

# WALL WASH TEST KIT

## INSTRUCTION MANUAL



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## Contents of Wall wash test kit

| Amount. | Description                                           |                |
|---------|-------------------------------------------------------|----------------|
| 1       | Chloride Standard Solution 10 mg/lt                   | 250 ml bottle  |
| 2       | Cotton Wool                                           |                |
| 1       | Filter paper - folded                                 | 100 pcs        |
| 1       | Funnel - Round                                        |                |
| 1       | Glass bottle (500 ml empty for permanganate solution) |                |
| 1       | Hydrochloric Acid (concentrated)                      | 1000 ml bottle |
| 1       | Lab Grade De-ionized Water                            | SL             |
| 1       | Lab Grade Methanol                                    | 2.5 L bottle   |
| 1       | Latex Gloves 100 pcs                                  |                |
| 2       | Measuring cylinders 50 ml                             |                |
| 2       | Nessler tubes                                         | 50 ml          |
| 1       | Measuring Pipette - glass 10 ml                       |                |
| 1       | Measuring Pipette - glass 5 ml                        |                |
| 1       | Measuring Pipette - glass 2 ml                        |                |
| 1       | Measuring Pipette - glass 1 ml                        |                |
| 10      | Pasteur pipette - plastic 3 ml                        |                |
| 1       | Pipetting Bulb                                        |                |
| 1       | pH strips - range 0- 14                               | 100 pcs        |
| 5       | Potassium permanganate crystals - 0.1 g               |                |
| 1       | Shoe Covers                                           | 100 pcs        |
| 1       | Silver Nitrate - 5% Solution (30 ml. drop bottle)     |                |
| 1       | Squirt bottle - 500 ml                                |                |
| 1       | Standard Co- Colour solution Permanganate Time Test   | 50 ml cylinder |
| 1       | Tube rack                                             |                |
| 1       | Instruction Manual                                    |                |

## Permanganate Time Test (PTT Test) Scope:

This method serves as a means of detecting the presence of impurities in alcohols or ketones that reduce potassium permanganate. Applicable to Methanol, Ethanol, Propanol, Butanol, Acetone, Methyl Ethyl Ketone and Methyl Isobutyl Ketone.

## Summary of method:

Substances reacting with potassium permanganate in neutral solutions reduce it to manganese dioxide, which colors the solution yellow. In the permanganate time test the time required for the color of the test solution to change to that of a standard solution is measured.

The color of the test solution changes from pink-orange to yellow-orange.

## Equipment:

- Shaking cylinder, glass with stopper, 50 ml. tall form.
- Constant temperature bath, capable of maintaining a temperature of 15°C or 25°C.
- Pipette 3 ml.
- Clock or stopwatch.

## Reagents:

- Potassium permanganate solution 0.100 g of  $\text{KMnO}_4$  per 500 ml Demi water.
- Cobalt Chloride solution, the standard solution represents the color of the end point to which the sample solution fades in the  $\text{KMnO}_4$ -test. This solution is stable and should be kept in a 100 ml. glass cylinder, exactly the same as those in which the test is run.

## Procedure:

- Fill a 50 ml. glass cylinder to the mark with sample to be tested and place it in a constant temperature bath (15°C for Methanol and 25°C for Acetone).
- When the sample has reached the bath temperature (approximately 10 minutes), add with a pipette 3 ml of the potassium permanganate solution.
- Stopper tube, mix by inverting the cylinder and return to constant temperature bath.
- Determine the time from addition of the  $\text{KMnO}_4$  until the color matches that of the standard. Protect the test tube from light during the time of the test.
- When you have finished the test, clean the sample cylinder twice with tap water.

## Note:

1. Close the glass cylinder to avoid evaporation.
2. Clean glass cylinder before use by 10 times rinsing with tap water, 5 times rinsing with Demi water and 3 times rinsing with sample.

## Chloride Test Scope:

This method serves as a means of detecting the presence of chlorides on the tank surface.

### Summary of method:

The principle of this tests it that chloride gives a milky, cloudy solution when it reacts with the silver nitrate solution.

### Equipment :

- Demi water.
- Pipette 1, 5 and 10 ml.
- Funnels, flat sided and round.
- 2 Nessler tubes.
- Cotton wool.
- Filter paper.

### Reagents:

- Silver nitrate 5% solution • Chloride standard solution.

### Procedure:

- 1 m<sup>2</sup> of the surface of the tank is washed with cotton-wool, moistened with Demi water.
- The Demi water in the cotton-wool is transferred by pressing into a collection-tube.
- All of the solution is filtered off, using a funnel with filtering paper which is placed on the top of the Nessler tube.
- The tube is filled up with Demi water to exactly 50 ml.
- Three drops of silver nitrate solution are added.
- The contents are mixed thoroughly.
- Fill another Nessler tube with 49 ml of Demi water and add with a pipette 1 ml chloride standard solution (10 mg/ l).
- Add three drops of the silver nitrate solution and mix thoroughly.
- Compare the first tube with the standard Nessler tube.

### Note:

1. The turbidity of the standard test tube equals 0.01 mg chloride on 1 m<sup>2</sup>. When the turbidity of the test tube is less than the turbidity of the standard test tube, the chloride content of the surface is lower than 0.01 mg on 1 m<sup>2</sup>. If the turbidity of the test solution is greater than the turbidity in the standard test tube, the chloride content on the surface is higher than 0.01 mg on 1 m<sup>2</sup>. If the turbidity is the same the chloride content is equal to 0.01 mg on 1 m<sup>2</sup>. With the area of the tank and its volume known, the chloride content that can be washed from the surface of the tank walls by the parcel of methanol can be calculated. (Amount of Chloride per m<sup>2</sup> x surface of tanks in m<sup>2</sup> / volume of tank).
2. It is advisable, when performing this test, to use clean plastic disposable gloves.

## Hydrocarbon Test for Alcohols Scope:

Because of the fact that the surface of a tank or container for shipping alcohols must be free of any hydrocarbons, a field test was developed on the principle that hydrocarbons together with water will give a milky, cloudy solution.

## Summary of method:

A predefined area of the tanks is washed with water. This water is analyzed for the presence of hydrocarbons.

## Equipment:

- Demi water.
- 2 measuring cylinders 50 ml.
- 2 Nessler tubes.
- Cotton wool.

## Procedure:

- 1 m<sup>2</sup> of the surface of the tank is washed with cotton-wool, and hydrocarbon free methanol.
- After each washing the methanol is transferred from the cotton wool into a Nessler tube by pressing.
- To 5 ml of the wall wash methanol 45 ml of Demi water is added.
- The mixture is shaken and allowed to stand for 20 minutes.
- The contents of the Nessler tubes are compared with what is known as blank tube filled with 50 ml of Demi water.
- If the sample shows a cloudy or a not completely clear liquid, there are still hydrocarbons on the surface of the tank, which means that the surface must be entirely re-washed and tested again.

## Note:

1. It is advisable, when performing the test, to use clean plastic disposable gloves.