PolySeed®

Technical Report

Extreme pH Values

Question:
Should samples containing caustic alkalinity or acidity be adjusted before preparing BOD dilutions?

Answer:
Yes! Samples containing caustic alkalinity (pH >8.0) or acidity (pH >6.0) can prevent the growth of bacteria during the BOD test, resulting in an insufficient bacterial population and inaccurate test results. To prevent this, samples with a pH value greater than 8.0 or lower than 6.0 must be neutralized to pH of 7.0 prior to seeding.

Sample Neutralization Procedure:

1. Pour 50 mL sample into a 100 mL beaker.

2. Measure the pH of the sample using a pH meter. If the pH is out of the range of 6.0 – 8.0, continue with steps 3-6. Otherwise, perform the BOD test on the untreated sample.

3. Add 1 N sulfuric acid if the sample is alkaline or 1 N sodium hydroxide if the sample is acidic until the pH reaches 7.0 – 7.2.

4. Calculate the amount of sulfuric acid or sodium hydroxide needed to neutralize 1000 mL of the sample. *calculation below

5. Add the calculated amount or base to the sample.

6. Repeat steps 1 – 5 until the pH test shows a pH of 7.0 – 7.2.

SULFURIC ACID/SODIUM HYDROXIDE CALCULATION: *Calculate the amount of 1 N sulfuric acid or 1 N sodium hydroxide needed to neutralize the sample to pH 7.0 using the following formula:*

mL needed = (mL acid or base used x mL total) / mL sample portion used for neutralization

For example, suppose 1.3 mL of 1 N NaOH is used to neutralize 50 mL of sample to pH of 7.0, calculate the volume of NaOH to be added to neutralize the sample as follows:

mL 1 N NaOH needed = (1.3 mL x 1000 mL) / 50 mL = 1300/50 = 26 mL