

# THPS Test Kit



# Instruction Manual



# THPS

## A. Preparation of Iodine Titrant Solution

Using the pasteur pipette, transfer 1.0ml of 0.1N Iodine solution to the 14ml graduated tube and dilute to 10ml with deionised water to produce 0.01N iodine solution titrant. Cap the tube and invert gently to mix. Transfer this titrant to the empty 50ml amber glass bottle for storage. The iodine titrant solution will be stable for approximately 1 week if stored under cool conditions.

## B. Sample Preparation (absence of hydrogen sulphide)

1. Acquire the test sample and contain it in a plastic/glass bottle, filled to the top and capped to minimise the risk of oxidation by the air. Cool sample (see note 1).
2. Fill the 10ml syringe with approximately 11ml of sample, connect the filter assembly and filter (GF/C) exactly 10ml into a clean 100ml titration jar (run the first 1ml to waste).
3. Continue with step 5 of the procedure below.

## B. Sample Preparation (presence of hydrogen sulphide)

1. Acquire the test sample and contain it in a plastic/glass bottle, filled to the top and capped to minimise the risk of oxidation by the air. Cool sample (see note 1).
2. Fill the 30ml vessel to the 20ml mark with sample and add 10 drops of Zinc Acetate Solution (per 250ppm H<sub>2</sub>S present) and swirl to mix. A white precipitate indicates the presence of hydrogen sulphide.
3. Fill the 10ml syringe with approximately 11ml of this sample, connect the filter assembly and filter (GF/C) exactly 10ml into a clean 100ml titration jar (run the first 1ml to waste).
4. Continue with step 5 of the procedure below.

## C. Procedure

5. Transfer approximately 10ml of deionised water to the 100ml titration jar and swirl to mix.
6. Using a 2ml syringe, add 2ml DSP solution to the 100ml titration Jar and swirl to mix.
7. Using a 1ml pasteur pipette add 0.25ml PSSA solution (see note 2) and swirl to mix.
8. Using the plastic spatula, add a small amount of starch Indicator (see note 3) and mix well.

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## C. Procedure

9. Titrate with 0.01N iodine titrant, using a 1ml syringe plus needle, to a blue/black end point which does not disappear immediately on swirling (see note 4). **Record the titre (S).**  
*Ensure the needle tip is below the surface of the liquid while dispensing the iodine.*
10. Repeat steps 5-9 using a 20ml blank sample (system water not containing THPS). **Record the titre (B).**

**Calculation: THPS Concentration (ppm) = (S-B) x 1.02**

## Notes

1. Under some circumstances, e.g. especially where a cationic surfactant is part of the THPS formulation dosed to the water, temperature may have an effect on the titration. For maximum accuracy, therefore, it is best to carry out the titration, consistently, between 20°-25°C.
2. PolyStyrene Sulphonic Acid (PSSA) is added to mask interference to the titration end point caused by the presence of cationic surfactants. If you are seeing a sharp blue black end point without the PSSA, this stage may safely be omitted.
3. Only a very small amount of starch is needed; large amounts will blur the end point. As a guide, half fill the indent in the plastic stirring rod with starch powder (i.e. approximately 50 - 100 mg) will be correct.
4. The end point is reached at the first appearance of a blue/black colour which does not fade within a few seconds. The end point is "fugitive" which means that the colour will fade on standing. It is strongly recommended that new users conduct a number of "practice titrations" to familiarise themselves with the end point before analysing real test samples. With practice, quite accurate analyses will be achieved.

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## Calibration

If calibration of the test kit is required, it may be accomplished by titration of a THPS solution of known concentration. However, standard solutions of THPS must always be made in a buffered medium to avoid oxidation of the THPS which would otherwise give a false result. A suitable method is as follows:

Weigh out 1.0 g of sodium bicarbonate and add to a 1 litre graduated flask. Add 800 ml of deionised water and swirl to mix. Weigh out, accurately, the quantity of THPS biocide which will contain exactly 1.00 g of THPS, active ingredient (e.g. 1.33 g of Tolcide PS75). Wash this into the sodium bicarbonate solution and swirl to mix. Top up the graduated flask to the 1 litre mark with deionised water and mix well. This standard solution will contain 1000 ppm of THPS (active ingredient).

For lower concentrations of THPS, dilute the 1000 ppm standard, as required, with deionised water (e.g. for a 100 ppm solution, take 10 ml of standard and dilute this, with deionised water, to 100 ml).

## Note

**For maximum accuracy, make up the THPS standard solutions fresh when needed and use them without delay.**