

Total Hardness

2-40 ppm , 5-100 ppm

AE201

Directions for Use:-

1. Take 25 ml of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **TH 1**.
3. Mix contents well to dissolve.
4. Add 10-12 drops* of **TH 2** and mix contents well.
5. If colour turns blue, it indicates there is 'No Hardness' in the water.
6. If colour turns red, it indicates there is 'Hardness'.
7. Now drop wise* add **TH 3**, counting the number of drops while mixing, until the colour changes from red to blue.

If the expected hardness of the test sample is more than 40 ppm, then use TH 4 instead of TH 3.

Calculations:

$$\begin{aligned} \text{Total Hardness as ppm CaCO}_3 &= 2 \times (\text{Number of drops of TH 3}) \\ &= 5 \times (\text{Number of drops of TH 4}) \end{aligned}$$

For controlled addition of drops, follow instructions on the dispenser.

Total Hardness
10-200 ppm

AE201H

Directions for Use:-

1. Take 25 ml of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **TH 1**.
3. Mix contents well to dissolve.
4. Add 10-12 drops* of **TH 2** and mix contents well.
5. If colour turns blue, it indicates there is 'No Hardness' in the water.
6. If colour turns red, it indicates there is 'Hardness'.
7. Now drop wise* add **TH 4H**, counting the number of drops while mixing, until the colour changes from red to blue.

Calculations:

Total Hardness as ppm CaCO₃ = 10 x (No. of drops of TH 4H)

**For controlled addition of drops, follow instructions on the dispenser.*

Total Hardness

2-40 ppm , 5-100 ppm

AE501

Directions for Use:-

1. Take 25 ml of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **TH 1**.
3. Mix contents well to dissolve.
4. Add 10-12 drops* of **TH 2** and mix contents well.
5. If colour turns blue, it indicates there is 'No Hardness' in the water.
6. If colour turns red, it indicates there is 'Hardness'.
7. Now drop wise* add **TH 3**, counting the number of drops while mixing, until the colour changes from red to blue.

* If the expected hardness of the test sample is more than 40 ppm, then use **TH 4** instead of **TH 3**.

Calculations:

$$\begin{aligned} \text{Total Hardness as ppm CaCO}_3 &= 2 \times (\text{Number of drops of TH 3}) \\ &= 5 \times (\text{Number of drops of TH 4}) \end{aligned}$$

For controlled addition of drops, follow instructions on the dispenser

Total Hardness

2-40 ppm , 25-500 ppm

AE511

Directions for Use (A): (2 -40 PPM)

1. Take 25 ml of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **TH 1**.
3. Mix contents well to dissolve.
4. Add 10-12 drops* of **TH 2** and mix contents well.
5. If colour turns blue, it indicates there is 'No Hardness' in the water.
6. If colour turns red, it indicates there is 'Hardness'.
7. Now drop wise* add **TH 3⁺**, counting the number of drops while mixing, until the colour changes from red to blue.

*** If the colour does not changes to blue after adding 20 drops the hardness of the sample is more than 40 PPM. Now use Direction for use (B)**

Directions for Use (B): (25 - 500 PPM)

1. Take 10 ml of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **TH 1**.
3. Mix contents well to dissolve.
4. Then add 10-12 drops of **TH 2**, and mix contents well.
5. Now drop wise* add **TH 5**, counting the number of drops while mixing, until the colour changes from red to blue.

Calculations:

Total Hardness as ppm $\text{CaCO}_3 = 2 \times (\text{Number of drops of TH 3})$

Total Hardness as ppm $\text{CaCO}_3 = 25 \times (\text{Number of drops of TH 5})$

For controlled addition of drops, follow instructions on the dispenser.

Total Hardness

AE221

5-100 ppm , 25-500 ppm

Directions for Use (A): (5 -100 PPM)

1. Take 25 ml of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **TH 1**.
3. Mix contents well to dissolve.
4. Add 10-12 drops* of **TH 2** and mix contents well.
5. If colour turns blue, it indicates there is 'No Hardness' in the water.
6. If colour turns red, it indicates there is 'Hardness'.
7. Now drop wise* add **TH 4⁺**, counting the number of drops while mixing, until the colour changes from red to blue.

*** If the colour does not changes to blue after adding 20 drops the hardness of the sample is more than 100 PPM. Now use Direction for use (B)**

Directions for Use (B): (25 - 500 PPM)

1. Take 10 ml of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **TH 1**.
3. Mix contents well to dissolve.
4. Then add 10-12 drops of **TH 2**, and mix contents well.
5. Now drop wise* add **TH 5**, counting the number of drops while mixing, until the colour changes from red to blue.

Calculations:

Total Hardness as ppm CaCO_3 = 5 x (Number of drops of **TH 4**)

Total Hardness as ppm CaCO_3 = 25 x (Number of drops of **TH 5**)

**For controlled addition of drops, follow instructions on the dispenser.*

Total Hardness

5-100 ppm , 25-500 ppm

AE521

Directions for Use (A): (5 -100 PPM)

1. Take 25 ml of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **TH 1**.
3. Mix contents well to dissolve.
4. Add 10-12 drops* of **TH 2** and mix contents well.
5. If colour turns blue, it indicates there is 'No Hardness' in the water.
6. If colour turns red, it indicates there is 'Hardness'.
7. Now drop wise* add **TH 4⁺**, counting the number of drops while mixing, until the colour changes from red to blue.

*** If the colour does not changes to blue after adding 20 drops the hardness of the sample is more than 100 PPM. Now use Direction for use (B)**

Directions for Use (B): (25 - 500 PPM)

1. Take 10 ml of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **TH 1**.
3. Mix contents well to dissolve.
4. Then add 10-12 drops of **TH 2**, and mix contents well.
5. Now drop wise* add **TH 5**, counting the number of drops while mixing, until the colour changes from red to blue.

Calculations:

Total Hardness as ppm CaCO_3 = 2 x (Number of drops of **TH 4**)

Total Hardness as ppm CaCO_3 = 25 x (Number of drops of **TH 5**)

For controlled addition of drops, follow instructions on the dispenser.

Total Hardness

AE231

1-20 ppm , 5-100 ppm

Directions for Use:

1. Take 25 ml of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **TH 1**.
3. Mix contents well to dissolve.
4. Add 10-12 drops of **TH 2** and mix contents well.
5. If colour turns blue, it indicates there is 'No Hardness' in the water.
6. If colour turns red, it indicates there is 'Hardness'.
7. Now drop wise* add **TH 3L#**, counting the number of drops while mixing, until the colour changes from red to blue.

If the expected hardness of the test sample is more than 20 ppm, then use **TH 4** instead of **TH 3L**.

Calculation:

Total Hardness as ppm CaCO_3 = 1 x (No. of drops of TH 3L)
= 5 x (No. of drops of TH 4)

For controlled addition of drops, follow instructions on the dispenser.

Total Hardness

1-20 ppm , 5-100 ppm

AE531

Directions for Use:

1. Take 25 ml of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **TH 1**.
3. Mix contents well to dissolve.
4. Add 10-12 drops of **TH 2** and mix contents well.
5. If colour turns blue, it indicates there is 'No Hardness' in the water.
6. If colour turns red, it indicates there is 'Hardness'.
7. Now drop wise* add **TH 3L#**, counting the number of drops while mixing, until the colour changes from red to blue.

If the expected hardness of the test sample is more than 20 ppm, then use **TH 4** instead of **TH 3L**.

Calculation:

Total Hardness as ppm CaCO_3 = 1 x (No. of drops of TH 3L)
= 5 x (No. of drops of TH 4)

For controlled addition of drops, follow instructions on the dispenser.

Calcium Hardness

AE202

5-100 ppm

Directions for use:

1. Take 10 ml. of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **CH 2**.
3. Mix well to dissolve.
4. Then add 10 drops of **CH 1**.
5. Now drop wise* add **CH 3**, counting the number of drops while mixing, until the colour changes from red to violet.

Calculations:

Calcium as ppm $\text{CaCO}_3 = 5 \times [\text{No. of drops of CH3}]$

For controlled addition of drops, follow instructions on the dispenser.

Calcium Hardness 25-500 ppm

AE212

Directions for use:

1. Take 10 ml of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **CH2**.
3. Mix well to dissolve.
4. Then add 10 drops of **CH1**.
5. Now drop wise* add **CH3 H** counting the number of drops while mixing until the colour changes from red to violet.

Calculations:

Calcium Hardness as ppm $\text{CaCO}_3 = 25 \times (\text{No. of drops of CH3H})$

For controlled addition of drops, follow instructions on the dispenser.

Chloride

AE203

10-200, 50-1000 ppm

Directions for Use:-

1. Take 10 ml. of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **CD 1**.
3. Mix well to dissolve.
4. Then add **CD 2** drop by drop till the sample turns yellow.
5. Now drop wise* add **CD 3#**, counting the number of drops while mixing, until the colour changes from yellow to bluish violet.

If the expected chloride of the sample is more than 200 ppm, then use **CD 4** instead of **CD 3**.

Calculations:

Chloride as ppm Cl = 10 x (Number of drops of **CD 3**)
= 50 x (Number of drops of **CD 4**)

For controlled addition of drops, follow instructions on the dispenser.

Chloride

2-40, 5-100 ppm

AE213

Direction for Use:

1. Take 10 ml of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **CD 1**.
3. Mix well to dissolve.
4. Then add **CD 2** drop by drop till the sample turns yellow.
5. Now drop wise* add **CD 3L - 2 #**, counting the number of drops while mixing, until the colour changes from yellow to bluish violet.

If the expected chloride of the sample is more than 40 ppm, then use **CD 3L – 5**.

Calculation:

$$\begin{aligned}\text{Chloride as ppm Cl} &= 2 \times [\text{Number of Drops of CD 3L- 2}] \\ &= 5 \times [\text{Number of Drops of CD 3L- 5}]\end{aligned}$$

For controlled addition of drops, follow instructions on the dispenser.

Chloride
1 - 20 ppm

AE213SPL

Direction for Use:

1. Take 10 ml of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of CD 1.
3. Mix well to dissolve.
4. Then add CD 2 drop by drop till the sample turns yellow.
5. Now drop wise* add CD 3L - 1 #, counting the number of drops while mixing, until the colour changes from yellow to bluish violet.

Calculation:

Chloride as ppm Cl = 1 X [Number of Drops of CD 3L- 1]

For controlled addition of drops, follow instructions on the dispenser.

Alkalinity

AE204

10-200 & 100-2000 ppm

Directions for Use:

1. Take 10 ml of water sample to be tested in the test jar.
2. Add 2 drops of **AK 1**. Mix well to dissolve.
3. If a pink colour appears it indicates presence of P Alkalinity.
4. Then drop wise* add **AK 2 #** counting the number of drops while mixing, until the Pink colour disappears (N drops).
5. To this solution add one spoonful (provided herewith) of **AK 4**. The sample will turn green.
6. Now drop wise * add **AK 2** counting the number of drops while mixing until the colour changes from green to reddish violet. (N 1 drops)

If the expected Alkalinity is more than 200 ppm, then use **AK 3** instead of **AK 2**.

Calculations:

$$\begin{aligned} \text{P Alkalinity ppm as CaCO}_3 &= 10 \times (\text{Number of Drops of AK 2}) \\ &= 100 \times (\text{Number of Drops of AK 3}) \end{aligned}$$

$$\begin{aligned} \text{Total Alkanity ppm as CaCO}_3 &= 10 \times (\text{N} + \text{N 1 drops of AK2}) \\ &= 100 \times (\text{N} + \text{N 1 drops of AK 3}) \end{aligned}$$

* For controlled addition of drops, follow instructions on the dispenser.

Alkalinity

AE214

5-100 & 25-500 ppm

Directions for Use:

1. Take 10 ml of water sample in the test jar. Add 2 drops of **AK 1**. Mix well. If a pink colour does not appear, this indicates P Alkalinity is nil. Then proceed to step No. 4.
2. If a pink colour appears, this indicates presence P Alkalinity
3. Then drop wise* add **AK 5** counting the number of drops while mixing until the pink colour disappears (N drops).
4. To this solution add one spoonful (provided herewith) of **AK 4**. The sample will turn green.
5. Now drop wise* add **AK 5[#]** counting the number of drops while mixing. Until the pink colour changes from green to reddish violet (N 1 drops).

if the expected Alkalinity is more than 100 ppm, then use **AK 6** instead of **AK 5**.

Calculations:

P Alkalinity ppm as CaCO ₃	= 5 X (N of Drops of AK 5)
M or Total Alkalinity ppm as CaCO ₃	= 5 X (N + N 1 drops of AK 5)
P Alkalinity ppm as CaCO ₃	= 25 X (N drops of AK 6)
M or Total Alkalinity ppm as CaCO ₃	= 25 X (N + N 1 drops of AK 6)

* For controlled addition of drops, follow instructions on the dispenser

Free Chlorine 0.1-2.0 ppm

AE205

Directions for Use:

1. Take 10 ml. of water sample to be tested in the test jar.
2. Add one spoonful (provided herewith) of **FC 1**.
3. Mix contents well to dissolve.
4. If a pink colour does not develop, chlorine is not present.
5. If a pink colour appears, free chlorine is present.
6. Now drop wise* add **FC 2** counting the number of drops while mixing, until the pink colour disappears.

Calculations:

Free Chlorine as ppm Chlorine = $0.1 \times (\text{No. of drops of FC 2})$

Important:

After the end point (colourless) has reached, if a pink colour reappears on keeping, it should be ignored.

Since the **FC 1** reagent is sensitive to air, separate pouches containing **FC 1** are provided. Please empty one pouch at a time into the amber coloured container provided.

Close the lid of the **FC1** bottle immediately after the use.

For controlled addition of drops, follow instructions on the dispenser.

Free Chlorine 0.2-4.0 ppm

AE215

Directions for Use:

1. Fill the test jar with the water sample to be tested up to the 10 ml mark.
2. Add one spoonful (provided herewith) of **FC 1**.
3. Mix well to dissolve.
4. If a pink colour does not develop Chlorine is absent.
5. If a pink colour appears, Free Chlorine is present.
6. Now drop wise* add **FC 3** counting the number of drops while mixing until the pink colour disappears.

Calculations:

Free Chlorine as ppm Chlorine = $0.2 \times (\text{Number of drops of FC 3})$

Important:

After the end point (colourless) has reached, if a pink colour reappears on keeping, it should be ignored.

Since the FC 1 reagent is sensitive to air, separate pouches containing FC 1 are provided. Please empty one pouch at a time into the amber coloured container provided.

Close the lid of the FC1 bottle immediately after the use.

* For controlled addition of drops, follow instructions on the dispenser

Sulphite 5-100 ppm

AE206

Directions for Use:

1. Take 10 ml of water sample to be tested in the test jar.
2. Add 2 drops of AK 1 (Alkalinity indicator).
3. If a pink colour does not appear, proceed to step 5.
4. If a pink colour appears, then drop wise add **AK 2** (Alkalinity neutralizer) until the colour disappears. Then proceed to step 5.
5. Add 2 spoonfuls (provided herewith) of **ST 1** and mix well.
6. Now drop wise* add **ST 2**, counting the number of drops while mixing, until the colour changes from colourless to blue.

Calculations:

Sulphite as ppm $\text{Na}_2\text{SO}_3 = 5 \times (\text{Number of drops of ST 2})$

For controlled addition of drops, follow instructions on the dispenser.

Aquasol AE 206 is recommended for use in detecting Sulphite residue in boiler water or in water where Sulphite has been added.

Note: Sample should be neutralize using **AK 1 & AK 2** reagent to get correct reading of Sulphite residue. Very high Sulphite content (above prescribe range) may not show the colour change, unless suitably dilute.

Phosphonate 5-100 & 50-1000 ppm

AE401

Directions for Use:

1. Take 10 ml. of filtered water sample to be tested in the test jar.
 2. Add 2 drops of **SQ 1**. Mix well.
 3. Adjust pH of the sample between 2 to 3 by drop wise addition of **SQ 2** Use pH paper.
 4. Add one spoonful (provided herewith) of **SQ 3** powder. Mix well. Then the sample turns yellow.
 5. Now drop wise* add **SQ 4#**, counting the number of drops while mixing, until the colour changes from yellow to redish orange. Note the number of drops added. Say **(S)**.
 6. Repeat the procedure given above with the raw water of makeup water blank. Note the number of drops added say **(B)**
- # If the expected Phosphonate of the sample is more than 100 ppm, then use **SQ5** instead of **SQ 4**.

Calculations:

Phosphonate as ppm HEDP = 5 x (S - B)

= 5 x (Number of drops of **SQ 4 for sample**) – (Number of drops of **SQ 4 for blank**)

= 50 x (S - B)

= 50 x (Number of drops of **SQ 5 for sample**) – (Number of drops of **SQ 5 for blank**)

The test kit can be used to determine residual level of sequesterant product after finalizing the multiplication factor for the product.

Phosphonate

AE411

2-40 & 5-100 ppm

Direction for use:

1. Take 10 ml of filtered water sample in the test jar.
2. Add two drops of **SQ 1**. Mix well to dissolve
3. Adjust pH of the sample between 2 to 3 by dropwise addition of **SQ2**. Use pH paper.
4. Add one spoonful (provided herewith) of **SQ3** Powder, Mix well. Then the sample turns yellow.
5. Now drop wise * add **SQ 4 L**, counting the number of drops while mixing until the colour changes from yellow to red / reddish orange. Note the number of drops added. Say (**S**)
6. Repeat the procedure given above with raw water of makeup water/ sample blank. Note the number of drops added say (**B**)

If the expected Phosphonate level of the sample is more than 40 ppm, then use **SQ4** instead of **SQ 4L**.

Calculations:

$$\begin{aligned} \text{Phosphonate as ppm HEDP} &= 2 \times (\mathbf{S-B}) \\ &= 2 \times (\text{No. of drops of } \mathbf{SQ4L} \text{ for Sample} - \text{No. of drops of } \mathbf{SQ4L} \text{ for Blank}) \\ &= 5 \times (\mathbf{S-B}) \\ &= 5 \times (\text{No. of drops of } \mathbf{SQ4} \text{ for Sample} - \text{No. of drops of } \mathbf{SQ 4} \text{ for Blank}) \end{aligned}$$

The test kit can be used to determine residual level of sequesterant product after finalizing the multiplication factor for particular product.

Amine

AE402

5-100 & 50-1000 ppm

Directions for Use:

1. Take 10 ml of sample in a test jar.
2. Add one spoon of **AM 1**. Mix well to dissolve.
3. Now drop wise* add AM 2, counting the number of drops while mixing until the colour changes from Blue to Pale Yellow.

if the expected Amine level of the sample is more than 100 ppm then use **AM 3** instead of **AM 2**.

Calculations:

Amine as Cyclohexylamine ppm = 5 X (No. of drops of **AM 2**)
= 50 X (No. of drops of **AM 3**)

* For controlled addition of drops, follow instruction on the dispenser.

Note: Only for Boiler condensate water

Bromine 0.1 - 1 ppm

AE404

Direction for Use:

1. Take 10 ml water sample to be tested in the test jar.
2. Add one spoonful (provided here) of Br 1
3. Mix well to dissolve.
4. If a pink colour does not develop Bromine is absent.
5. If a pink colour appears, Bromine is present.
6. Now drop wise * add Br₂ counting the number of drops while mixing, until the pink colour disappears.

Calculations:

Bromine as ppm Bromine = $0.1 \times (\text{No. of drops of Br } 2)$

IMPORTANT:

1. After the end point (colourless) has been reached, if the pink colour reappears on keeping, then this has to be ignored.
2. Since the Br 1 reagent is sensitive to air, separate pouches containing Br 1 are provided, please empty one pouch at a time into the black coloured container provided.
3. Close the lid of the Br 1 bottle immediately after the use.

* For controlled addition of drops, follow instruction on the dispenser

*This procedure is valid in the absence of chlorine and iodine in water sample.

Amine
1-20 ppm

AE412

Direction for Use:

1. Take 10 ml of sample in a test jar.
2. Add one spoon of **AM 1**. Mix well to dissolve.
3. Now drop wise* add **AM 2L**, counting the number of drops while mixing until the colour changes from Blue to Pale Yellow.

Calculations:

Amine as Cyclohexylamine ppm = 1 X (No. of drops of **AM 2L**)

* For controlled addition of drops, follow instruction on the dispenser

Note: Only for Boiler condensate water

Chlorine Dioxide 0.2-4.0ppm

AE405

Direction for Use:

Pretreatment:

Take about 25ml sample and add 15 drops of Chlorine Dioxide Pretreat reagent, mix.

Procedure:

1. Add 2 spoonful (provided herewith) of **CLDO 1** in 10 ml Test Jar.
2. Add above treated sample up to 10 ml mark and mix.
3. If a pink colour does not develop, Chlorine Dioxide is not present.
4. If a pink colour appears, Chlorine Dioxide is present.
5. Now dropwise* add **CLDO 2**, counting the number of drops while mixing, until the pink colour disappears.

Calculation:

Chlorine Dioxide as ppm **ClO₂** = 0.2 X (No. of drops of **CLDO 2**)

* Since the **CLDO 1** reagent is sensitive to air, separate pouches containing **CLDO 1** are provided.

* Please empty one pouch at a time into the amber coloured container provided.

* **Important:** After the end point (colourless) has reached, if a pink colour reappears on keeping, it should be ignored.

* For controlled addition of drops, follow instructions on the dispenser

HYDROGEN PEROXIDE 5-100 & 50-1000 ppm

AEHP

Direction for Use:

1. Fill the test jar with the water sample to be tested up to the 10 ml. mark.
2. Add 20 drops of **HP 1**. Mix well.
3. Add two spoonful (provided here) of **HP 2**. Mix well a black brown colour is obtained here.
4. Now drop wise* add **HP3** counting the number of drops while mixing, until the solution becomes colourless.
5. If the expected ppm of hydrogen peroxide is more than 100 ppm then use HP 4 instead of **HP3**.

Calculations:

HYDROGEN PEROXIDE as ppm H_2O_2 = 5 x (No. of drops of HP 3)
= 50 x (No. of drops of HP 4)

* For controlled addition of drops, follow instructions on the dispenser

Orthophosphate

AE301

0, 5, 10, 20, 30, 40 ppm

Directions for Use:

1. Take 2.5 ml of cooled, filtered and prepared* sample using syringe in the 10 ml test jar provided.
2. Add equal volume of **OP 1**
3. Dilute to 10 ml mark with DM / clear colourless phosphate free water.
4. Mix the contents well. Keep for 5 minutes. This is now **"S"**.
5. In another test jar fill 10 ml DM water. This is now **"B"**.
6. Read the ppm Orthophosphate as follows:
 - a) Place the test jar **"B"** on the yellow circle and test jar **"S"** on the white circle next to each other on the colour comparison chart.
 - b) View from the top of the comparator test jar to compare the sample colour.
 - c) Match the colours by moving the test jar from one circle to another.
 - d) Read the ppm Orthophosphate after arriving at the correct match.

* Preparation of Sample

1. Water pH should be preferably neutral. Neutralize the highly alkaline sample to phenolphthalein end point before testing.
2. In case of sample having colour tint; take 50 ml of this sample, add 1-2 gram of **OP2** and boil till contents turn colourless. Cool and make up to 50 ml using distilled water. Filter through No. 42 paper and proceed for estimation of phosphate. If the sample cannot be decolorized, do the following:
 - a) Take the original water sample in the comparator tube and read the ppm Phosphate as per the procedure in No. 6 above.
 - b) This ppm reading has to be subtracted from the reading of the tested sample.
 - c) Determine chloride in the sample. If necessary, dilute the sample to maintain the chloride to less than 75 ppm Chloride.

Orthophosphate

AE311

0.1, 0.2, 0.5, 1.0, 2.5, 5.0, 7.5, 10 ppm

Directions for Use:

1. Take 10 ml of cooled, filtered and prepared sample in the tube supplied.
2. Add 5 drops of LPR 1. Mix the contents.
3. Add 3 drops of LPR 2. Mix the contents.
4. Shake well and keep for ten minutes. This is now "S".
5. In another tube fill DM water (clear colourless water / filtered prepared sample) upto 10 ml mark. This is now "B".
6. Read the ppm Orthophosphate as follows:
 - a) Place the Tube 'B' on blue circle and Tube 'S' on the white circle next to each other.
 - b) View from top of both the tubes and observe the circles.
 - c) Arrive at the appropriate reading by moving both the tubes together from one concentration to another. Match the correct colour and read the ppm ORTHOPHOSPHATE from the colour chart.

* Preparation of Sample

1. Water pH should be preferably neutral. Neutralize the highly alkaline sample to phenolphthalein end point before testing.
2. In case of sample having colour tint; take 50 ml of this sample, add 1-2 gram of **OP2** and boil till contents turn colourless. Cool and make up to 50 ml using distilled water. Filter through No. 42 paper and proceed for estimation of phosphate. If the sample cannot be decolourized, do the following:
 - a) Take the original water sample in the comparator tube and read the ppm Phosphate as per the procedure in No. 6 above.
 - b) This ppm reading has to be subtracted from the reading of the tested sample.
 - c) Determine chloride in the sample. If necessary, dilute the sample to maintain the chloride to less than 75 ppm Chloride.

Silica

AE302

5,10, 20, 40, 60, 80 ppm

Directions for Use:

- 1) Take 5 ml. of prepared* sample in plastic test jar using syringe.
- 2) Add in a rapid succession 3 drops of **SL 1** and 6 drops of **SL 2**
- 3) Stopper the test jar and mix the contents thoroughly. Keep for 5 minutes. Add 6 drops of **SL 3** and mix thoroughly. Wait for 2 minutes.
- 4) Transfer the contents in small comparator tube provided here.
- 5) Read the ppm Silica as follows:
 - a) Place the comparator tube on the small inner (white) circle, on the colour comparison chart.
 - b) View from the top of the comparator tube to compare the sample colour and the colour around.
 - c) Match the colours by moving the tube from one circle to another.
 - d) Read the ppm SILICA after arriving at the correct match.

Preparation: The pH of water should be preferably neutral. Therefore neutralize highly acidic or alkaline sample to pH 6.5 to 7.5.

Silica

AE312

0.01, 0.025, 0.05, 0.075, 0.1, ppm

Directions For Use:

- 1) Take 25 ml of sample in a plastic test jar i.e fill it upto the 25 ml mark of the test jar.
- 2) Add 35 drops of **LS 1L**. Mix well. Wait for 5 minutes.
- 3) Add 65 drops of **LS 2L**. Mix well.
- 4) Add 15 drops of **LS 3L** and mix the content thoroughly. Wait for 10 minutes.
- 5) Transfer the contents to 25 ml test jar. This is now "**S**".
- 6) In another tube fill DM water (clear colourless water / filtered prepared sample) up to 25 ml mark. This is now "**B**".
- 7) Read the ppm SILICA as follows:
 - a) Place the Tube '**B**' on blue circle and Tube '**S**' on the white circle next to each other.
 - b) View from top of both the tubes and observe the circles.
 - c) Arrive at the appropriate reading by moving both the tubes together from one concentration to another. Match the correct colour.
 - d) Read the ppm SILICA from the colour chart.

Note: The pH of water should be preferably neutral. Therefore neutralize highly acidic or alkaline sample to pH 6.5 to 7.5.

Silica

AE322

0.05, 0.1, 0.2, 0.4, 0.8, 1.5, 3.0 , 5.0 ppm

Directions for Use:

- 1) Dilute 10 ml sample in plastic test jar i.e. up to the 10 mark of the test jar.
- 2) Add 14 drops* of **LS1**. Mix well. Wait for 5 minutes.
- 3) Add 26 drops of **LS 2**. Mix well.
- 4) Add 6 drops of **LS 3**. Stopper the test jar and mix the content thoroughly. Wait for 10 minutes. This is now "**S**".
- 5) In another tube fill DM water (clear colourless water / filtered prepared sample) upto 10 ml mark. This is now "**B**".
- 6) Read the ppm SILICA as follows:
 - a) Place the Tube '**B**' on blue circle and Tube '**S**' on the white circle next to each other.
 - b) View from top of both the tubes and observe the circles.
 - c) Arrive at the appropriate reading by moving both the tubes together from one concentration to another. Match the correct colour.
 - d) Read the ppm SILICA from the colour chart.

For controlled addition of drops, follow instructions on the dispenser.

Silica (High Level)

AE332

75, 100, 125, 150, 175, 200 ppm

Direction for Use:

1. Take 10 ml sample in plastic Test Jar. (up to the 1st mark)
2. Dilute 25 ml of the D. M. Water (up to the 2nd mark)
3. Add in a rapid succession 0.5ml (15 drops) of SL 1 and 1 ml (30 drops) of **SL 2**.
4. Stopper the test jar and mix the content thoroughly by inverting five times. Keep for 5 minutes. Add 1 ml (30 drops) of **SL 3** and mix thoroughly. Wait for 2 minutes.
5. Rinse the blank comparator test tube with the sample and then fill upto the level of the Comparator tube
6. Read the ppm Silica as follows:
 - a) Place the comparator tube on the small inner (white) circle, on the colour comparison chart.
 - b) View from the top of the comparator tube to compare the sample colour and the colour around.
 - c) Match the colours by moving the tube from one circle to another.
 - d) Read the ppm SILICA after arriving at the correct match from the colour chart.

Preparation: The pH of water sample should be preferably neutral. Therefore neutralize highly acidic or alkaline sample to pH 6.5 to 7.5

Iron

AE303

0,0.05, 0.1, 0.3, 0.4, 0.7, 1.0, 1.5, 2.0 ppm

Directions for Use:

- 1) Take 5 ml of water sample in the test jar using syringe provided here.
- 2) Add 15 drops of FE1 and 30 drops of FE2
- 3) Mix the contents thoroughly.
- 4) Add one spoonful (provided herewith) of FE3 and mix the contents thoroughly by swirling the test jar. Let the mixture stand for 10 minutes.
- 5) Transfer the content in small comparator tube provided here.
- 6) Read the ppm Iron as follows:
 - a) Place the comparator tube on the small inner (white) circle, on the colour comparison chart.
 - b) View from the top of the comparator tube to compare the sample colour and the colour around.
 - c) Match the colours by moving the tube from one circle to another.
 - d) Read the ppm IRON after arriving at the correct match.

Note: • Sample pH should be preferably neutral. If a sample is acidic or alkaline it should be neutralized before test.

- In case of water sample having colour tint, do the following:
 1. Take the original water sample in the comparator tube and read the ppm IRON as per the procedure in No. 6 above.
 2. This ppm reading has to be subtracted from the reading of the tested sample.

Zinc

AE305

0.1,0.25,0.5,1.0,2.5,5.0,7.5 ppm

Directions for Use:

- 1) Take 5 ml of water sample in a test jar (use Syringe)
- 2) Add 10 drops of **Zn 1**. Mix the contents thoroughly.
- 3) Add 5 drops of **Zn 2** and mix the contents thoroughly.
- 4) Add 5 drops of **Zn 3** and mix the contents thoroughly.
- 5) Add 3 drops of **Zn 4** and swirl gently. (Do not shake vigorously)
- 6) Wait for Twenty five minutes. This is now "**S**"
- 7) In another tube fill DM water (clear colourless water/ filtered prepared sample) up to 5ml mark. This is now "**B**"
- 8) Read the ppm Zinc as follows using colour chart.
 - a. Place the Tube "**B**" on green circle and Tube "**S**" on the white circle next to each other.
 - b. View from the top of both the tubes and observe the circles.
 - c. Arrive at the appropriate reading by moving both the tubes together from one concentration to another. Match the colour and read the ppm Zinc from the colour chart.

Note: Sample pH should be preferably neutral. If a sample is acidic or alkaline it should be neutralized before test.

* For controlled addition of drops, follow instruction on the dispenser.

Ammonium

AE307

0.5, 1.0, 2.0, 4.0, 6.0 , 8.0 ppm

Directions for Use:

1. Take 10 ml of sample in the test jar, provided.
2. Add 10 drops* of **NH 1**. Mix thoroughly wait for ten minutes.
3. Transfer the content in small comparator tube provided here.
4. Read the ppm Ammonium as follows:
 - a) Place the comparator tube on the small inner (white) circle, on the colour comparison chart.
 - b) View from the top of the comparator tube to compare the sample colour and the colour around.
 - c) Match the colours by moving the tube from one circle to another.
 - d) Read the ppm Ammonium from the colour chart, after arriving at the correct match.

* For controlled addition of drops, follow instructions on the dispenser.

Ammonium

AE317

0.05, 0.1, 0.25, 0.5, 0.75, 1.0 ppm

Directions for use:

- 1) Take 25 ml of the sample in the test jar, provided.
- 2) Add 25 drops* of **NH1**. Mix thoroughly. Wait for ten minutes.
- 3) Transfer the content in small comparator tube supplied here.
- 4) Read the ppm Ammonium as follows :
 - a) Place the comparator tube on the small inner (white) circle, on the colour comparison chart.
 - b) View from the top of the comparator tube to compare the sample colour and the colour around.
 - c) Match the colours by moving the tube from one circle to another.
 - d) Read the ppm Ammonium from the colour chart, after arriving at the correct match.

For controlled addition of drops, follow instructions on the dispenser.

Nitrate

AE308

1.0, 2.5, 5, 10, 20, 30, 40, 50 ppm

Directions for Use:

- 1) Take 5 ml of sample in the test tube provided.
- 2) Now add one spoonful of **HNT1**, shake well. Keep for 10 minutes, while shaking intermittently.
- 3) To this now add three drops* of **HNT2**. Mix well. Keep for three minutes, while shaking intermittently.
- 4) Now add one spoonful of HNT3. Shake well. Wait for 5 minutes to allow maximum colour development Dilute to 25 ml mark with DM water.
- 5) Transfer the content in small comparator tube provided here.
- 6) Read the ppm Iron as follows :
 - a. Place the comparator tube on the small inner (white) circle, on the colour comparison chart.
 - b) View from the top of the comparator tube to compare the sample colour and the colour around.
 - a. Match the colours by moving the tube from one circle to another.
 - b. Read the ppm NITRATE after arriving at the correct match.

For controlled addition of drops, follow instructions on the dispenser.

Copper

AE310

0.25,0.5,1.0,1.5,2.0,2.5,3.0,4.0,5.0 ppm

Directions for Use:

1. Take 10 ml of sample in the test jar.
2. Add 10 drops of Cu1. Mix the contents thoroughly.
3. Add one spoonful of Cu2. Mix well to dissolve. Keep it for 5 minutes with intermittent shaking.
4. Rinse the blank test tube with the above mixture and then fill upto the level of the comparator tube.
5. Read the ppm Copper as follows:
 - a. Place the comparator tube on the small inner (white) circle, on the colour comparison chart.
 - b. View from the top of the comparator tube to compare the sample colour and the colour around.
 - c. Match the colours by moving the tube from one circle to another.
 - d. Read the ppm COPPER after arriving at the correct match.

Preparation: Water pH should be preferably neutral. Neutralize the highly alkaline or acidic sample to Phenolphthalein end point before testing.

Turbidity **1,5,10 &25 NTU**

AE310

Direction for use:

1. Shake thoroughly the water sample to be tested
2. Take the above sample in a test jar upto 25 ml mark
3. Read the NTU Turbidity as follows:
 - a. Place the comparator tube on the inner (black) circle, on the Turbidity (colour) comparison chart.
 - b. View from the top of the comparator tube to compare the sample Turbidity (colour) and the Turbidity (colour) around.
 - c. Match the Turbidity (colour) by moving the tube from one circle to another.
 - d. Read the NTU after arriving at the correct match.

Molybdate

AE309

5,10, 20, 30, 40, 50 ppm

Directions for Use:

1. Take 10 ml of water sample in a test jar.
2. Add 8 drops of **MO 1**. Mix well.
3. Add 8 drops of **MO 2**. Mix well.
4. Rinse the empty comparator test tube with the above mixture and then fill upto the level of the comparator tube.
5. Read the ppm Molybdate as follows:
 - a) Place the comparator tube on the smaller inner (white) circle, on the colour comparison chart.
 - b) View from the top of the comparators tube to compare the sample colour and the colour around.
 - c) Match the colours by moving the tune from one circle to another.
 - d) Read the ppm Molybdate after arriving at the correct match from the colour chart

Note: Reading should be taken within 3 minutes from the time of addition of **MO 2**

Calculations: Record ppm MOLYBDATE as MoO₄ by standard colour comparison

*** Dilute test sample proportionately with D.M. Water and carry out the test Multiply the ppm MoO₄ obtained by standard colour comparison with dilution factor to get higher than 50 ppm MoO₄.

Chlorine

AE235

0.05, 0.1, 0.2, 0.4, 0.7, 1.0 ppm

Directions for Use:

1. Add 3 drops of CL 1 in 10 ml test jar.
2. Pour 10 ml of water sample to be tested in the test jar. Mix well.
3. Let the mixture stand for one minute.
4. Rinse the small comparator tube with the above mixture and then fill up to the level of comparator tube.
5. Read the ppm Chlorine as follows:
 - a. Place the comparator tube on the small inner (white) circle, on the colour comparison chart.
 - b. View from the top of the comparator tube to compare the sample colour and the colour around.
 - c. Match the colours by moving the tube from one circle to another.
 - d. Read the ppm CHLORINE after arriving at the correct match from the colour chart.

Chlorine

AE236

0.5 , 1.0 , 2.0 , 3.0 , 4.0 , 5.0 ppm

Directions for Use:

- 1) Add 3 drops of CL 1 in 10 ml test jar.
- 2) Pour 10 ml of water sample to be tested in the test jar. Mix well.
- 3) Let the mixture stand for one minute.
- 4) Rinse the small comparator tube with the above mixture and then fill up to the level of comparator tube.
- 5) Read the ppm Chlorine as follows:
 - a) Place the comparator tube on the small inner (white) circle, on the colour comparison chart.
 - b) View from the top of the comparator tube to compare the sample colour and the colour around.
 - c) Match the colours by moving the tube from one circle to another.
 - d) Read the ppm CHLORINE after arriving at the correct match from the colour chart.

Nitrate

100 – 2000 ppm

AE207SPL

Directions for Use:-

1. Take 10 ml of water sample to be tested in the test jar.
2. Add 2 drops of NTH 1 mix well.
3. Then dropwise * add NTH2 counting the number of drops while mixing until Pale blue or bluish green colour appears.

Calculations: Nitrite ppm as $\text{NaNO}_2 = 5 \times (\text{Number of drops of NTH2})$

*If the expected Nitrite is more than 100 ppm, then use the following procedure.

Directions for Use:-

1. Take 1 ml of water sample in the test jar and dilute to 10 ml with raw water (preferably distilled or de-mineralized)
2. Add 2 drops of NTH 1. Shake the jar well to mix.
3. Add NTH 2 accurately counting the drops* while mixing until pale blue or bluish green colour appears.

Calculations: Nitrite ppm as $\text{NaNO}_2 = 50 \times (\text{Number of drops of NTH2})$

Note: Recommended only for use in detecting Nitrite residue in closed cooling system where Nitrite has been added.

The kit is not applicable to check low level Nitrite or if Nitrite is absent. For very high Nitrite content (Above prescribed range) diluted sample to be used for testing.

*For controlled addition of drops, follow instructions on the dispenser

Nitrate 0.04-0.8 ppm

AE217

Directions for Use:

1. Fill a test tube up to the 10 ml mark with the clean water to be tested.
2. Add 3 drops of **NL 1**. Mix and allow to wait for 2 minutes.
3. Add NL2 one spoon, shake to dissolve, wait for 10 minutes. A pink colour in the tube indicates presence of Nitrite.
4. Retain this for comparison.
5. Fill a second tube up to the 10 ml mark with Nitrite free water.
6. Add 5 drops of **NL3** and mix well.
7. Add NL4 to the second tube, one drop at a time. Mixing gently after each drop. Counting the number of drops added until the pink colour in the second tube matches the pink colour in the first tube.

Calculations: Nitrite ppm as $\text{NO}_2 = \text{Number of drops of NL4} \times 0.04$

High level can be determined by diluting the sample.

Chlorine

10 - 200 ppm

AE246

Direction for use:-

- 1) Take 10 ml. of water sample to be tested in a test jar
- 2) Add 10 drops of Chlorine Reagent **A**
- 3) Add 10 drops of Chlorine Reagent **B**. Mix well.
- 4) Add 5 drops of Chlorine Reagent **C**. Mix well
- 5) Now drop wise add Chlorine Reagent **D**, counting the number of drops while mixing, until colour changes from Blue to colourless.

CALCULATIONS:

Chlorine ppm = 10 X (No. of drops of Chlorine reagent **D**).

For controlled addition of drops, follow instructions on the dispense

Chlorine 1 - 20 ppm

AE246L

Direction for use:-

1. Take 10 ml. of water sample to be tested in a test jar
2. Add 10 drops of Chlorine Reagent **A**
3. Add 10 drops of Chlorine Reagent **B**. Mix well.
4. Add 5 drops of Chlorine Reagent **C**. Mix well
5. Now drop wise add Chlorine Reagent **DL1**, counting the number of drops while mixing, until colour changes from Blue to colourless.

CALCULATIONS:

Chlorine ppm = 1 X (No. of drops of Chlorine reagent **DL1**).

For controlled addition of drops, follow instructions on the dispenser

Acidity

AE264

10-200 & 100-2000 ppm

Directions for use:-

1. Take 10 ml of water sample to be tested in the test jar.
2. Add 2 drops of **AC 1** mix well to dissolve.
3. Now drop wise * add **AC 2** # counting the number of drops while mixing until the colour changes from colourless to pink.

* If the expected Acidity is more than 100 ppm, then use **AC 3** instead of **AC 2**.

Calculations:

Total Acidity ppm as CaCO₃ = 10 X (Number of Drops of AC 2)
= 100 X (Number of Drops of AC 3)

*For controlled addition of drops, follow instructions on the dispenser

Sulphate 10-200 & 50-1000 ppm

AE209

Directions for use:-

1. Take 2 ml sample in Test jar with the help of syringe (provided herewith)
2. Dilute with Alcohol (Ethanol/Methanol/Isopopropanol) (AR/GR) up to the 10 ml mark. Mix well.
3. Add one spoonful of **NSP2**. Mix well.
4. Now drop wise add **NSP3** counting the number of drops while mixing until the yellow colour change to saffron red.

If the expected Sulphate content of the sample is more than 200 ppm, then use **NSP 4** instead of **NSP 3**.

Calculations:

Sulphate as ppm SO_4 = 10 x (No. of drops of NSP₃)

Sulphate as ppm SO_4 = 50 x (No. of drops of NSP₄)

Fluoride
1-20 ppm

AE210

Directions for use:

1. Take 10 ml of filtered water sample in the test jar, provided
2. Add 1 drops of **FD1**. Mix well. If a yellow colour does not appear, then add **FD 2a** dropwise* till you get yellow colour.
3. Now Add **FD 2b** till the solution becomes colourless. Add 8 drops more of **FD 2b**.
4. Add 2 spoonfuls of **FD 3**, mix well to dissolve.
5. Now drop wise add **FD 4[#]**, counting the number of drops while mixing until the colour changes from yellow to the first distinct pink colour.
6. Observe this colour change against a white background held below the test jar.

Calculations: ppm as Fluoride = 1.0 x No. of drops of **FD 6**

* For controlled addition of drops, follow instructions on the dispenser

Fluoride
1-20 ppm

AE210H

Directions for use:

- 1) Take 10 ml of filtered water sample in the test jar, provided..
- 2) Add 1 drop of **FD1**. Mix well. If a yellow colour does not appear, then add **FD2a** dropwise* till you get yellow colour.
- 3) Now Add **FD2b** till the solution becomes colourless. Add 20 drops more of **FD2b**
- 4) Add 2 spoonfuls of **FD3**, mix well to dissolve.
- 5) Now drop wise add **FD6 #**, counting the number of drops while mixing until the colour changes from yellow to the first distinct pink colour.
- 6) Observe this colour change against a white background held below the test jar.

Calculations: ppm as Fluoride = 1.0 x No. of drops of **FD6**

* For controlled addition of drops, follow instructions on the dispenser

Chloroscope

AE239

0.1, 0.2, 0.5, 1.0,1.5,2.0 ppm

Directions for use:-

- 1) Add 3 drops of CL 1 in 10 ml test jar.
- 2) Pour 10 ml of water sample to be tested in the test jar
- 3) Mix Well.
- 4) Let the mixture stand for one minute.
- 5) Transfer the content in small comparator tube provided here.
- 6) Read the ppm Chlorine as follows :-
 - a) Place the comparator tube on the small inner (White) circle, on the colour comparison chart.
 - b) View from the top of the comparator tube to compare the sample colour and the colour around.
 - c) Match the colour by moving the tube from one circle to another.
 - d) Read the ppm Chlorine after arriving at the correct match.

Calculations: - Record ppm Chlorine by standard colour comparison

Dissolved Oxygen

AED08

0.65 – 7.8 ppm

Directions for Use:-

D.O Fixing: - The dissolved Oxygen requires to be fixed before testing.

1. Rinse the D.O test bottle 2 – 3 times with sample water. Fill it till it overflows with the sample water and then stopper the bottle and ensure that no air bubbles are trapped inside.
2. Now add 10 drops of D.O. 1 followed by 10 drops of D.O 2. Mix well. Wait for a minute. A brown precipitate will be formed and will start settling. Firmly stopper the bottle and shake the contents thoroughly. Keep the bottle in a safe place for a minimum of 20 minutes.
3. Now add 10-12 drops of D.O.3. Replace the stopper and shake the bottle till the precipitate dissolves. And more drops if required to dissolve.
4. Now this sample is used for testing.

D.O. Determination:-

1. Take 10 ml of sample (from step 3 of D.O fixing) in the test jar.
2. Add 4 drops of D.O 4. Mix well.
3. Now drop wise*add D.O.5, counting the number of drops while mixing, until the blue colour disappears.

Calculations:-

Dissolved Oxygen ppm = $0.65 \times (\text{No. of drops of D.O.5})$

For controlled addition of drops, follow instruction on the dispenser.

Iron (High Level)

AE313

0.2, 4,6,8,10 ppm

Directions for Use:-

1. Take 1ml water sample in the test jar using springle provided here.
2. Dilute up to 5 ml with demineralized or distilled (Iron free water)
3. Add 15 drops of **FE 1** and 30 drops of **FE 2**.
4. Add one spoonful of (provided here with) **FE 3** and mix the contents thoroughly by swirling the test jar. Let mixture stand for 10 minutes.
5. Transfer the contents in small comparator tube provided here.
6. Read the ppm Iron as follows:
 - a) Place the comparator tube on the small inner (white) circle, on the colour comparison chart.
 - b) View from the top of the comparator tube to compare the sample colour and the colour around.
 - c) Match the colors by moving the tube from one circle to another.
 - d) Read the ppm Iron after arriving at the correct match.

Note: Sample pH should be preferably neutral. If the sample is acidic or alkaline it should be neutralized before test.

In case of water sample having colour tint do the following.

- 1) Take the original water sample in the comparator tube and read the ppm Iron as per the procedure in No. 6 above.
- 2) This ppm reading has to be subtracted from the reading of the tested sample.

Dissolved Oxygen 0.65 – 7.8 ppm

AED08L

Directions for Use:-

D.O Fixing: The dissolved Oxygen requires to be fixed before testing.

- 1) Rinse the D.O test bottle 2-3 times with sample water. Fill it till it overflows with the sample water & then stopper the bottle and ensure that no air bubbles are trapped inside.
- 2) Now add 10 drops of D.O 1 followed by 10 drops of D.O 2. Mix well. Wait for a minute. A brown precipitate will be formed and will start settling. Firmly stopper the bottle in a safe place for a minimum of 20 minutes.
- 3) Now add 10- 12 drops of D.O 3. Replace the stopper and shake the bottle till the precipitate dissolves. Add more drops if required to dissolve the precipitate.

Now this sample is used for testing. Proceed for D.O determination as described in below

D.O. Determination:

- 1) Take 10 ml. of sample (from step 3 of D.O fixing) in the test jar.
- 2) Add 4 drops of D.O 4. Mix well.
- 3) Now drop wise* add D.O. 5 counting the number of drops while mixing, until the blue colour disappears.

Calculations: Dissolved Oxygen ppm= 0.65 x (No. of drops of D.O.5)

Tannin
5-100 & 25-500 ppm

AE2TN

Directions for use:-

- 1) Take 10 ml of filtered boiler water sample to be tested in the test jar provided.
- 2) Add 3- 4 spoonful of **TN 1**. Mix well to dissolve.
- 3) Add **TN2*** drop wise. Shake the jar after addition of each drop.
- 4) Continue adding **TN2#** until the reddish pink colours persist for one minute.

If the expected Tannin content of the sample is more than 100 ppm, then use **TN3** instead of **TN2**.

Calculation: Tannin ppm = 5 x (No. of drops of **TN2**)
= 25 x (No. of drops of **TN3**)

For controlled addition of drops, follow instructions on the dispenser.

Nitrite

AE207

5-100 & 50-1000 ppm

Directions for use:-

1. Take 10 ml. of water sample to be tested in the test jar.
2. Add 2 drops of **NTH 1** and mix well.
3. Then drop wise * add **NTH2** counting the number of drops while mixing until pale blue or bluish green colour appears.

Calculations: Nitrite ppm as $\text{NaNO}_2 = 5 \times (\text{Number of drops of NTH2})$
If the expected Nitrite is more than 10 ppm, then use the following procedure.

Directions for use:-

- 1) Take 1 ml of water sample in the test jar and dilute to 10 ml with raw water (preferably distilled or de—mineralized)
- 2) Add 2 drops of **NTH 1** shake the jar well to mix.
- 3) Add **NTH 2** accurately counting the drops * while mixing until pale blue or bluish green colour appears.

Calculations: -Nitrate ppm as $\text{NaNO}_2 = 50 \times (\text{Number of drops of NTH2})$

Note: Aquasol **AE-207** is recommended only for use in detecting Nitrite residue in closed cooling system where Nitrite has been added. The kit is not applicable to check low level Nitrite or if Nitrite is absent. For very high Nitrite content (above prescribed range) diluted sample to be used for testing.

Hydrazine

AE304

0.1,0.2,0.3,0.4,0.5,0.75,0.9,1.0,1.25 ppm

Directions for Use:

1. Take 0.5 ml of sample in the test tube provided.
2. Add 40 drops of **HZ 1**, shake well.
3. Add two spoonful of **HZ 2**, mix well.
4. Dilute the above mixture up to mark 5 ml with DM water. Shake till **HZ 2** dissolves completely.
5. Transfer the content in small comparator tube provided here.
6. Read the ppm HYDRAZINE as follows :
 - a. Place the comparator tube on the small inner (white) circle, on the colour comparison chart.
 - b. View from the top of the comparator tube to compare the sample colour and the colour around.
 - c. Match the colours by moving the tube from one circle to another.
 - d. Read the ppm HYDRAZINE after arriving at the correct match.

For controlled addition of drops, follow instructions on the dispenser.

Chromate

AE208

5-100 & 25- 500 ppm

Directions for Use:

1. Take 10 ml of sample in a test jar
2. Add (30 drops) of CR 1, mix well.
3. Then add 5 drops of CR 2. Mix well.
4. Now drop wise * add CR 3 # counting the number of drops.
5. While mixing, until the violet colour this appears at the start of the CR 3 Addiction appears.

If the expected chromate is more than 100 ppm, then use CR4L instead of CR3

Calculations:

Chromate as ppm Chromate = 5 x (No. of Drops of CR3)
= 25 x (No. of Drops of CR4L)

Carbon dioxide 2-40 & 10-200 as CO₂

AE403

Direction for use:-

1. Take 10 ml of water sample to be tested in the jar.
2. Add 5 drops of CO₂ Reagent A mix well to dissolve.
3. IF a pink colour appears it indicates free CO₂ is absent.
4. IF the sample remains colourless drop wise* add **CO₂** Reagent B#, Counting the number of drops while gently swirling, until the definite pink colour persist for 30 seconds, when view through the depth of sample.

IF the **CO₂** content is more than 40 ppm then use **CO₂** Reagent C Instead of **CO₂** Reagent B.

Calculations :-

$$\begin{aligned} \text{Free CO}_2 &= 2 \times (\text{No. of drops of } \mathbf{CO}_2 \text{ Reagent B}) \\ &= 10 \times (\text{No. of drops of } \mathbf{CO}_2 \text{ Reagent C}) \end{aligned}$$

Note: The reagent must be protected from atmosphere CO₂ by keeping bottle closed all the time. Close the cap immediately after use.

pH
4 to 10

AE306

Direction for use:-

- 1) Fill the test jar with the water sample upto 10 ml mark.
- 2) Add 10 drops of Ph 1 and mix well.
- 3) Compare the colour developed with the colour chart by placing the test jar near the colour circles. View the sample colour from the top of the jar while matching with the colour chart.

Calculations: - Read the PH.

Arsenic

AE408

0.0, 0.05, 0.1, 0.2, 0.5, 1.0, 2.0, 3.0 ppm

Direction for use:-

Preparation:

1. Keep one ASR test paper on the black lid of the test bottle, using a forceps* provided
2. Make sure that the hole in the lid is covered by the test paper.
3. Now fix the blue disc on the black lid gently. The test paper should be available thru' the hole.
4. Now keep this lid aside. Do not touch the test zone.

Estimation:

1. Take 5 ml of sample to be tested in the test bottle. With the syringe provided.
2. Add 3 spoonful of ASR 1 and swirl the contents gently for one minute.
3. Now add six spoonfuls of ASR 2 to the above. Immediately screw tightly the Lid, along with the blue disc as prepared above.
4. Swirl the test bottle gently & allow the stand for 15 minutes, while swirling intermittently.
5. Remove the ASR test paper from lid and dip in water for two second, Shake Off excess water.

Read the PPM ARSENIC as follows:

Compare the test paper colour with the colour comparison chart after 5 mins and before 8 mins. Read the ppm ARSENIC after arriving at the correct match.

Important: Avoid skin contact with ASR test paper. The pH of the test water sample should be between 6.5to7.5. Keep in dry place and away from moisture, heat and sunlight.

Chloroscope

AE238

0.1, 0.2, 0.5, 1.0, 1.5, 2.0 ppm

Direction for use:-

1. Add 3 drops of CL 1 in 10 ml test jar.
2. Pour 10 ml of water sample to be tested in the test jar. Mix well.
3. Let the mixture stand for one minute.
4. Transfer the content in small comparator tube provided here.
5. Read the ppm chlorine as follows:
 - a) Place the comparator tube on the small inner (White) circle, on the colour comparison chart.
 - b) View from the top of the comparator tube to compare the sample colour and the colour around.
 - c) Match the colours by moving the tube from one circle to another.
 - d) Read the ppm Chlorine after arriving at the correct match.

Calculations: Record ppm Chlorine by standard colour comparison.

Chlorine

AE237

0.2, 0.4, 0.7, 1.0, 2.0, 3.0 ppm

Direction for use:-

1. Add 3 drops of CL 1 in 10 ml test jar.
2. Pour 10 ml of water sample to be tested in the test jar. Mix well.
3. Let the mixture stand for one minute.
4. Rinse the small comparator tube with the above mixture and then fill up to the level of comparator tube.
5. Read the ppm chlorine as follows:
 - a) Place the comparator tube on the small inner (White) circle, on the colour comparison chart.
 - b) View from the top of the comparator tube to compare the sample colour and the colour around.
 - c) Match the colours by moving the tube from one circle to another.
 - d) Read the ppm Chlorine after arriving at the correct match from the colour chart.

Calculations: Record ppm Chlorine by standard colour comparison.

Nitrite

100 – 2000 ppm

AE207IN

Directions for Use:

1. Take 1 ml of water sample in the test jar and dilute to 10 ml with Raw water (preferably distilled or de-mineralized)
2. Add 2 drops of NTH 1. Shake the jar well to mix.
3. Add NTH4 accurately counting the drops * while mixing until Pale blue or bluish green colour appears.

Calculations:

Nitrite ppm as $\text{NaNO}_2 = 100 \times (\text{Number of drops of NTH4})$

*For controlled addition of drops, follow instructions on the dispenser.

IODINE

AE406

0.1 – 2 ppm

DIRECTIONS FOR USE:

1. Take 10 ml water sample to be tested in the test jar.
2. Add one spoonful (provided here) of ID 1
3. Mix well to dissolve
4. If a pink colour does not develop Iodine is absent.
5. If a pink colour appears, Iodine is present.
6. Now drop wise * add ID 2 # counting the number of drops while mixing, until the pink colour disappears.

CALCULATIONS:-

Iodine as ppm Iodine= 0.1 X (No. of drops of ID 2)

IMPORTANT:

- After the end point (colourless) has been reached, if the pink colour reappears after some time, then this has to be ignored.
- Since the ID 1 reagent is sensitive to air, separate pouches containing ID 1 are provided
- Please empty one pouch at a time into the black coloured container.
- Close the lid of the ID 1 bottle immediately after the use.
- For controlled addition of drops, follow instructions on the dispenser & keep the reagent in cool & dry place, keep away from direct heat & sunlight.

*This procedure is valid in the absence of chlorine and Bromine in water sample.