

DYNAJET[®]

DRY POLYMER APPLICATION WORK SHEET

Sludge Dewatering / Thickening Application

Step 1. _____ GPM sludge X 8.345 lbs / gal = _____ lbs / min liquid sludge

Step 2. _____ lbs / min sludge X _____% dry solids (expressed as a decimal, i.e. 4% = 0.04) = _____ lbs / min dry solids

Step 3. _____ lbs / min dry solids X 60 min / hr = _____ lbs / hr dry solids

Step 4.a _____ lbs / hr dry solids ÷ 2000 lb / ton = _____ tons / hr dry solids

Polymer Dosage	
Thickening	Dewatering
6 – 10 lb/ton D.S.	12 – 25 lb/ton D.S.
Use 8 for sizing	Use 18 for sizing

-or- (if sludge volume is given in tons per day, skip steps 1 thru 4.a)

Step 4.b _____ tons / day ÷ hrs of operation = _____ tons / hr dry solids

Step 5. _____ tons / hr dry solids X _____ lbs of polymer / dry ton of sludge = _____ lbs 100% active polymer / hr
(see Polymer Dosage Table)

Polymer Solution Pump Required – gal / hr

NOTE: Typical Dry Polymer make-down concentration is 0.5% (maximum)

Step 1. _____ lbs / hr 100% active dry polymer ÷ 0.005 ÷ 8.345 lbs / gal = _____ gal / hr 0.5% polymer solution

Sizing Post Dilution – gal / hr

Step 1. _____ gal / hr (0.5%) X 0.005 ÷ _____% solution desired = _____ gal / hr _____% final dilute polymer solution
(expressed as a decimal, i.e. 0.25% = 0.0025)

Step 2. _____ gal / hr (_____% final dilute) – _____ gal / hr (0.5% dilute) = _____ gal / hr post dilution water

EXAMPLE:

Belt press application with 150 gpm, 8 hrs/day operation @ 4% solids. Final desired concentration = 0.3%

Step 1. 150 gpm X 8.345 lbs / gal = 1,252 lbs / min liquid sludge

Step 2. 1,252 lbs / min sludge X 0.04 = 50 lb / min dry solids

Step 3. 50 lb / min dry solids x 60 min / hr = 3,004 lbs / hr dry solids

Step 4. 3,004 lbs / hr dry solids ÷ 2000 lb / ton = 1.5 tons / hr dry solids

Step 5. 1.5 tons / hr dry solids x 18 lbs polymer (see table) / dry ton = 27 lbs / hr 100% active dry polymer

Dry Polymer Characteristics			
%	% Dilution		
	Dewatering	Thickening	Clarifying
Active			
100	0.25 – 0.5	0.2 – 0.3	0.1 – 0.3

Polymer Pump Sizing:

Step 1. 27 lbs 100% active dry polymer ÷ 0.005 ÷ 8.345 lbs / gal = 647 gal / hr 0.5% polymer solution

Post-Dilution Sizing:

Step 1. 647 gal / hr 0.5% solution X 0.005 ÷ 0.003 = 1,078 gal / hr total flow @ 0.3% dilute concentration

Step 2. 1,078 gal / hr (0.3%) – 647 gal / hr (0.5%) = 431 gal / hr post dilution water required

Clarifying / Filtration Application

NOTE: Typical Dose for Clarification / Filtration: 0.5 to 3.0 PPM (mg/l)

Step 1. _____ MGD plant flow X _____ PPM polymer dosage = _____ GPD 100% active polymer

Step 2. _____ GPD active polymer ÷ hours of operation = _____ GPH 100% active polymer

Step 3. _____ gal / hr 100% active polymer X 8.345 lbs / gallon = _____ lbs / hr dry polymer

Polymer Solution Pump Required – gal / hr

NOTE: Typical Dry Polymer make-down concentration is 0.5% (maximum)

Step 1. _____ lbs / hr 100% active dry polymer ÷ 0.005 ÷ 8.345 lbs / gal = _____ gal / hr 0.5% polymer solution

Sizing Post Dilution – gal / hr

Step 1. _____ gal / hr (0.5%) X 0.005 ÷ _____ % solution desired = _____ gal / hr _____ % final dilute polymer solution
(expressed as a decimal, i.e. 0.25% = 0.0025)

Step 2. _____ gal / hr (____ % final dilute) – _____ gal / hr (0.5% dilute) = _____ gal / hr post dilution water

EXAMPLE:

Filter Maintenance application with 100 MGD applied to 10 filters. Dose: 1 PPM Final desired concentration: 0.05%

Step 1. 100 MGD X 1 PPM = 100 GPD 100% active polymer

Step 2. 100 GPD ÷ 24 hrs / day = 4.2 GPH 100% active polymer

Step 3. 4.2 GPH X 8.345 lbs/gal = 35 lbs / hr dry polymer

Polymer Pump Sizing:

Step 1. 35 lbs 100% active dry polymer ÷ 0.005 ÷ 8.345 lbs / gal = 839 gal / hr 0.5% polymer solution

839 gal / hr 0.5% polymer solution / 10 filters = 84 gal / hr per feed point

Post-Dilution Sizing:

Step 1. 84 gal / hr 0.5% solution X 0.005 ÷ 0.0005 = 840 gal / hr per filter @ 0.05% dilute concentration

Step 2. 840 gal / hr (0.05%) – 84 gal / hr (0.5%) = 756 gal / hr post dilution water required