Alkalinity (P/T) Test Kit

1 drop = 10 or 50 ppm as $CaCO_3$ / 25 mL **red caps**

KIT COMPONENTS:

SA1555-B	Alkalinity Titrant Low, 60 mL
SA1595-B	Alkalinity Titrant High, 60 mL
PH1605-A	Phenolphthalein Indicator, 30 mL
AI6925-A	Total Alkalinity Indicator, 30 mL
VL-1005-V	Vial, 10-50 mL

SAFETY TIPS: Wear Gloves; Use Eye Protection; Read SDS

TESTING TIPS: Collect Accurate Sample; Hold Bottles Vertically; Ensure Proper Lighting

INTERFERENCES: Turbid samples may mask the color change at the endpoint. Use a pH meter for these samples titrating for the phenolphthalein alkalinity and for total alkalinity.

ATTENTION: As necessary, calibrate this kit against a known standard made with plant / make-up water. Be sure to collect a representative sample.

Video Procedure

EndPoint ID® Test Procedure

Alkalinity (P/T) Test Kit

1 drop = 10 or 50 ppm as $CaCO_3$ / 25 mL **red caps**

KIT COMPONENTS:

SA1555-B	Alkalinity Titrant Low, 60 mL
SA1595-B	Alkalinity Titrant High, 60 mL
PH1605-A	Phenolphthalein Indicator, 30 mL
AI6925-A	Total Alkalinity Indicator, 30 mL
VL-1005-V	Vial, 10-50 mL

SAFETY TIPS: Wear Gloves; Use Eye Protection; Read SDS

TESTING TIPS: Collect Accurate Sample; Hold Bottles Vertically; Ensure Proper Lighting

INTERFERENCES: Turbid samples may mask the color change at the endpoint. Use a pH meter for these samples titrating for the phenolphthalein alkalinity and for total alkalinity.

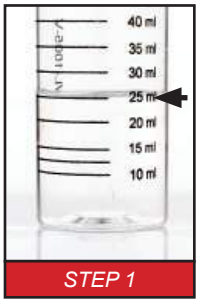
ATTENTION: As necessary, calibrate this kit against a known standard made with plant / make-up water. Be sure to collect a representative sample.

Video Procedure

EndPoint ID® Test Procedure

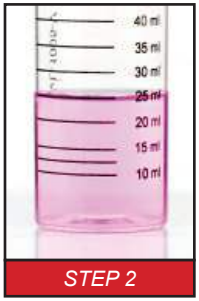
Alkalinity (P/T) Test Kit

1 Rinse vial three times with sample to be tested. **Fill vial to 25 mL.**



STEP 1

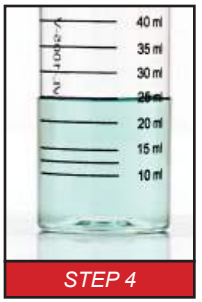
2 **Add 3 drops of Phenolphthalein Indicator** (PH1605) and swirl to mix. The sample should turn pink.



STEP 2

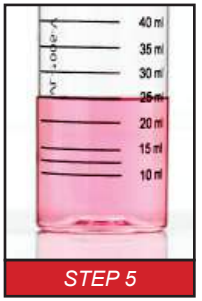
3 **Add Alkalinity Titrant** one drop at a time while swirling. Count the number of drops until the sample color changes from pink to colorless. Record the number of drops as P-Alkalinity.

4 **Add 3 drops of Total Alkalinity Indicator** (AI6925) and swirl to mix. The sample should turn green.



STEP 4

5 **Add Alkalinity Titrant** one drop at a time while swirling. Count the number of drops until the sample color changes from green to red. Record the total number of drops (from step 3 & 5) as T-Alkalinity.



STEP 5

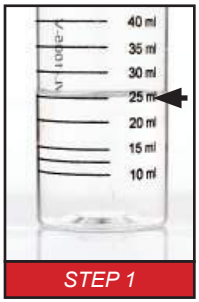
Alkalinity Titrant Low (SA1555)
drops x 10 = ppm as $CaCO_3$

Alkalinity Titrant High (SA1595)
drops x 50 = ppm as $CaCO_3$

OH Alkalinity = (2xP) - M

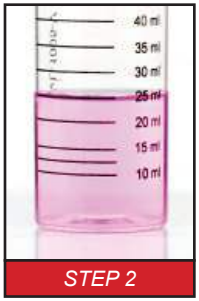
Alkalinity (P/T) Test Kit

1 Rinse vial three times with sample to be tested. **Fill vial to 25 mL.**



STEP 1

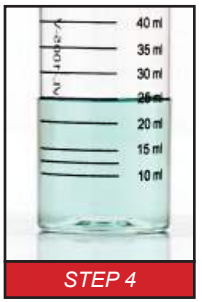
2 **Add 3 drops of Phenolphthalein Indicator** (PH1605) and swirl to mix. The sample should turn pink.



STEP 2

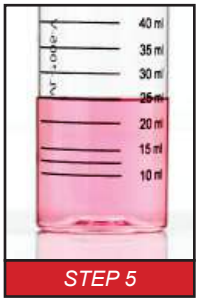
3 **Add Alkalinity Titrant** one drop at a time while swirling. Count the number of drops until the sample color changes from pink to colorless. Record the number of drops as P-Alkalinity.

4 **Add 3 drops of Total Alkalinity Indicator** (AI6925) and swirl to mix. The sample should turn green.



STEP 4

5 **Add Alkalinity Titrant** one drop at a time while swirling. Count the number of drops until the sample color changes from green to red. Record the total number of drops (from step 3 & 5) as T-Alkalinity.



STEP 5

Alkalinity Titrant Low (SA1555)
drops x 10 = ppm as $CaCO_3$

Alkalinity Titrant High (SA1595)
drops x 50 = ppm as $CaCO_3$

OH Alkalinity = (2xP) - M

Chloride Test Kit

yellow caps

KIT COMPONENTS:

SN3410-B	Chloride Titrant, 60 mL
PC8025-B	Potassium Chromate Indicator, 60 mL
PH1605-A	Phenolphthalein Indicator, 30 mL
SA1555-B	Alkalinity Titrant Low, 60 mL
VL-1005-V	Vial, 10-50 mL

SAFETY TIPS:


Wear Gloves


Use Eye Protection

Read SDS

TESTING TIPS:


Collect Accurate Sample


Hold Bottles Vertically


Ensure Proper Lighting

INTERFERENCES: The effect of interferences increases as the sample size increases. Iron concentrations can mask the endpoint. Orthophosphate in excess of 25 ppm will precipitate the silver. Cyanide, Bromide and Iodide interfere directly and create a positive interference. Sulfite provides a positive interference. Sulfite can be eliminated with Hydrogen Peroxide 3% before testing.

ATTENTION: As necessary, calibrate this kit against a known standard made with plant / make-up water. Be sure to collect a representative sample.

Video Procedure

EndPoint ID® Test Procedure

Chloride Test Kit

yellow caps

KIT COMPONENTS:

SN3410-B	Chloride Titrant, 60 mL
PC8025-B	Potassium Chromate Indicator, 60 mL
PH1605-A	Phenolphthalein Indicator, 30 mL
SA1555-B	Alkalinity Titrant Low, 60 mL
VL-1005-V	Vial, 10-50 mL

SAFETY TIPS:


Wear Gloves


Use Eye Protection

Read SDS

TESTING TIPS:


Collect Accurate Sample


Hold Bottles Vertically


Ensure Proper Lighting

INTERFERENCES: The effect of interferences increases as the sample size increases. Iron concentrations can mask the endpoint. Orthophosphate in excess of 25 ppm will precipitate the silver. Cyanide, Bromide and Iodide interfere directly and create a positive interference. Sulfite provides a positive interference. Sulfite can be eliminated with Hydrogen Peroxide 3% before testing.

ATTENTION: As necessary, calibrate this kit against a known standard made with plant / make-up water. Be sure to collect a representative sample.

Video Procedure

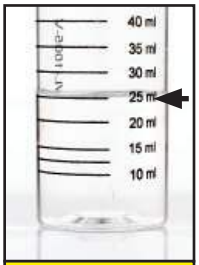
EndPoint ID® Test Procedure

Chloride Test Kit

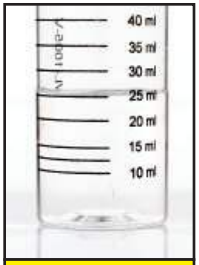
1 Select a sample size based on the desired drop equivalency. For smaller sample sizes, use a 5 mL syringe to collect the sample and dilute to 10 mL if necessary.

1 drop = 10 ppm	25 mL sample
1 drop = 25 ppm	10 mL sample
1 drop = 50 ppm	5 mL sample
1 drop = 100 ppm	2.5 mL sample
1 drop = 500 ppm	0.5 mL sample

2 Add 2 drops of Phenolphthalein Indicator (PH1605) and swirl to mix. If the sample remains colorless, proceed to step 3. If the sample turns red, add Alkalinity Titrant Low (SA1555) one drop at a time, while swirling, until the sample color changes from red to colorless.



STEP 1



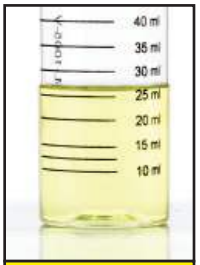
STEP 2

3 Add 6 drops of Potassium Chromate Indicator (PC8025) and swirl to mix. The sample should turn yellow.

4 Add Chloride Titrant (SN3410) one drop at a time while swirling. Count the number of drops until the sample color changes from yellow to red. The first color change is the endpoint.

drops x factor = ppm Chloride (Cl)

To convert Chloride (Cl) to Sodium Chloride (NaCl): Multiply results by 1.65.



STEP 3

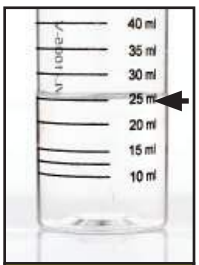
STEP 4

Chloride Test Kit

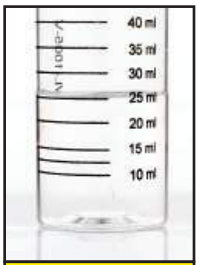
1 Select a sample size based on the desired drop equivalency. For smaller sample sizes, use a 5 mL syringe to collect the sample and dilute to 10 mL if necessary.

1 drop = 10 ppm	25 mL sample
1 drop = 25 ppm	10 mL sample
1 drop = 50 ppm	5 mL sample
1 drop = 100 ppm	2.5 mL sample
1 drop = 500 ppm	0.5 mL sample

2 Add 2 drops of Phenolphthalein Indicator (PH1605) and swirl to mix. If the sample remains colorless, proceed to step 3. If the sample turns red, add Alkalinity Titrant Low (SA1555) one drop at a time, while swirling, until the sample color changes from red to colorless.



STEP 1



STEP 2

3 Add 6 drops of Potassium Chromate Indicator (PC8025) and swirl to mix. The sample should turn yellow.

4 Add Chloride Titrant (SN3410) one drop at a time while swirling. Count the number of drops until the sample color changes from yellow to red. The first color change is the endpoint.

drops x factor = ppm Chloride (Cl)

To convert Chloride (Cl) to Sodium Chloride (NaCl): Multiply results by 1.65.

STEP 3

STEP 4

Hardness (Total & Calcium) Test Kit

1 drop = 2 or 10 ppm as $CaCO_3$ / 25 mL **blue caps**

KIT COMPONENTS:

ED2073-B	Hardness Titrant Low, 60 mL
ED2070-B	Hardness Titrant High, 60 mL
HA7405-A	Hardness Buffer Solution, 30 mL
HA7475-H	Hardness Indicator Powder, 10 g
CA1119-A	Calcium Buffer, 30 mL
CA1100-H	Calcium Indicator Powder, 10 g
VL-1005-V	Vial, 10-50 mL

INTERFERENCES: Metals may cause difficulty in seeing the endpoint. If metal interference is presumed, add one drop of Hardness Titrant to the sample before adding buffer or indicator. Include this drop of titrant when calculating your results. Additional Hardness Buffer may be necessary to view a clean endpoint.

ATTENTION: As necessary, calibrate this kit against a known standard made with plant / make-up water. Be sure to collect a representative sample.

EndPoint ID® Test Procedure

Hardness (Total & Calcium) Test Kit

1 drop = 2 or 10 ppm as $CaCO_3$ / 25 mL **blue caps**

KIT COMPONENTS:

ED2073-B	Hardness Titrant Low, 60 mL
ED2070-B	Hardness Titrant High, 60 mL
HA7405-A	Hardness Buffer Solution, 30 mL
HA7475-H	Hardness Indicator Powder, 10 g
CA1119-A	Calcium Buffer, 30 mL
CA1100-H	Calcium Indicator Powder, 10 g
VL-1005-V	Vial, 10-50 mL

INTERFERENCES: Metals may cause difficulty in seeing the endpoint. If metal interference is presumed, add one drop of Hardness Titrant to the sample before adding buffer or indicator. Include this drop of titrant when calculating your results. Additional Hardness Buffer may be necessary to view a clean endpoint.

ATTENTION: As necessary, calibrate this kit against a known standard made with plant / make-up water. Be sure to collect a representative sample.

EndPoint ID® Test Procedure

Hardness (Total & Calcium) Test Kit

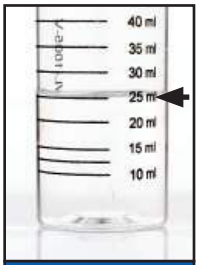
1 Rinse vial three times with sample to be tested. **Fill vial to 25 mL.**

For Total Hardness, go to Step 2.
For Calcium Hardness, go to Step 4.

2 **Add 5 drops of Hardness Buffer** (HA7405) and swirl to mix. **Add 1 scoop of Hardness Indicator Powder** (HA7475) and swirl to mix.

Note: The sample will turn red if hardness is present and blue if there is no hardness.

3 **Add Hardness Titrant** one drop at a time while swirling. Count the number of drops until the color changes from red to blue. Record drops as Total Hardness. Multiply drops by factor to obtain results.



STEP 1

STEP 2 & 4

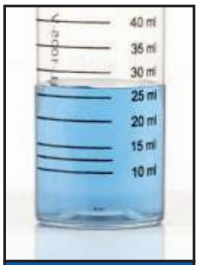
4 **Add 5 drops of Calcium Buffer** (CA1119) and swirl to mix. **Add 1 scoop of Calcium Indicator Powder** (CA1100) and swirl to mix.

Note: The sample will turn red if hardness is present and blue if there is no hardness.

5 **Add Hardness Titrant** one drop at a time while swirling. Count the number of drops until the color changes from red to blue. Record drops as Calcium Hardness. Multiply drops by factor to obtain results.

Factor:
Hardness Titrant Low (ED2073)
# of drops x 2 = ppm as $CaCO_3$

Hardness Titrant High (ED2070)
# of drops x 10 = ppm as $CaCO_3$



STEP 3 & 5

Hardness (Total & Calcium) Test Kit

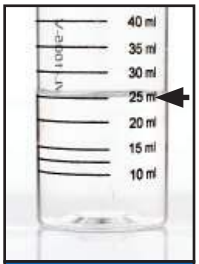
1 Rinse vial three times with sample to be tested. **Fill vial to 25 mL.**

For Total Hardness, go to Step 2.
For Calcium Hardness, go to Step 4.

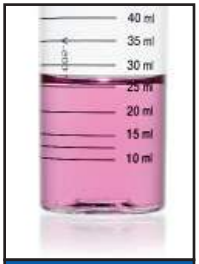
2 **Add 5 drops of Hardness Buffer** (HA7405) and swirl to mix. **Add 1 scoop of Hardness Indicator Powder** (HA7475) and swirl to mix.

Note: The sample will turn red if hardness is present and blue if there is no hardness.

3 **Add Hardness Titrant** one drop at a time while swirling. Count the number of drops until the color changes from red to blue. Record drops as Total Hardness. Multiply drops by factor to obtain results.



STEP 1



STEP 2 & 4

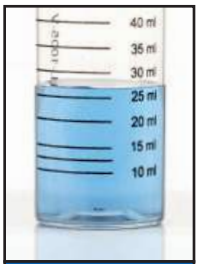
4 **Add 5 drops of Calcium Buffer** (CA1119) and swirl to mix. **Add 1 scoop of Calcium Indicator Powder** (CA1100) and swirl to mix.

Note: The sample will turn red if hardness is present and blue if there is no hardness.

5 **Add Hardness Titrant** one drop at a time while swirling. Count the number of drops until the color changes from red to blue. Record drops as Calcium Hardness. Multiply drops by factor to obtain results.

Factor:
Hardness Titrant Low (ED2073)
# of drops x 2 = ppm as $CaCO_3$

Hardness Titrant High (ED2070)
# of drops x 10 = ppm as $CaCO_3$



STEP 3 & 5

Molybdenum (Mo) Test Kit

1 drop = 2, 5, 20 or 50 ppm **white caps**

KIT COMPONENTS:

MO1546-B	Molybdenum Titrating Solution, 60 mL
MO1525-B	Molybdenum Buffer, 60 mL
MO1589-H	Molybdenum Indicator Powder, 10g
MO1591-B	Molybdenum Indicator Solvent, 60 mL
SY-2001-P	Syringe, 1 mL (3x)
SY-2005-P	Syringe, 5 mL
VL-1005-V	Vial, 10-50 mL (4x)

INTERFERENCES: High concentrations of phosphonate can create positive interferences. High concentrations of nitrites can cause negative interferences.

ATTENTION: As necessary, calibrate this kit against a known standard made with plant / make-up water. Be sure to collect a representative sample.

EndPoint ID® Test Procedure

Molybdenum (Mo) Test Kit

1 drop = 2, 5, 20 or 50 ppm **white caps**

KIT COMPONENTS:

MO1546-B	Molybdenum Titrating Solution, 60 mL
MO1525-B	Molybdenum Buffer, 60 mL
MO1589-H	Molybdenum Indicator Powder, 10g
MO1591-B	Molybdenum Indicator Solvent, 60 mL
SY-2001-P	Syringe, 1 mL (3x)
SY-2005-P	Syringe, 5 mL
VL-1005-V	Vial, 10-50 mL (4x)

INTERFERENCES: High concentrations of phosphonate can create positive interferences. High concentrations of nitrites can cause negative interferences.

ATTENTION: As necessary, calibrate this kit against a known standard made with plant / make-up water. Be sure to collect a representative sample.

EndPoint ID® Test Procedure

Molybdenum (Mo) Test Kit

1 Rinse a vial 3 times with sample and select a sample size based on the desired drop equivalency. For smaller sample sizes, use syringe to collect the sample and dilute to 10 mL with Molybdenum free water.

1 drop = 2 ppm	25 mL sample
1 drop = 5 ppm	10 mL sample
1 drop = 20 ppm	2.5 mL sample
1 drop = 50 ppm	1 mL sample

Fill a second vial with equal volume of distilled, deionized or molybdenum free tap water.

2 Use the 1 mL syringe to add 0.5 mL of Molybdenum Buffer (MO1525) to each sample vial. Swirl the vials to mix.

3 Use the other 1 mL syringe to add 2 mL of Molybdenum Indicator Solvent (MO1591) to a third sample vial.

STEP 1

STEP 4

4 Add 3 scoops of Molybdenum Indicating Powder (MO1589) to the third vial and swirl to dissolve. The solvent/powder mixture will turn red/orange. Results will not be affected by undissolved crystals.

Molybdenum Indicator Solution (MO1543) may be substituted for solvent/powder mixture.

5 Use 1 mL syringe to transfer 0.5 mL of solvent/powder mixture (vial 3) to each sample vial. Swirl to mix.

6 Add Molybdenum Titrating Solution (MO1546) to the vial containing your sample. Add one drop at a time while swirling. Count the number of drops until the sample color matches the color of the blank vial or until no further color change occurs.

Multiply number of drops by equivalence factor from step 1. Record result as ppm Molybdenum (Mo).

Multiply ppm Molybdenum by 1.7 to express result as ppm Molybdate (MoO_4).

STEP 5

STEP 6

Molybdenum (Mo) Test Kit

1 Rinse a vial 3 times with sample and select a sample size based on the desired drop equivalency. For smaller sample sizes, use syringe to collect the sample and dilute to 10 mL with Molybdenum free water.

1 drop = 2 ppm	25 mL sample
1 drop = 5 ppm	10 mL sample
1 drop = 20 ppm	2.5 mL sample
1 drop = 50 ppm	1 mL sample

Fill a second vial with equal volume of distilled, deionized or molybdenum free tap water.

2 Use the 1 mL syringe to add 0.5 mL of Molybdenum Buffer (MO1525) to each sample vial. Swirl the vials to mix.

3 Use the other 1 mL syringe to add 2 mL of Molybdenum Indicator Solvent (MO1591) to a third sample vial.

STEP 1

STEP 4

4 Add 3 scoops of Molybdenum Indicating Powder (MO1589) to the third vial and swirl to dissolve. The solvent/powder mixture will turn red/orange. Results will not be affected by undissolved crystals.

Molybdenum Indicator Solution (MO1543) may be substituted for solvent/powder mixture.

5 Use 1 mL syringe to transfer 0.5 mL of solvent/powder mixture (vial 3) to each sample vial. Swirl to mix.

6 Add Molybdenum Titrating Solution (MO1546) to the vial containing your sample. Add one drop at a time while swirling. Count the number of drops until the sample color matches the color of the blank vial or until no further color change occurs.

Multiply number of drops by equivalence factor from step 1. Record result as ppm Molybdenum (Mo).

Multiply ppm Molybdenum by 1.7 to express result as ppm Molybdate (MoO_4).

STEP 5

STEP 6

Sulfite Test Kit

1 drop = 2 or 10 ppm as Na_2SO_3 / 25 mL **orange caps**

KIT COMPONENTS:

PI8056-B	Sulfite Titrant Low, 60 mL
PI8063-B	Sulfite Titrant High, 60 mL
PH1605-A	Phenolphthalein Indicator, 30 mL
ST5205-H	Starch Acid Powder, 10g
VL-1005-V	Vial, 10-50 mL

SAFETY TIPS: Wear Gloves; Use Eye Protection; SDS Read SDS

TESTING TIPS: Collect Accurate Sample; Hold Bottles Vertically; Ensure Proper Lighting

INTERFERENCES: All oxidizable substances such as Organic Matter, Sulfides and Nitrites, are positive interferences. Metals, namely copper, can stop or slow the chemical reaction. Adding one Sulfamic Acid powder pillow to the sample immediately following collection will minimize the interference. Sample should be covered and cooled to room temperature before testing. Exposure to air can be a negative interference.

ATTENTION: As necessary, calibrate this kit against a known standard made with plant / make-up water. Be sure to collect a representative sample.

Video Procedure

EndPoint ID® Test Procedure

Sulfite Test Kit

1 drop = 2 or 10 ppm as Na_2SO_3 / 25 mL **orange caps**

KIT COMPONENTS:

PI8056-B	Sulfite Titrant Low, 60 mL
PI8063-B	Sulfite Titrant High, 60 mL
PH1605-A	Phenolphthalein Indicator, 30 mL
ST5205-H	Starch Acid Powder, 10g
VL-1005-V	Vial, 10-50 mL

SAFETY TIPS: Wear Gloves; Use Eye Protection; SDS Read SDS

TESTING TIPS: Collect Accurate Sample; Hold Bottles Vertically; Ensure Proper Lighting

INTERFERENCES: All oxidizable substances such as Organic Matter, Sulfides and Nitrites, are positive interferences. Metals, namely copper, can stop or slow the chemical reaction. Adding one Sulfamic Acid powder pillow to the sample immediately following collection will minimize the interference. Sample should be covered and cooled to room temperature before testing. Exposure to air can be a negative interference.

ATTENTION: As necessary, calibrate this kit against a known standard made with plant / make-up water. Be sure to collect a representative sample.

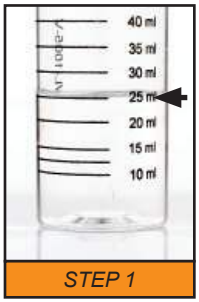
Video Procedure

EndPoint ID® Test Procedure

Sulfite Test Kit

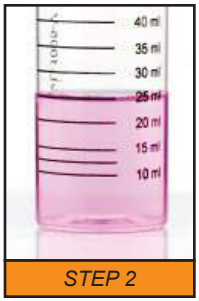
- *Cool the sample to room temperature*
- *Run test immediately after collecting and cooling the sample.*

1 Rinse vial three times with sample to be tested. **Fill vial to 25 mL.**



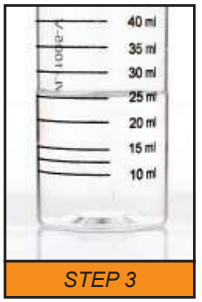
STEP 1

2 **Add 1 drop of Phenolphthalein Indicator** (PH1605) and swirl to mix. The sample should turn pink.



STEP 2

3 **Add Starch Acid Powder** (ST5205) one scoop at a time, swirling after each scoop, until the sample color changes from pink to colorless. Then, add two more scoops.



STEP 3

4 **Add Sulfite Titrant** one drop at a time while swirling. Count the number of drops until the sample color changes from colorless to blue.

Sulfite Titrant Low (PI8056)
drops x 2 = ppm as Na_2SO_3

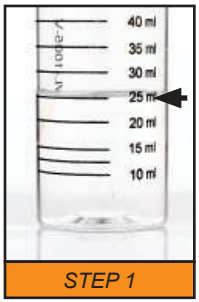
Sulfite Titrant High (PI8063)
drops x 10 = ppm as Na_2SO_3

STEP 4

Sulfite Test Kit

- *Cool the sample to room temperature*
- *Run test immediately after collecting and cooling the sample.*

1 Rinse vial three times with sample to be tested. **Fill vial to 25 mL.**



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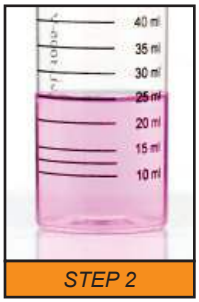

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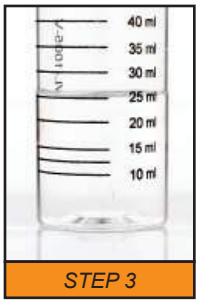

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STEP 4