

## Simplified Formulas for Chemical Additions

Lowering Total Alkalinity with Muriatic Acid:

$$(\text{Volume} \div 125,000) \times \text{___ ppm desired change} = \text{___ quarts}$$

Lowering Total Alkalinity with Sodium Bisulfate:

$$(\text{Volume} \div 47,000) \times \text{___ ppm desired change} = \text{___ pounds}$$

Raising Total Alkalinity with Sodium Bicarbonate:

$$(\text{Volume} \div 71,400) \times \text{___ ppm desired change} = \text{___ pounds}$$

Raising Total Alkalinity with Sodium Carbonate:

$$(\text{Volume} \div 113,200) \times \text{___ ppm desired change} = \text{___ pounds}$$

Raising Total Alkalinity with Sodium Sesquicarbonate:

$$(\text{Volume} \div 80,000) \times \text{___ ppm desired change} = \text{___ pounds}$$

Chlorine Gas:

$$(\text{Volume} \div 120,000) \times \text{___ ppm desired change} = \text{___ pounds}$$

Sodium Hypochlorite:  $(\text{Volume} \div 30,000) \times \text{___ ppm desired change} = \text{___ quarts}$

(Based on 10%/weight – this can vary slightly based on the strength and age of the product, but is a usable approximation)

Calcium Hypochlorite:  $(\text{Volume} \div 78,000) \times \text{___ ppm desired change} = \text{___ pounds}$

(Based on 65% av Cl)

Lithium Hypochlorite:  $(\text{Volume} \div 42,000) \times \text{___ ppm desired change} = \text{___ pounds}$

Trichlor:  $(\text{Volume} \div 108,000) \times \text{___ ppm desired change} = \text{___ pounds}$

Dichlor (56% av Cl):  $(\text{Volume} \div 67,200) \times \text{___ ppm desired change} = \text{___ pounds}$

(Based on 56% strength – for 62% strength use 74,400 as the formula number instead)

Sodium Chloride (Salt):  $(\text{Volume} \div 120,000) \times \text{___ ppm desired change} = \text{___ pounds}$

Sodium Sulfite:  $(\text{Volume} \div 67,250) \times \text{___ ppm unwanted chlorine} = \text{___ pounds}$

(Amount in pounds to reduce excess chlorine)

Sodium Thiosulfate:  $(\text{Volume} \div 117,600) \times \text{___ ppm unwanted chlorine} = \text{___ pounds}$

(Amount in pounds to reduce excess chlorine – based on 100% sodium thiosulfate pentahydrate)

Calcium Chloride:  $(\text{Volume} \div 83,300) \times \text{___ ppm desired increase} = \text{___ pounds}$

(Amount in pounds to increase calcium hardness with 77% calcium chloride strength – use 101,700 as divisor for 94% strength)

Cyanuric Acid:  $(\text{Volume} \div 120,000) \times \text{___ ppm desired change} = \text{___ pounds}$

(Amount in pounds to increase cyanuric acid – based on 100% cyanuric acid strength)

Borax:  $(\text{Volume} \div 17,800) \times \text{___ ppm boron} = \text{___ pounds}$

(Amount in pounds to increase ppm of boron using 5 mol borax, or sodium tetraborate pentahydrate –  $\text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$ )

PHMB:  $(\text{Volume} \div 250,000) \times \text{___ ppm PHMB} = \text{___ quarts}$

(Amount in pounds to increase ppm of PHMB – using standard 20% polyhexamethylene biguanide)