

Calculating Chemical Dose

Liquid Alum Fed Neat (Undiluted) From Calibration Cylinder Drawdown



Using This Poster

Start by measuring the specific gravity of the delivered alum using a hydrometer. Enter the value (center). Next, fill in the coagulant strength from the product data sheet. Then, using a stopwatch and calibration cylinder, measure the chemical feed pump rate (below). Fill in the numbers and use a calculator to find the current values for each of the colored boxes. Finally, plug those values into the equation at the bottom and use a calculator to determine the current dose.

Abbreviations

- gpm:** gallons per minute
- lb:** pounds
- L:** liters
- mg:** milligrams
- MG:** million gallons
- MGD:** million gallons per day
- mL:** milliliters (1/1000 liter)
- SG:** specific gravity

Drawdown from Calibration Cylinder (mL/min)

e.g., 58 mL drawdown ÷ 4 min = 14.5 mL/min

Convert to gal/day

1,440 min/day ÷ 3,785 mL/gal ≈ .38

Coagulant Feed Rate (gal/day)

aluminum sulfate

Coagulant Name

Specific Gravity

Typically 1.335

Coagulant Strength

Commercial liquid alum is typically 0.485 (48.5%) on a weight/weight basis.

Convert to lb/gal

Coagulant Concentration (lb/gal)

Plant Flow (gpm)

Convert to MGD

1,440 min/day ÷ 1,000,000 = .00144

Plant Flow Rate (MGD)

$$\text{Dose} \left(\frac{\text{mg}}{\text{L}} \right) = \frac{\text{Coagulant Feed Rate} \left(\frac{\text{gal}}{\text{day}} \right) \times \text{Coagulant Concentration} \left(\frac{\text{lb}}{\text{gal}} \right)}{\text{Plant Flow Rate (MGD)} \times 8.34 \left(\frac{\text{lb}}{\text{gal}} \right)}$$

Dose (mg/L)

Coagulant Feed Rate (gal/day)

Coagulant Concentration (lb/gal)

Plant Flow Rate (MGD)

lb/gal

Updated on (date): _____

