

Alkalinity  
&  
Calcium  
Hardness

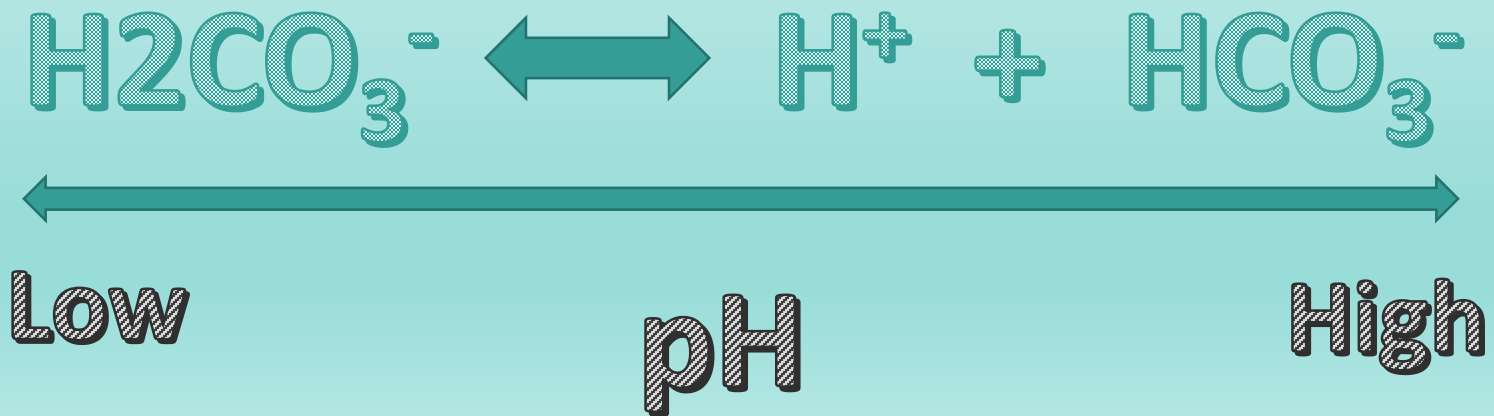


## Important Minerals

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# ALKALINITY

- Alkalinity is a measure of certain minerals in the water and represents the water's ability to resist changes in pH – Alkalinity is a pH buffer
  - At normal pool pH, alkalinity is primarily Bicarbonate:



## Primary Disinfectants (CHLORINE)



| Product              | % Available Chlorine              | pH in 1% solution  | pH Effect | Appearance              |
|----------------------|-----------------------------------|--|-----------|-------------------------|
| Gas Chlorine         | 100%                              | 0  | Lowers pH | Gas                     |
| Sodium Hypochlorite  | 10-12.5%<br>Household bleach 3-5% | 9-14      | Raises pH | Liquid                  |
| Calcium Hypochlorite | 47-78%                            | 8.5-11    | Raises pH | Granular, tabs, briquet |
| Lithium Hypochlorite | 35%                               | 10.8   | Raises pH | Granular                |
| Trichlor*            | 90%                               | 2.8-3.5  | Lowers pH | Granular & Tabs         |
| Dichlor*             | 56-63%                            | 6.5-6.8  | Neutral   | Granular                |
| Bromine (BCDMH)      | 27%                               | 4.8  | Lowers pH | Granular, Tabs          |

\*These chlorine products are sun stabilized – they contain cyanuric acid

# ALKALINITY

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- Build alkalinity by adding Sodium Bicarbonate
  - Adjust alkalinity first
    - The recommended Range is 80 – 120 ppm
- If your disinfectant drive pH down the higher end of the range might work better
- If your disinfectant drives pH up, the lower part of the range might work best.

# Calcium Hardness

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- The term “hard water” comes from the fact that in mineral rich waters it is hard to make soap bubbles
- The most important hardness mineral for pool operators is calcium hardness
- Too little calcium and water is corrosive; too much and it will deposit scale

# Calcium Hardness

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- Calcium hardness should be between 200 – 400 ppm
- Increase calcium hardness by adding Calcium Chloride
- Reducing calcium hardness requires diluting it out by dumping water and adding fresh water.

Questions?

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