

# POLYPACK® AP: Continuous and automatic preparation of polymers



## Introduction

The use of polymers or flocculants considerably improves the separation process between the solid/liquid phases for applications in:

- Water treatment (flocculation of industrial and potable water)
- Waste water treatment (physico-chemical treatment)
- Sludge treatment (centrifuges, filter press to improve dewatering)
- Paper industry (retention agent)
- Various other industries (chemical, petrochemical, quarry etc).

These flocculants, in powder form, are very high molecular weight polymers. To ensure efficiency of the separation process, the preparation of the usable dilute polymer solution (2 to 5 g/l) is critical. The Polypack® AP employs rigorous technical standards and features which ensure optimum and consistent flocculant preparation.

With over 20 years experience in the design, manufacture and supply of polymer (flocculant) preparation systems, Milton Roy Europe is pleased to offer the new Polypack® AP series. The Polypack® AP range offers very significant improvements in through-put of prepared polymer in a most cost effective manner.

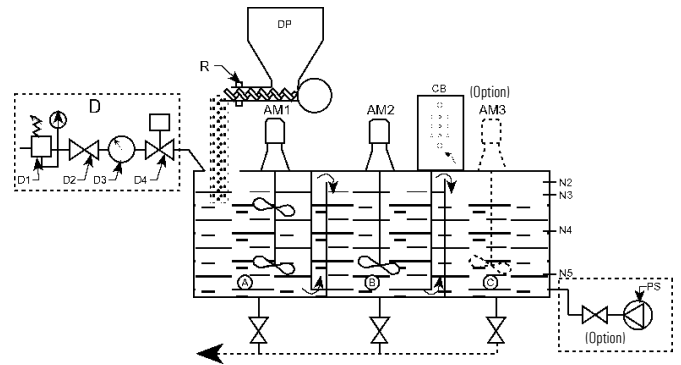
## Design

The Polypack® AP is composed of:

- A 3 compartment tank(\*):
  - Preparation / wetting (A)
  - Maturation / ageing (B)
  - Dosing / final solution (C)
- A water feed unit (D)
- A control panel which operates:
  - A dry feeder with supply hopper (DP)
  - 1, 2 or 3 mixers (AM)
  - Water feed electro-valve (D4) and warning light indication with dry contact output
- A system to «wet» the powder by water flow
- 4 level detectors
- An extraction flow outlet connection.

(\*) AP430 model: 2 compartment tank

## Operating diagram



- |                           |                          |
|---------------------------|--------------------------|
| Ⓐ: Preparation tank       | CB: Control panel        |
| Ⓑ: Maturation tank        | PS: Pump (option)        |
| Ⓒ: Extraction/dosing tank | R: Heating cable         |
| D: Water feed             | AM1: Mixer (2 impellers) |
| D1: Pressure reducer      | AM2: Mixer (1 impeller)  |
| D2: Water supply          | AM3: Mixer (option)      |
| D3: Contact flow meter    | N2: Very high level      |
| D4: Electro-valve         | N3: High level           |
| DP: Dry feeder            | N4: Low level            |
|                           | N5: Very low level       |

## Operating principle

The circulation of the polymer preparation is routed through the compartments, which are separated by baffles. This ensures the optimum reaction time in each compartment, and a continuous concentration level, thereby avoiding any preferential route between the preparation compartment and final dosing solution compartment.

The Polypack® AP is automated by the control panel connected to the level detectors located in the dosing solution compartment. As soon as the solution in the dosing compartment reaches «low level», the detector activates the opening of the water feed electro-valve. The contact flow meter in turn operates the start-up of the dry feeder. The dry feeder is sized according to the required amount of water to obtain an accurate concentration level. As soon as the «high level» is reached, the process cycle stops, although the two (or three) mixers continue to operate.

The Polypack® provides automatic and continuous preparation of polymer solution of constant and uniform quality, thanks to:

- A new «wetting» system for the powder
- A mixer with 2 impellers located in the preparation compartment (single impeller in the maturation compartment)
- Optimised maturation cycles.

This main solution can in turn be further diluted, by fitting an optional Dilution unit.

## How to select the POLYPACK® AP

For example:

Hypothesis	Volume of water to be treated	1000 m <sup>3</sup> /h
	Treatment level	5 ppm in weight
	Diluted polymer	5 g/l
	Maturation time	1/2 h
Mass flow rate of polymer powder	$(1000 \cdot 10^3) \times (5 \cdot 10^{-6}) = 5 \text{ kg/h}$	
Extraction/dosing flow	$5 \text{ kg/h} \times (1/0.005 \text{ kg/l}) = 1000 \text{ l/h}$	
<b>The model to select is the:</b>	<b>Polypack AP 1340</b>	

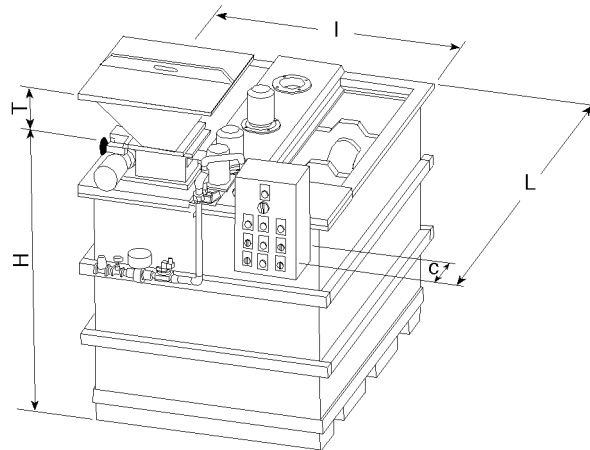
## Dimensions

Model		AP430	AP985	AP1340	AP2660	AP4165	AP6660	AP10940	AP13340
Dimension in mm	L	1165	1740	1740	1740	2440	3100	3880	4115
	I	1000	1340	1340	1340	1340	1570	2065	2460
	H	915	970	1230	1720	1720	1720	1640	1750
	C	250	250	250	250	250	250	250	250
Net weight in kg		210	280	320	420	520	650	980	1100

## Hoppers

These 4 hopper versions are available for all Polypack® models.

Capacity (l)	Dimension (mm)
60	350
100	520
160	650
200	820



## Characteristics

Model		AP430	AP985	AP1340	AP2660	AP4165	AP6660	AP10940	AP13340
Extraction/dosing flow (l/h)	Maturing time 1/2 h	430	985	1340	2660	4165	6660	10940	13340
	Maturing time 1 h	215	492	822	1404	2081	3418	5469	7292
Tank volume (l)	Total	468	1075	1574	2496	3588	5850	9360	12490
	Permanent	280	640	1069	1826	2706	4444	7110	9480
Water supply flow (l/h)x100		8 to 15	8 to 15	8 to 20	10 to 40	15 to 62	25 to 100	40 to 165	55 to 200
Maturing time (h)		1/2 to 2	1/2 to 2	1/2 to 2	1/2 to 2	1/2 to 2	1/2 to 2	1/2 to 2	1/2 to 2



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