

Formaldehyde Test Kit



EM Quant[®] Formaldehyde Test

Test strips and reagent for the detection and semi-quantitative determination of formaldehyde in aqueous solutions.

General

The EM Quant[®] Formaldehyde Test is a rapid semi-quantitative test for formaldehyde in aqueous solutions. A saturated solution of formaldehyde in water (approx. 40 % by volume or 37 % by mass) is also known as formalin

Parasite-S[™] (formalin) is used in fish culture for labeled indications including treatment for external parasites and fungi. To prevent ineffective applications or treatment failures with the Parasite-S[™] administration, it is important to determine whether fish are receiving the targeted Parasite-S[™] dilution and exposure. Treatment applications should be routinely checked with the EM Quant[®] Test. For some facilities, monitoring Parasite-S[™] levels in the effluent may also be required.

Other aldehydes such as acetaldehyde or glutaraldehyde at higher concentrations can cause a test response however, the resulting color is different.

Principle of the Method

The detection reaction is based on the condensation of aldehydes with 4-amino-3-hydrazino-5-mercapto-1,2,3-triazol followed by atmospheric oxidation to yield purple-colored tetrazine derivatives.

Colorimetric Graduation

0 - 10 - 20 - 40 - 60 - 100 mg/l (ppm) formaldehyde

Directions

1. Rinse the measuring vessel several times with some of the sample and fill to the 5 ml mark.
2. Add 10 drops of reagent (sodium hydroxide solution) and swirl carefully.
3. Immerse the test strip in the solution for 1 second so that the reaction zone is thoroughly moistened.
4. Remove the test strip, wipe off excess liquid by stroking the edge of the strip against the rim of the vessel, wait 1 minute and compare the reaction zone with the color scale.

Note

The sensitivity can be approximately doubled by comparing the test strip with the color scale after 2 minutes instead of after 1 minute. The concentration indicated must then be divided by 2.

Disregard any change in color occurring after 5 minutes.

Since the sample solution must be adjusted to an alkaline pH, some compounds having a disinfectant effect, may

Formaldehyde Test Kit



release formaldehyde during the test and indicate a positive reaction even though there is no free formaldehyde present. In this case it will be necessary to perform a parallel analysis using a reference method.

Because of its measuring range, the test is unsuitable for checking formaldehyde levels in air.

Safety Precautions

Keep the reagent (32% sodium hydroxide solution) away from the skin. In the event of contact, rinse well immediately with plenty of water. Seek immediate medical attention if substance enters the eye.

Additional Determination Considerations

Since in some instances the formaldehyde concentration will exceed the highest value on the color scale, the sample solution must be diluted to bring it within range. Of course, allowance must then be made for the dilution factor

Detection Range	Sample Solution	+ Water	Factor
20 - 200 mg/l	2.5 ml	2.5 ml	2
100 - 1000 mg/l	0.5 ml	4.5 ml	10
500 - 5000 mg/l (= 0.05 - 0.5%)	0.1 ml (2 ml)	4.9 ml (98 ml)	50
1000 - 10000 mg/l (= 0.5 - 1%)	0.05 ml (1 ml)	4.95 ml (99 ml)	100

Dilute either by pipetting the sample solution into the testing vessel and making up to 5 ml with water or by making up the milliliter quantities in brackets to 100 ml. Subsequently determine as directed.

Monitoring Parasite-S™ (Formalin) Treatments

Parasite-S™ is a solution of formaldehyde in water. The test kit measures formaldehyde concentration. To convert the test kit results from the formaldehyde concentration to the Parasite-S™ concentration, the test result must be multiplied by 2.7.

(Parasite-S™ contains 37% formaldehyde; $37\% \times 2.7 = 100\%$)

Example 1: Converting the test strip results

- Test strip result = 60 mg/l (ppm) formaldehyde
- Multiply this by a factor of 2.7 to account for the concentration of formaldehyde in Parasite-S™
 - = 60 mg/l x 2.7
 - = approx. 162 mg/l (ppm) Parasite-S™

Formaldehyde Test Kit



Example 2: Checking Parasite-S™ concentrations

- If the target Parasite-S™ treatment concentration = 250 mg/l (ppm) (a 1:4000 dilution), divide this by 2.7 to account for the concentration of formaldehyde in Parasite-S™
= 250 mg/l (ppm) / 2.7
= Approx. 92.6 mg/l (ppm) Parasite-S™
- Expect the test strips resulting reaction zone color to be very similar to the 100 mg/l (ppm) color graduation on the scale included with the kit.

Interference

Ketones, esters, amides, hydrazines, hydroxylamines, quinones, aminophenol, uric acid and formic acid prevent the proper color reactions from taking place, while strong oxidizing and reducing agents interfere by reducing the detection sensitivity.

Standard (1000 mg/l)

Add approximately 0.26 ml of formaldehyde (min. 37%) to approximately 100 ml of distilled water and titrate to determine the exact concentration. Dilute to the desired strength.

Package Size

10036 EM Quant® Test strips and reagent

Formaldehyde Test for 100 determinations (100 Test Strips)