

PolySeed[®]

Technical Report

Aeration Methods

The purpose of stirring and aerating prepared PolySeed solution is to manipulate the products growth phase so the bacterial population of the solution will be at its optimal level when testing begins. There are two methods of stirring and aeration: *The Vortex Method and The Air Pump Method.*

The Vortex Method

The commonly used Vortex Method uses a stir plate set to a high speed to “whip the solution up like a tornado”. Although this method is allowable, it is not recommended. The large air bubbles created by the vortex provide sufficient but not ideal levels of aeration and the turbulent environment created by the fast stirring can be damaging to the bacteria and even prevent full sporulation.

The Air Pump Method

The Air Pump Method, on the other hand is performed by stirring the solution at a low speed while simultaneously using an air pump to infuse oxygen. This is the preferred method of aeration because it creates an environment that encourages bacteria to become healthy vegetative cells. The slow stir speed does not cause cell-damaging turbulence and air bubbles created by an air pump are much smaller than those created by a vortex. These smaller “micro-bubbles” provide a larger surface area for oxidation transfer and therefore, superior aeration.

In conclusion, achieve optimal test results by always using the Air Pump Method when preparing the PolySeed solution. Use of this method ensures a healthy bacterial population at the time of testing because it encourages bacteria growth without compromising cell structure.

NOTE: After each use, allow the air stones/diffusers to completely dry before storing them. It is also good practice to replace the air stones/diffusers and tubing frequently.