



Formula for Sizing Chemical Feed Pump

Well Pump	Required	Time	Solution	Required
FLOW RATE	X	DOSAGE	X	1440
(gpm)		(ppm)		÷
		(min/day)	(ppm)	=
				FEED RATE
				(gpd)

A. Well Pump Flow Rate (gpm)

Turn well pump off, drain bladder tank, place 5 gallon bucket under spigot (coming of bladder tank), open spigot, turn well pump back on, time how long it takes to fill 5 gallon bucket

Example:

5 gallons in 2 minutes = 2.5 gpm

5 gallons in 1 minute = 5 gpm

5 gallons in 30 seconds = 10 gpm

B. Dosages (ppm)

	Favorable pH Range	Chlorine as Cl ₂	Contact Time Required
Iron (Fe)	6.5 - 7.5	1.0 ppm	20 minutes
Manganese (Mn)	8.0 - 9.5	2.0 ppm	20 minutes
Hyd. Sulfide (H ₂ S)	8.5 - 10	3.0 ppm	30 minutes

Example:

1. For every 1 ppm of Iron, 1 ppm of chlorine is required for dosage
2. If water report consist of 2.0 ppm iron & 1 ppm of manganese; required dosage would be 3.0 ppm of chlorine

Note: Always round up, i.e., 0.3 ppm iron = 1 ppm chlorine

C. Time (minutes/day)

1440 minutes per day

D. Solution Strength

Bleach 5.25%	52,500 ppm
Bleach 12.5%	125,000 ppm
Hydrogen Peroxide 35%	350,000 ppm



Chemical Feed Pump Sizing Example

If pump produces 5 gpm, contains 3 ppm of iron and were using regular 5.25% chlorine bleach

Well Pump	Required	Time	Solution	Required
5 FLOW RATE	3 DOSAGE	1440	52500 STRENGTH	0.41 FEED RATE
(gpm)	(ppm)	(min/day)	(ppm)	(gpd)

We offer 2 different size pumps, 3 gallons per day and 10 gallons per day. When sizing the pump, the pump should be set 50-70% of its maximum output to maximize efficiency and not overrun pump. The 3 gpd pump would be set to inject 1-1.5 gpd; the 10 gpd would be set to inject at 3-5 gpd.

In the example above, our “required feed rate” is 0.41 gpd. This feed rate is closer to 1-1.5 gpd for 3 gpd pump vs. the 3-5 gpd of 10gpd pump. Therefore we would choose the 3 gpd pump based on this calculation.

However, as indicated we need to run between 1-1.5 gpd to maximize efficiency and were only at 0.41 gpd, therefore we will dilute this solution to achieve our 1-1.5 gpd feed requirement.

Take 1.5 gpd (half our pump curve) ÷ 0.41 gpd (Feed Rate) = 3.65 Dilution Rate

We would dilute roughly 3.5 gallons of water to 1 gallon of bleach

1.5 gallons per day would be used if pump was running 24 hours per day; in a normal household the pump may only run a maximum total of 3 hours per day.

Example:

1.5 gallons per day ÷ 24 hours per day = 0.06 gallons per hour

0.06 gallons per hour x 3 hours per day (pump usage) = 0.18 gallons of solution used per day

0.18 gallons per day x 30 days = 5.6 gallons per month

15 gallons solution tank ÷ 5.6 gallons per month = 2.6 months of solution