<table>
<thead>
<tr>
<th>Multiply</th>
<th>Conversions</th>
<th>divide</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 psi</td>
<td>= 2.31 ft of head</td>
<td></td>
</tr>
<tr>
<td>1 ft³ of water</td>
<td>= 7.48 gallons</td>
<td></td>
</tr>
<tr>
<td>1 ft³ of water</td>
<td>= 62.4 lbs</td>
<td></td>
</tr>
<tr>
<td>1 gallon</td>
<td>= 8.34 lbs</td>
<td></td>
</tr>
<tr>
<td>1 ppm</td>
<td>= 1 mg/L</td>
<td></td>
</tr>
<tr>
<td>1 ft³/sec</td>
<td>= 448.8 gpm</td>
<td></td>
</tr>
<tr>
<td>1 MGD</td>
<td>= 1.55 ft³/sec</td>
<td></td>
</tr>
<tr>
<td>1 MGD</td>
<td>= 694.5 gpm</td>
<td></td>
</tr>
<tr>
<td>1 HP</td>
<td>= 0.746 kilowatt</td>
<td></td>
</tr>
<tr>
<td>1 mile</td>
<td>= 5280 ft</td>
<td></td>
</tr>
<tr>
<td>1 day</td>
<td>= 1440 minutes</td>
<td></td>
</tr>
<tr>
<td>1 lb</td>
<td>= 453.6 g (ml water)</td>
<td></td>
</tr>
<tr>
<td>1 yd³</td>
<td>= 27 ft³</td>
<td></td>
</tr>
<tr>
<td>1 % solution</td>
<td>= 10,000 ppm</td>
<td></td>
</tr>
</tbody>
</table>

**Flow and Velocity**

“Q” = FLOW, ft³/sec

“V” = VELOCITY, f/s

“A” = AREA, ft²

\[ Q = A \times V \]

\[ V = Q \div A \]

\[ A = Q \div V \]

**Water - Brake - Motor Horsepower**

\[ WHP = \frac{gpm \times \text{total head ft}}{3960} \]

\[ BHP = \frac{gpm \times \text{total head ft}}{3,960 \times E_p} \]

\[ MHP = \frac{gpm \times \text{total head ft}}{3,960 \times E_p \times E_m} \]

\[ E_p = \text{Pump Efficiency %} \quad E_m = \text{Motor Efficiency %} \]

**Other Formulas and Information**

\[ KW\text{hr cost} = MHP \times 0.746 \times hr \text{ operation} \times \text{cost/kWhr} \]

Total Static Head = Static Discharge head + Static Suction Lift

Total Static Head = Static Discharge head – Static Suction Head

**Equivalent Flow Rate (EFR) for C-factor**

\[ \text{EFR} = \frac{\text{Actual flow rate}}{C \text{ factor}} \times 100 \]

**Area ft²**

- Rectangle: \( \text{length ft} \times \text{width ft} \)
- Circle: \( 0.785 \times D \text{ ft} \times D \text{ ft} \)

**Volume ft³**

- Cube: \( \text{Length ft} \times \text{width ft} \times \text{height ft} \)
- Cylinder: \( 0.785 \times D \text{ ft} \times D \text{ ft} \times \text{length ft} \)

**Dosage** = Demand + Residual

Residual = Dosage – Demand

Demand = Dosage - Residual

**Lbs of chemical = \( \frac{\text{ppm} \times 8.34 \times \text{MGD}}{\% \text{ Purity}} \)**

**Gallons = \( \frac{\text{ppm} \times 8.34 \times \text{MGD}}{\% \text{ purity} \times \text{SG} \times 8.34} \)**

**Dose (ppm) = \( \frac{\text{lbs of chemical} \times \% \text{ Purity}}{\text{MGD} \times 8.34} \)**

**Specific Gravity (SG) = \( \frac{\text{wt of a liquid}}{\text{equal wt of water}} \)**

**Strength of Solution = \( \frac{\text{wt of chemical}}{\text{wt of solution}} \times 100 \)**

*Ignore % purity if not given in formula.*
Drinking Water Distribution Formula Sheet

Lbs (of chemical)

Flow or Volume (MGD)

Dose or Concentration (ppm or mg/L)

8.34