Instruction Manual of ATP Water Test Swab (Free)

【Product Name】 ATP Water Test Swab (Free)

【Product Model】 Liquswab Free

【Packing Strength】 5 pcs/bag, 20 pcs/bag

【Intended Use】 This product can be used with an ATP detector to monitor ATP levels in water as a quality indicator in areas like Clean-In-Place (CIP) systems and rinse water samples. It is also used for water treatment applications in healthcare and monitoring biomass in cooling towers.

【Detection Principle】

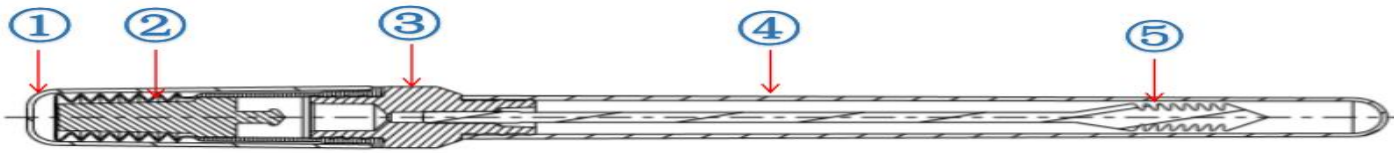
Adenosine Triphosphate (ATP) is universally present in all biological cells. It is an energy substance for the metabolism of organisms and has special significance for the existence of organisms and the life process in the body. When the organism dies, ATP is quickly decomposed. In ATP bioluminescence assay, ATP reacts with luciferin-luciferase to generate photons, and then a fluorometer is used to detect the luminescence value to obtain the amount of ATP. Therefore, by measuring the amount of ATP in the sample, the content of microorganisms can be calculated, and the degree of contamination of the test article can be detected.

ATP Water Test Swab is a rapid detection device based on the principle of ATP bioluminescence assay to determine the degree of microbial contamination in a sample. That is, in the presence of ATP, recombinant luciferase can catalyze the oxidation of the substrate D-luciferin and emit fluorescence. In addition to ATP, when other substrates are in excess, the number of photons and the amount of ATP have a linear relationship within a certain range.

$$\text{ATP} + \text{D-Luciferin} + O_2 \xrightarrow[\text{Firefly Luciferase}]{Mg^{2+}} \text{AMP} + \text{oxyluciferin} + \text{PPi} + CO_2 + \text{Light}$$

ATP Water Test Swab (Total) measures both ATP contained within living cells and particulate matter (microbial ATP) as well as ATP dissolved in water (non-microbial or dead microbial ATP). ATP Water Test Swab (Free) measures only dissolved ATP outside of living cells (non-microbial ATP). Used together, these two products can be an effective quality monitoring system. The difference between Total and Free test results represents ATP from living organisms (also referred to as biomass).Total ATP= Free ATP + Microbial ATP, therefore, Microbial ATP = Total ATP – Free ATP

【Structure of ATP Water Test Swab】



1. Protective cap 2. Spring cap 3. Connector 4. Integrated tube 5. Sample collection dipper

【Product Composition】

Component name	Strength/Unit	Number
ATP Water Test Swab	5 pcs/bag	5
	20 pcs/bag	20

【Storage & Shelf Life】 When stored at 2-8°C, it is valid for 12 months; when stored for a short time at room temperature (20-25°C), it is valid for 4 weeks. Keep it away from light and keep it sealed.

【Applicable instruments】 Tianlong ATP detector and equivalents.

【Instructions for use】

1. Swab equilibrium: Take the ATP Water Test Swab out of the refrigerator and place it for about 10-20 minutes, allow it to equilibrate to room temperature.Forcefully flick the swab in a downward motion to shake liquid extractant from collection dipper to bottom of tube. Shaking liquid extractant to bottom of tube assists with accurate extraction of ATP and helps collect a more consistent sample.
2. Sample collection: unscrew the integrated tube below the blue connector of the ATP Water Test Swab. Submerge sample collection dipper in water sample, and agitate the sample collection dipper to exhaust gas.
3. Installing the integrated tube: lift sample collection dipper up vertically, install the integrated tube removed in step 2 to the correct position of the ATP Water Test Swab (the mouth of the integrated tube is flush with the lower end of the blue

connector). Gently shake device for 1-2 seconds to release water sample from collection tip and to mix sample with extractant at bottom of test tube.

4. Injecting reagent: remove the protective cap from the upper end of the ATP Water Test Swab, hold the ATP Water Test Swab vertically in your hand, press the spring cap firmly, you can press it repeatedly to expel all liquid into the integrated tube, and shake the ATP Water Test Swab if necessary.
5. Shaking and mixing: hold the spring cap on the upper part of the ATP Water Test Swab and shake it at 30° left and right (3 seconds) to make the reagent completely react with the sample.
6. Sample testing: quickly insert the ATP Water Test Swab into the test chamber of the ATP detector when the testing interface is on, close lid, and run the test.

1. ATP Water Test Swab equilibrium

2. Sample collection

3. Installing integrated tube

4. Injecting reagent

5. Shaking and mixing

6. Sample testing

【Precautions】Please read the precautions before using this product.

1. Disposable gloves should be worn during the experiment to avoid contamination of adventitious ATP.
2. Do not touch the sample collection dipper during the sampling process, and make sure that the sample collection dipper is only in contact with the liquid to be tested.
3. After the sample on the ATP Water Test Swab reacts with the solution, place it in the ATP detector and read the value within 10 seconds.
4. This reagent detects the cleanliness of the surface of an object below the resolution of the naked eye. Therefore, if there is visible dirt in the tested liquid, it may interfere with the detection of ATP Water Test Swab.
5. If the liquid sample to be tested has a certain pH, it may affect the detection of ATP Water Test Swab.
6. It is recommended to set RLU thresholds according to user's test application. Higher RLU results indicate higher contamination in sample. In clean or treated water samples, Free ATP results are similar to Total ATP results. In some circumstances, when organic matter is present and where microbial contamination is low, Total ATP results may appear lower than Free ATP results; this is normal and is due to presence of extractant in ATP Water Test Swab (Total).

【Basic Information】

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【Version and Modification Date】V2.0 29/03/2023