

PolySeed®

Technical Report

Dechlorination

Question:

What should I do if my wastewater sample contains residual Chlorine?

Answer:

Because chlorine will inhibit the growth of living bacteria in the BOD test, wastewater samples containing residual chlorine must be dechlorinated prior to preparing BOD dilutions. To dechlorinate the samples, add sodium sulfite to any wastewater sample thought to contain residual chlorine prior to seeding.

Sample Dechlorination Procedure

Step 1. Add 100ml of a well-mixed portion of the sample to be dechlorinated to a 250ml Erlenmeyer flask.

Step 2. Add 10ml of either 1+1 acetic acid solution or 1+50 sulfuric acid solution to the flask and swirl to mix.

Step 3. Add 10ml of potassium iodide solution and 1ml of starch indicator solution. Swirl to mix and let stand for 15 minutes.

Step 4. If a blue color does not appear, there is no chlorine in the sample, and it does not require further treatment prior to the BOD test.

NOTE: Do not assume that the sample was not chlorinated simply because there is no reaction. Chlorine can disappear from the sample while it sits in the sample container. The only way to be sure a sample is not chlorinated is to know exactly where the sample was collected.

Step 5. If a blue color appears, titrate the treated portion of sample with 0.025 sodium sulfite until the blue color first disappears. Record this amount on a lab sheet.

Step 6. Calculate the amount of sodium sulfite solution needed to dechlorinate the selected BOD sample volume.

Sodium Sulfite Calculation: Calculate the amount of sodium sulfite, (Na_2SO_3) needed to dechlorinate the BOD sample using the following formula:

$\text{mL Na}_2\text{SO}_3 \text{ needed} = (\text{mL Na}_2\text{SO}_3 \text{ used} \times \text{mL total test sample}) / \text{mL sample portion used for dechlorination}$

For example, suppose 1.0 mL of Na_2SO_3 is needed to titrate 100 mL of sample for dechlorination...calculate the volume of Na_2SO_3 needed to dechlorinate 1500 mL of the BOD sample as follows:

$\text{mL Na}_2\text{SO}_3 \text{ needed} = (1.0 \text{ mL} \times 1500 \text{ mL}) / 100 \text{ mL} = 1500 / 100 = 15 \text{ mL}$

Step 7. Add the calculated volume of sodium sulfite to the BOD sample and mix thoroughly.

Step 8. Allow the sample to stand for 10-20 minutes, then repeat steps 1-3.

Step 9. If no chlorine is detected, continue with the BOD test procedure. Otherwise, continue with steps 5-8 until the sample is dechlorinated.