

Pilot Plant Glossary

Pilot Plant Glossary of Terms

Alum

Alum is short for aluminum sulfate. This is the chemical coagulant we use to form flocs. This charges the particles and helps them stick together after they hit each other in the flocculator.

Baffles

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[!Henry with Baffles.jpg|thumbnail!]

Former member Henry Zeng working with Baffles

Plates placed in the flocculation tank. Raw water flows over or under them, creating variances in shear that help flocs form. See [Construction of Adjustable Baffle System](#) for the latest design (as of spring 2009).

Floc

A clump of particles stuck together with coagulant (alum or PAC). Visible flocs in the pilot plant range in size from that of a pinhead to marble-size. Large flocs look like grayish-brown lumps that you could pick up, but they usually disintegrate upon touch.

Flocculation

The process during which particles in water form little clumps by bumping into each other and sticking together with the help of a coagulant (a substance that causes particles to stick to each other). In the pilot plant, flocculation occurs in the flocculation tank.

Lamella

Lamella are thin plates help parallel to each other, usually by pins or rods of some kind. They are similar in design to baffles, but have a different purpose. In sedimentation tanks, they are placed near the top of tank, under the water surface. They are usually angled at about 60 degrees from horizontal. Because they are closely spaced, it is easier for flocs to settle when dirty water flows through them.

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[!Lamella in Tank Cross-Section.jpg|thumbnail!]

Cross Section of Sed Tank with Lamella

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A Sed Tank with Lamella in the Pilot Plant

PAC (Polyaluminum Chloride)

This is the coagulant that the Cornell University Water Filtration Plant uses. It is effective as a flocculant (coagulant) in colder waters, when alum loses it effectiveness. The pilot plant is currently (spring 2009) using PAC in order to match the dosing of the Water Filtration Plant. The obviates the need for the pilot plant team to perform jar tests, thus saving a great deal of time. It should be noted that AguaClara plants in Honduras use Alum, which should be considered when applying pilot plant research results to Honduras.

Peristaltic Pump

A pump that uses a flexible tube and rollers to move liquid through that tube. As the rollers rotate, they compress the tube and force the liquid ahead of the compression forward, while at the same time suction draws the liquid behind the compression forward. In the context of the pilot plant, they are used to pump alum and chlorine solutions, as well as to pump samples of water to the turbidimeters.

Sedimentation

Because flocs are more dense than water, gravity will cause them to sink. Sedimentation is the process by which flocs settle to the bottom of a tank, leaving clear, clean water on top.

Sludge Blanket

A sludge blanket occurs when the net force on a floc is about zero. For this to occur, the water needs to be flowing from the bottom of the tank to the top. The flocs want to flow up with the water due to inertia, but because they are more dense, gravity pulls down on them. When enough flocs accumulate, they start to act as a filter for the water flowing through it. As a result of this, there is usually there is a well defined clear layer of clear water at the top of the sludge blanket

Tube Flocculator

Flocculates water by sending it though a series of bends in the a tube (which generates velocity gradients).

Turbidimeter

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A Turbidimeter

A machine that measures turbidity. See [Flocculator Tank Maintenance](#) for more information.

Turbidity

A measurement of how dirty water is. Turbid water looks very cloudy and hazy because of all the small particles floating around. Turbidity is how we measure the quality of our water because it tells us how many particles we have removed. It is measured in units of NTUs (Nephelometric Turbidity Units).

See Also

Need more information? Very comprehensive information on all components of an AguaClara plant can be found on the [CEE 4540](#) site.

Sketch Demonstrating Location of Pilot Plant Components

