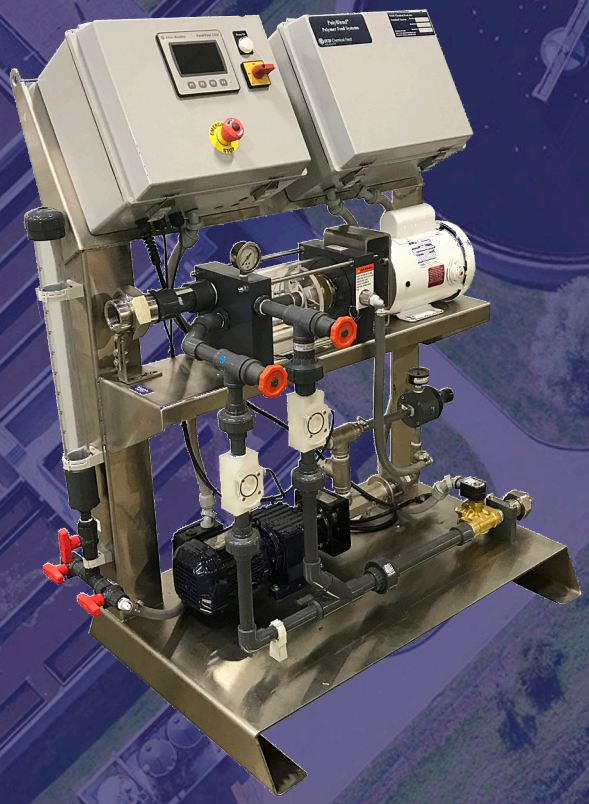
UGSI Chemical Feed SOLUTIONS

THE REAL SCIENCE OF POLYMER ACTIVATION

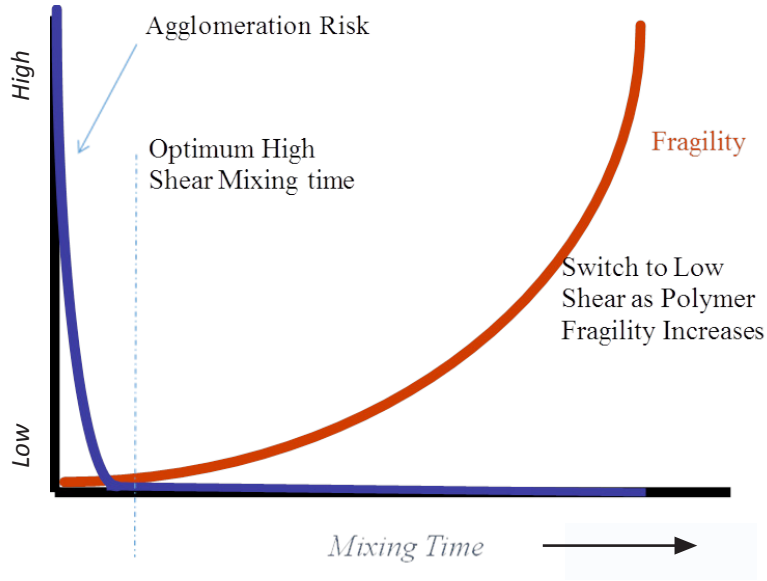


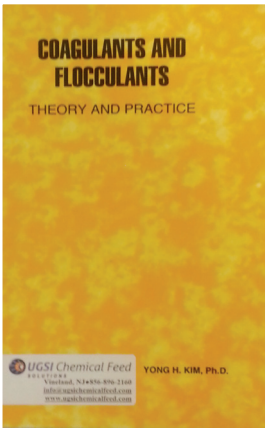
POLYBLEND®

POLYMER FEED SYSTEMS

The Real Science of Polymer Activation

Polymers vastly improve the operations of water and wastewater plants by accelerating settling of particles and improving sludge dewatering. Polymers (emulsion and dry) require the application of different levels of energy at different times to get the optimal "uncoiling" of the polymer chains without damaging or shortening the polymer chain. High shear mixing is required to prevent agglomerations, but over-mixing can damage the polymer – the key is to shift mixing energy over time to get the optimal results.





Written by Yong Kim, PhD
Technical Director,
UGSI Chemical Feed, Inc.

"The PolyBlend® polymer activation systems have performed flawlessly since installation and will result in very significant polymer saving for our facility."

Carlos Cardoso, Water Pollution Control Manager, City of Dartmouth, MA

PolyBlend® PB Series

At the center of the PolyBlend® PB Series polymer feed system is the unique multi-zone mixing chamber. The advanced design provides uniform dispersion energy at the moment of initial wetting. The high-energy mix prevents agglomerations and eliminates the need for extended mixing and aging by applying the right energy at the right time. The low-energy zone continues to activate the hydrated polymer without destroying the fragile polymer chains. The result is maximum polymer activation and improved polymer performance.

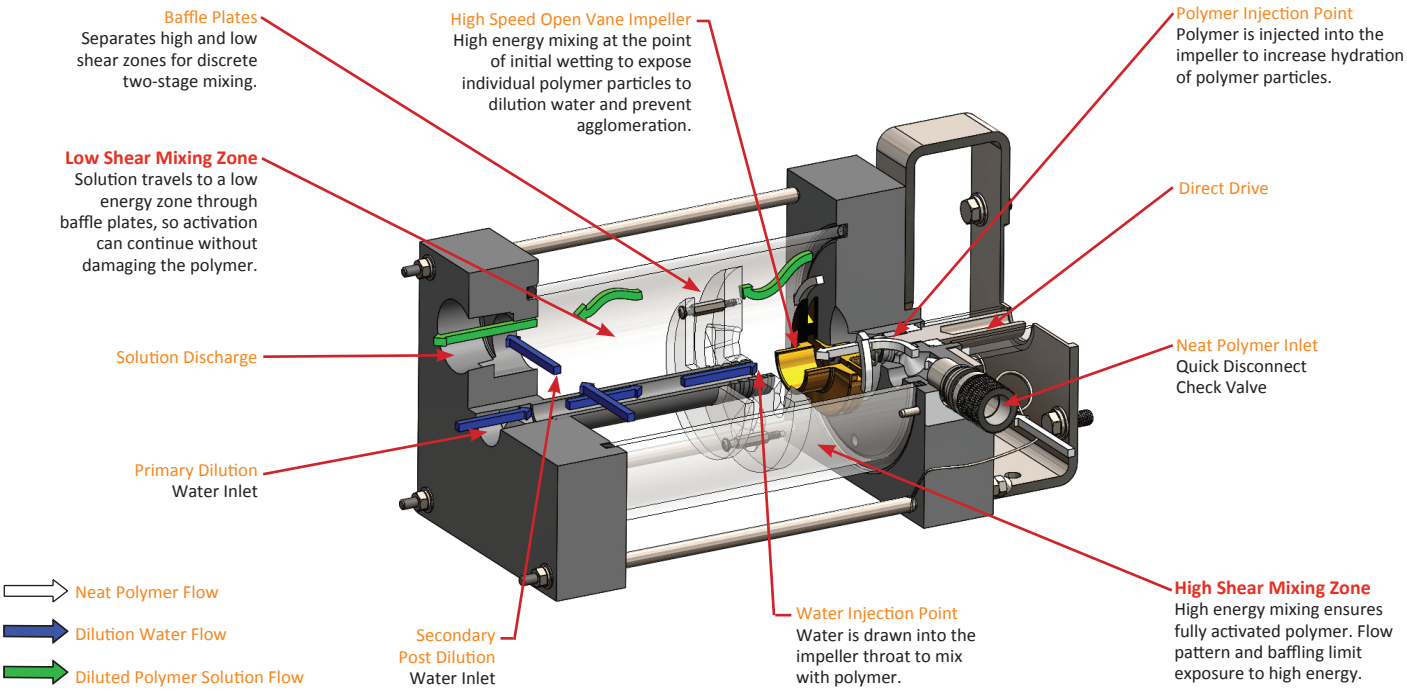
The compact design of the PolyBlend® PB Series provides easy installation. The corrosion-resistant, stainless steel chassis houses the lightweight, portable system, allowing for easy mobility.

Model	Water Flow Rate GPH / (LPH)	Diaphragm Pump Output GPH / (LPH)
PB16-0.4	1.6-16 / (6-60)	0.004-0.42 / (0.015-1.58)
PB16-1	1.6-16 / (6-60)	0.01-1 / (0.04-3.78)
PB50-0.4	5-50 / (19-189)	0.004-0.42 / (0.015-1.58)
PB50-1	5-50 / (19-189)	0.01-1 / (0.04-3.78)
PB100-0.4	10-100 / (38-375)	0.004-0.42 / (0.015-1.58)
PB100-1	10-100 / (38-357)	0.01-1 / (0.04-3.78)
PB200-0.4	10-200 / (38-757)	0.004-0.42 / (0.015-1.58)
PB200-1	10-200 / (38-757)	0.01-1 / (0.04-3.78)
PB200-2	10-200 / (38-757)	0.02-2 / (0.07-7.57)
PB600-1	60-600 / (227-2270)	0.01-1.0 / (0.04-3.78)
PB600-2	60-600 / (227-2270)	0.02-2 / (0.08-7.57)
PB600-4.5	60-600 / (227-2270)	0.045-4.5 / (0.17-17)
PB600-8	60-600 / (227-2270)	0.08-8 / (0.3-30.2)
PB1000-1	60-1200 / (227-4540)	0.01-1.0 / (0.04-3.78)
PB1000-2	60-1200 / (227-4540)	0.02-2 / (0.08-7.57)
PB1000-4.5	60-1200 / (227-4540)	0.045-4.5 / (0.17-17)
PB1000-8	60-1200 / (227-4540)	0.08-8 / (0.3-30.2)

"We provided a PolyBlend® PB100 demonstration unit at no charge and saved our client 35% in polymer. We purchased the unit within a week of our free 30-day demo period."

Ladd Ojala, Area Manager, Chemetall

PolyBlend® M Series Liquid Polymer Feed Systems



The PolyBlend® M Series Magnum is the latest development in our industry-leading technology, frequently providing 20%-30%+ more polymer savings through superior two-stage mechanical mixing, with improved maintenance and serviceability. Optimized mixing energy ensures consistent performance to handle new polymer developments, ultra-high molecular weights, different charge densities and new chemistries. The compact size and open–frame design provide easy installation in confined spaces and facilitate easy component access and maintenance. Control options (below) range from simple manual to full PLC-based automatic control with complete SCADA interface.

PolyBlend® Magnum System

PolyBlend®M Series	
Polymer Output Range	Flowmeter Range
0.004 GPH to 660 GPH	12 GPH to 12,000 GPH

The Magnum design, including mix chamber retrofit kits, is available for capacities between 240 to 2,400 GPH.

PolyBlend®M-Lo Series	
Polymer Output Range	Flowmeter Range
0.004 GPH to 2.5 GPH	2 GPH to 120 GPH

Visit our PolyBlend® Liquid Polymer Sizing Guide at http://ugsichemicalfeed.com/polyblend-sizing.php

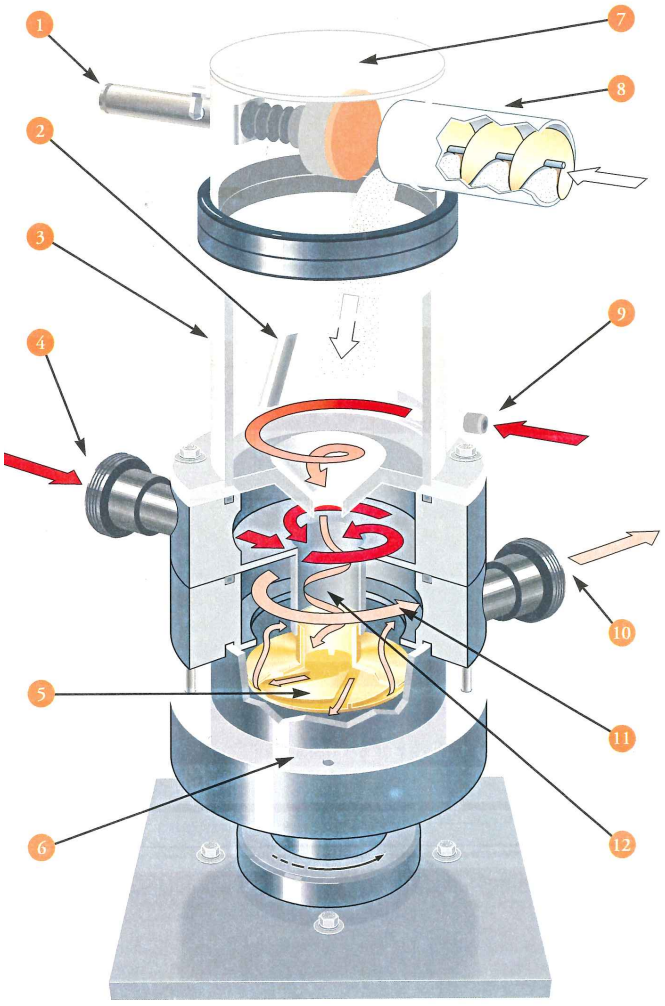
PolyBlend® M-Lo System

PolyBlend® M Series Control Options

	A Control	B / *B+ Control*	C Control
Input	4-20 mA Remote start	4-20 mA Remote start Configurable alarm Make-up concentration % *Ethernet (B+ Control)*	B Control, plus: - Final feed concentration % set point
Output	Run contact Loss of water alarm Contact switch Status	Run contact Loss of water alarm Polymer flow rate (4-20 mA) Alarm *Ethernet (B+ Control)*	Water flow rate (4-20 mA) Polymer flow rate (4-20 mA) Remote mode, discrete (10 amp) Run, discrete (5 amp) Alarm, discrete (5 amp)
Applications	Remote Start-Stop	Maintain constant concentration (%) Display (4 digit LED): - Low flow set-point - Water flow rates - Polymer flow rate - Make-up % set-point - Feed concentration % *B+ Control (NEW):* - *Color touchscreen HMI* - *Pre-programmed PLC* *(for optional features and additional I/O)*	Constant concentration % (with variable water flow rate or pressure) Display (4 line backlit LCD): - Water flow rates - Polymer flow rate - Make-up solution % set-point - Make-up solution % - Solenoid valve status - Mixer motor status - Loss of water flow alarm - Mixer motor overload

PolyBlend® DP Series - Designed for Superior Mixing

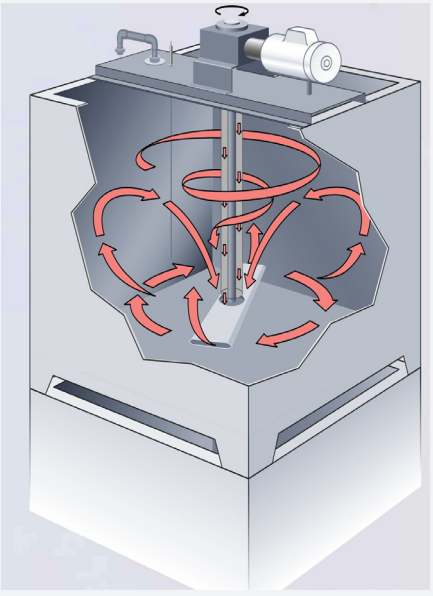
To create the ideal environment for the first stage of dry polymer dissolution, crucial initial wetting occurs in the DD4 disperser. Here, polymer and water are subjected to high energy created by mechanical mixing. The dry polymer is accurately metered into the high-energy mix chamber and is properly activated with water. After brief exposure, the solution exits the high-energy disperser. The point of initial polymer / water contact is visible to the operator through a clear, acrylic interface.



1. **Isolation Valve**
   Prevents moisture contamination of dry powder.
2. **Control Baffle**
   Creates optimum height for “liquid funnel.”
3. **Dry/Liquid Interface**
   Creates optimum environment for introducing dry powder and creating a homogeneous solution.
4. **Dilution Water Inlet**
5. **Mixing Impeller**
   Creates a vacuum and provides the initial high-energy mix necessary to prevent agglomerations.
6. **Stainless Steel Corrosion-Resistant Construction**
7. **Acrylic Cover**
8. **Dry Powder Feeder**
   Accurately meters dry powder for consistent solution concentration.
9. **“Liquid Funnel” Water Inlet**
   Creates a self-cleaning water funnel which prevents build-up on stationary surfaces.
10. **Solution Discharge to Mix Tank**
11. **High-Energy Mixing**
    After passing the impeller, the solutions moves up and around the vortex guide before exit.
12. **Vortex Guide Tube**
    Draws the contents of dry/liquid interface into high-shear mixing impeller.

Low-Energy Mix Tank

From the disperser, the polymer solution flows into the mix tank. Most polymer mix tanks are not uniform in their mixing energy. Agglomerations form in the portions of the tank that receive the least mixing energy while polymer chains are broken up at the tip of the rotating mixing blade. In contrast, the DP Series tank is specifically designed to be fully uniform in mixing intensity. The rotating impeller is a “hollow wing,” the length of which is over half the width of the tank. The hydraulics of the system make the impeller act like a pump, continuously moving the solution vertically as well as horizontally. Moreover, the square tank design further contributes to uniformity of the mixing energy, eliminating the potential for a damaging vortex. The result is minimal agglomerations and minimal broken polymer chains. In other words, minimal waste. Polymer costs are reduced and performance improved.



“PolyBlend® has been performing exceptionally well for Windsor, Ontario, for over two decades. With basic maintenance, we’ve needed very few parts over the years, and when you see the equipment, it is in excellent condition!”

Tony Bietola, Plant Manager
Lou Romano Water Reclamation Plant

PolyBlend® DP Dry/Liquid Polymer Feed Systems

The PolyBlend® DP110 is a lower cost option specifically designed to provide uniform mixing. Dry polymer and water are mixed in the vortex created by the rotating tank impeller. The unique mixing process provides maximum polymer preparation and activation.

Specifications	PolyBlend® DP110
Water Supply	10 GPM (37.8 LPM)
Tank Size	Two Tanks, each 75USG(283L)
*Polymer Feed	Up to 4.0lbs/hr (1.8kgs/hr) @ 0.3% concentration

The PolyBlend® DP500 consists of the DD4 dry polymer disperser, a fiberglass mix tank, and a gravity-fed fiberglass hold tank. The DP500 is specifically designed to provide uniform mixing. Dry polymer and water are initially mixed in the DD4 polymer disperser, exposing the solution to a high-shear agitation via mechanical mixing. The high-shear agitation ensures proper activation of the polymer and prevents unwanted agglomerations.

Specifications	PolyBlend® DP500
Water Supply	20 GPM (75.7 LPM)
Tank Size	Two Tanks, each 160 USG (605.7 L)
*Polymer Feed	Up to 16lbs (7.3kg) /hr dry polymer @ 0.75% concentration

The PolyBlend® DP800 is an integrated equipment package capable of automatically preparing a homogeneous polymer solution. The DP800 consists of the DD4 dry polymer disperser, a stainless steel mix tank, and a gravity-fed stainless steel hold tank.

Specifications	PolyBlend® DP800
Water Supply	30 GPM (113.6 LPM)
Tank Size	Two Tanks, each 360 USG (1362 8 L)
*Polymer Feed	Up to 32lbs (14.5kg) /hr dry polymer @ 0.75% concentration

The PolyBlend® DP2000 is an integrated equipment package capable of automatically preparing a homogeneous polymer solution. The DP2000 consists of the DD4 dry polymer dispenser and large side-by-side stainless steel mix and hold tanks.

Specifications	PolyBlend® DP2000
Water Supply	30 GPM (113.6 LPM)
Tank Size	Two Tanks, each 750 USG (2839.1 L)
*Polymer Feed	Up to 62lbs (28 kg)/hr dry polymer @ 0.75% concentration

*Consult UGSI Chemical Feed, Inc. with regard to dosing amount and your application.

Seeing Is Believing

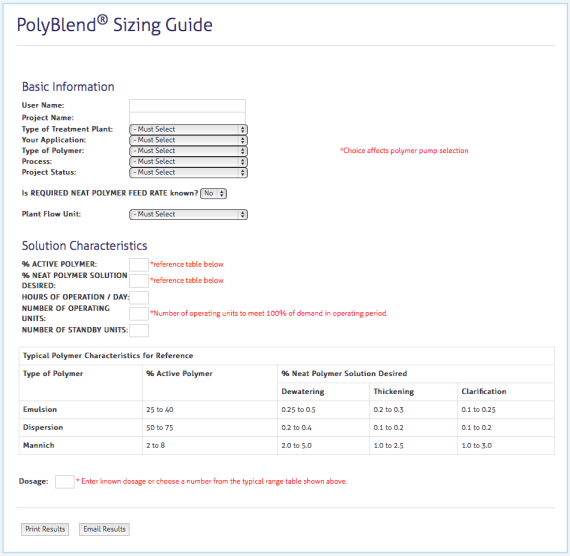
Let us demonstrate the effectiveness of the PolyBlend® polymer mixing system with your existing or new application. We're so sure you'll be satisfied that we'll bring the on-site trial to you for a side-by-side comparison at no charge.

Liquid PolyBlend® system demonstration units are also available.

"The PolyBlend® DP800 Demo Trailer was very simple to use. I just set the settings and walked away; it was extremely user-friendly. The way it blends and the resulting polymer solution – and the reduction in polymer usage – made this an excellent unit."

Brad Anderson, O&M Tech V
Fairfield-Suisun Sewer District, CA

Parts and accessories available


PolyBlend® Sizing Guide

Basic Information

User Name:
Project Name:
Type of Treatment Plant: - Must Select
Your Application: - Must Select
Type of Polymer: - Must Select
Process: - Must Select
Project Status: - Must Select
*Choice affects polymer pump selection

Is REQUIRED NEAT POLYMER FEED RATE known? No

Plant Flow Unit: - Must Select

Solution Characteristics

% ACTIVE POLYMER: *reference table below
% NEAT POLYMER SOLUTION DESIRED: *reference table below
HOURS OF OPERATION / DAY:
NUMBER OF OPERATING UNITS: *Number of operating units to meet 100% of demand in operating period.
NUMBER OF STANDBY UNITS:

Typical Polymer Characteristics for Reference

Type of Polymer	% Active Polymer	% Neat Polymer Solution Desired		
		Dewatering	Thickening	Clarification
Emulsion	25 to 40	0.25 to 0.5	0.2 to 0.3	0.1 to 0.25
Dispersion	50 to 75	0.2 to 0.4	0.1 to 0.2	0.1 to 0.2
Mannich	2 to 8	2.0 to 5.0	1.0 to 2.5	1.0 to 3.0

Dosage: * Enter known dosage or choose a number from the typical range table shown above.

Print Results Email Results

Visit our PolyBlend® Liquid Polymer Sizing Guide at
http://ugsichemicalfeed.com/polyblend-sizing.php

UGSI Chemical Feed SOLUTIONS

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