quiet corner.
2. **Use a fresh sample**
   Collect away from chemical return points and follow the kit's depth instructions.
3. **Read exactly on time**
   Late strip readings and rushed drop-count endpoints can distort the result.
4. **Write it down**
   Record alkalinity, pH, sanitizer, date, and any dose you add.

HOW OFTEN?

Test weekly while learning, after a refill, and whenever pH becomes unstable. Once your routine is predictable, some owners test alkalinity every two weeks - but sanitizer and pH still need regular attention.

BELOW THE TARGET

How to Raise Low Alkalinity

Low alkalinity provides too little buffering. The pH may move quickly after small chemical additions, bather use, or fresh water entering the spa.

COMMON WARNING SIGNS

- Alkalinity tests below the system target
- pH swings or repeatedly crashes
- Water becomes corrosive when pH also stays low
- Metal components or surfaces may be at risk over time

WHAT CAN DRIVE IT DOWN

- Low-alkalinity source or rain water
- Repeated acid additions
- Acidic sanitizer products used over time
- Dilution during splash-out and top-off
- An adjustment that overshot the target

Use Sodium Bicarbonate

BAKING SODA RAISES ALKALINITY

Sodium bicarbonate is the common active ingredient in alkalinity increaser. It raises total alkalinity reliably and usually changes pH only modestly.

1 Confirm spa volume

Accurate gallons matter because dosing is volume-based.

2 Follow the label

Use the product's dose for your current reading and desired increase.

3 Add a partial dose

Increase gradually so you do not overshoot the target.

4 Circulate and retest

Wait the label's mixing time - often a few hours - before adding more.

DOES BAKING SODA REDUCE ALKALINITY?

No. Baking soda raises alkalinity. Acid-based products lower it.

ABOVE THE TARGET

How to Lower High Alkalinity

High alkalinity makes pH difficult to lower and can contribute to cloudy water or scale when pH and calcium are also elevated.

COMMON WARNING SIGNS

- Alkalinity is above the system target
- pH remains high or rebounds quickly
- Cloudiness or scale appears when other factors are high

WHAT CAN DRIVE IT UP

- High-alkalinity fill or top-off water
- Too much alkalinity increaser
- Frequent topping off as mineral-rich water evaporates
- Testing or dosing errors

Lower It Without Crashing pH

1. **Check water age**

   If the water is old, difficult, or over about 3-4 months, a refill may be easier.

2. **Use spa pH decreaser**

   Sodium bisulfate is commonly used in small bodies of water. Follow the label exactly.

3. **Make a small adjustment**

   Acid lowers both pH and alkalinity. Partial doses give you more control.

4. **Circulate and retest**

   Allow thorough mixing before redosing. A 4-6 hour retest is a cautious routine when the label allows.

5. **Aerate if pH is low**

   Jets and air can raise pH with little effect on alkalinity. Then repeat carefully if needed.

MURIATIC ACID REQUIRES EXTRA CAUTION

It is highly caustic. Use it only if your spa instructions and product label allow it and you can handle it safely. Never mix acids with chlorine, bromine, or other chemicals.

QUICK REFERENCE

Alkalinity Answers & Action Plan

Balance alkalinity methodically: test, make one small change, circulate, retest, and record the result. That rhythm prevents most chemical-chasing problems.

ALKALINITY OR pH FIRST?

Set alkalinity first, then fine-tune pH. If sanitizer is at zero, address sanitation promptly and do not soak until the water is safe.

DOES CHLORINE AFFECT IT?

Some acidic chlorine and bromine products can gradually lower alkalinity. Other sanitizer types behave differently, so watch the test trend.

WHY IS IT HIGH AGAIN?

Check the fill and top-off water, dosing history, test method, and whether evaporation is concentrating a high-alkalinity source.

WHEN SHOULD I REFILL?

If water is old, difficult to balance, or repeatedly overshoots, a drain and fresh start may use less chemical and time.

Your Adjustment Checklist

- [ ] Confirm the spa volume
- [ ] Test alkalinity and pH
- [ ] Choose the correct product
- [ ] Add a partial dose
- [ ] Circulate before retesting
- [ ] Record the result

THE SIMPLE RULE

Test first. Adjust gradually. Let the water mix. Retest before adding more.