Portable ATP Hygiene Monitoring System Biolum

Your reliable hygiene safety guardian

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FEATURES & BENEFITS

Fast
Result in 10 sec for one test

Sensitive
Detect down to 10^{-16} mol of ATP

User Friendly
3.5" high resolution color screen, intuitive menus, less bottoms, simple to use

Highly Portable
within 300g with Battery, 189×70×36mm

Intuitive result
Pass, Caution, or Fail result symbols are intuitive for any user

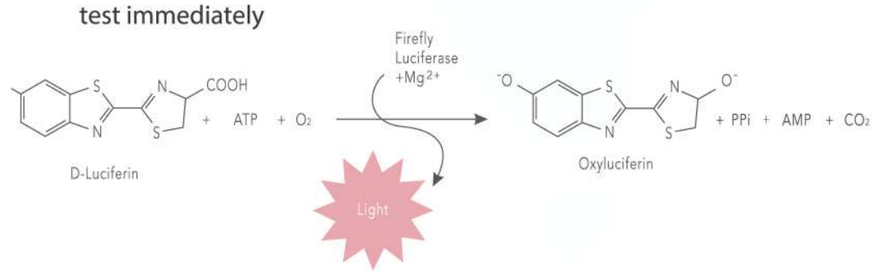
Powerful Memory Capacity
255 test plans, 255 user IDs, 2000 test program, 1000 results

Low consumption
Using Li-ion battery that can work more than 8h continually

Template
Pre-configured templates including different industries and locations together with upper and lower limits can start your test immediately

Connectivity
Connect PC via USB, connect printer or app in Android system mobile phone and pad through Bluetooth

Open Reagents
Compatible with swabs from other manufacturers



Biolum Portable ATP Hygiene Monitoring System, a powerful tool for implementing and managing your hygiene monitoring program. Taking advantages of the progressive QuickSwarb surface test, the hygiene level of the tested surface will be evaluated in seconds, and the results can be visualized on screen. Featuring the state-of-art technology, the Biolum is a user-friendly, flexible, and accurate quality monitoring system. It has all the features to maximize its value to your business.

Adenosine tri-phosphate (ATP) is a molecule found only in and around living cells in like all animal, plant, bacteria and yeast, and as such it gives a direct measure of biological concentration and health. ATP is quantified by measuring the light produced through its reaction with the naturally-occurring firefly Luciferase using a Luminometer. The amount of light produced is directly proportional to the amount of living organisms present in the sample.

Quickswab

ATP QuickSwab is simple to use, all-in-one and pen-sized sampling device, with the pre-moistened swab that offers extraordinary accuracy and precision for many industrial applications.

SWABS FEATURE

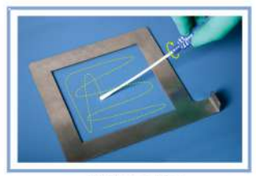
1. Sampling & Reaction together, easy to use
2. Pre-moistened swab tip
3. Accurate, high reproducibility
4. 10s for one test

HOW IT WORKS

The whole measurement procedure is easy to learn and test data can either print by buletooth printer, or export through data export software on PC for your documentation,data export software is an easy-to-use data analysis software that comes free with every Biolum system.

1. Device Self-Checking


2. Checking the swab


3. Sampling


4. Injection


5. Insertion

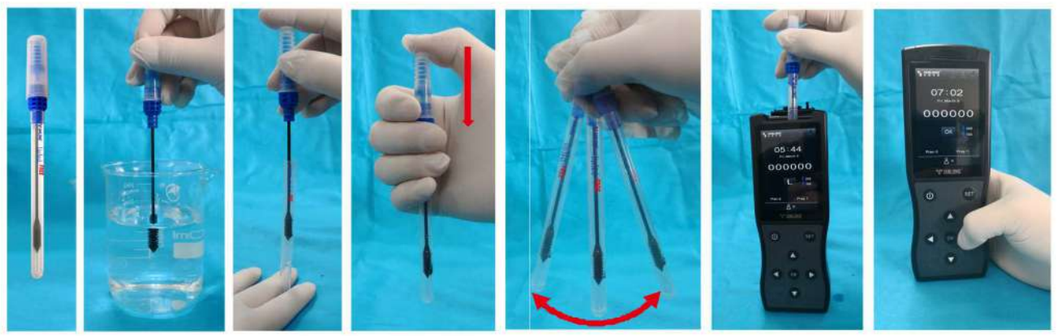
6. Measuring

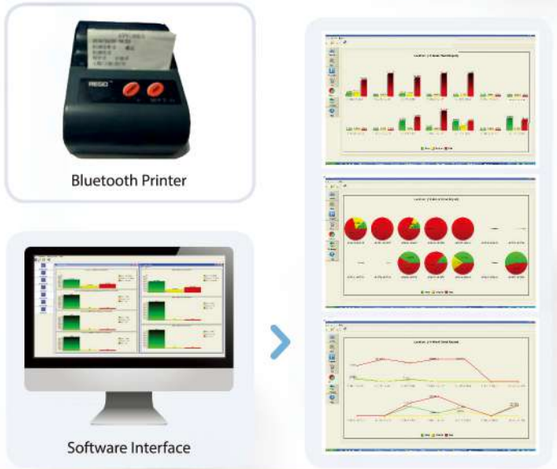
LiquSwab

LiquSwab is an easy to use ATP liquid test work with Biolum Hygiene monitoring system from Tainlong. The swab is available in two formats: Free and Total. LiquSwab Free measures dissolved ATP that is free in liquid(non-microbial ATP).LiquSwab Total measures both free ATP and microbial ATP(non-microbial and microbial ATP)in the liquid. The difference between Total and Free provides an indication of microbial contamination in the samples.

1. Easy to operate
2. 10s for one test
3. 12 month self life at 2-8℃
   4 weeks self life at 21-25℃
4. Detects down to 10^{-16}mol ATP

HOW IT WORKS





RESULT EXPORT

DviceID	UserID	Plan Name	Prog	Location	Surface	Result	RLU	Lower_ID	Upper_ID	Test Time	Test Date
99745	0	0	0			Pass	0	10	30	19:22:00	2014-4-24
99745	0	0	0			Pass	0	10	30	10:32:00	2014-4-24
99745	0	0	0			Pass	0	10	30	10:33:00	2014-4-24
99745	0	0	0			Pass	0	10	30	11:20:00	2014-4-24
99745	0	2	0			Fail	10976	10	30	11:21:00	2014-4-24
99745	0	2	0			Fail	10964	10	30	11:22:00	2014-4-24
99745	0	2	0			Fail	10961	10	30	11:23:00	2014-4-24

APPLICATIONS

Food Processors

- > Cleaning control the process of production and processing
- > Evaluating the disinfection of packaging
- > Testing the microbes of finished products and material
- > Monitoring the hygiene of processing environment

Health Care

- > Objects superficial inspection of the hospital major department
- > Hand cleaning check of the medical staffs
- > Medical equipment cleanliness and disinfection inspection
- > Cleanliness testing of the hospital environment

Food Service

- > Cleanliness control of the kitchen, dishes, operating carton and tools
- > Evaluating disinfection of dishes
- > Disinfection control of the airline catering dishes
- > Hygiene supervision for quality control department

Environment protection

- > Evaluating biological pollution of the water and wastewater sample
- > Detecting the contaminating microorganisms of soil, activated sludge samples and so on.

Other Industries

- > Daily health products manufacture
- > Quality supervision department
- > Hospitality industry hygiene management
- > The port supervision etc

SPECIFICATIONS

ITEMS	PARAMETER
Dimensions	189 mm × 70 mm × 36 mm
Weight	≤300 g
Detection limit	10^{-16} moles ATP
Detection Deviation	5 % or ±5
Self-calibration at startup	15 s or 60 s
Real-time detection time	10 s/test
Memory Capacity	255 test plans, 255 user IDs, 2000 test program, 1000 results
Communication interface	USB, Bluetooth
Reproducibility	CV 8 % ~ 20 %
Correlation Coefficient	$R^2 \geq 0.99$
Power Supply	Rechargeable battery
Running Time	continuously work for > 8 hrs, standby for > 600 hrs
Temperatures allowed during operation	5 ~ 40 °C
Relative humidity allowed during operation	<60 %
Swabs	
Swab strotage	2 ~ 8 °C : 12 monthes
Swab compatible	Hygiena SystemSURE Plus, EnSURE
Swab packing specifications	20 pieces/package 100 pieces/box

Ordering Information

Catalog No.	Description	Quantity
A010	Portable ATP Hygiene Monitoring System Biolum	1
A001	QuickSwab	20
A002	LiquSwab Total	20
A003	LiquSwab Free	20

A010 – Portable

ATP Hygiene Monitoring System

ATP Testing Guide for Hygiene Efficacy

What is ATP?

ATP is an organic compound that provides energy to drive many processes in living cells and organisms, such as muscle contraction and chemical synthesis. ATP serves as a great marker for the prevalence of protein-like material on the surface of the skin (or other organic suface)—some of which could be dangerous and pathogenic.

What is ATP testing?

The ATP test is a process of quickly measuring actively growing microorganisms through detection of Adenosine triphosphate, or ATP. In ATP testing, microorganisms on the surface of the hands combine with a certain enzyme to produce light which can then be measured using a device called a Luminometer. The amount of light that is “read” by the device is expressed in Relative Light Units (RLU’s). The more microorganisms that exist on the surface of the skin, the more light that is generated and thus, the higher the RLU reading will be. High ATP levels indicate that more organic material—some of which may possibly be harmful—are present. Organic material on the surface of the hands may fall into one of two categories: transient flora and resident flora.

Terminology

Resident flora:

organisms that naturally occur on skin and do not cause disease. Resident flora are essential to skin health and actually help protect the skin from transient organisms.

Transient flora:

Transient or temporary skin flora refers to the microorganisms that transiently colonize the skin. This includes bacteria, fungi and viruses, which reach the hands, for example, by direct skin-to-skin contact or indirectly via objects.

How to measure reduction: pre & post swabbing

An effective hygiene event results in reduced microorganisms on the hand. To measure this, make sure to capture a swab of the natural hand first, and then conduct a second swab after a hand wash is completed to measure the difference.

Using ATP testing for process validation

Determining your methods

There are two basic ways to use ATP testing for hand hygiene validation:

1. **Pass / Fail Limit Method:** involves setting a certain RLU limit and measuring whether employees RLU counts fall within this range.
2. **Percentage Reduction Method:** involves conducting a pre-hand wash swab and a post-hand wash swab to measure the percentage reduction in RLU counts.

Protocol considerations for operators

The following considerations should be taken into account when implementing an ATP testing protocol within a manufacturing or processing facility.

ATP readings will never reach 0. There will always be living organisms and proteins on the skin which will result in RLU readings. This does not mean that dangerous pathogens are present.

Each individual in your facility will have different naturally-occurring levels of ATP, and some unique individuals will have very high levels which will not be reduced below a certain level without damaging the skin. Therefore, you should always expect to find “outliers” in your test protocol, or individuals with unusually high levels of baseline ATP counts.

Lastly, it is very important that the same test methodology and technique be used for every test subject, including location of swab site, firmness of swab pressure, coverage of swab tip, and avoidance of cross contamination of swab. Every individual tasked with conducting an ATP test should receive the same training, and the protocol itself must be validated.

Using the Percentage Reduction Method

We recommend the Percentage Reduction Method for testing with ATP Luminometers for two reasons. For one, this method reduces the number of outliers due to naturally high levels of ATP. Second, focusing on a percentage of reduction eliminates the need to establish what the pass/fail limit should be, which can differ for every population and facility.

Using the Pass/Fail Limit Method

The Pass / Fail Limit Method is much more sensitive to variability in testing and results in more outliers, or individuals who fail to meet the minimum RLU reading standard. However, this method is frequently used as a training tool to demonstrate to individuals that they are not washing consistently every time they wash and that their washing method may not be effective—when, if compared to their baseline RLU counts, may not necessarily be true.

Why ATP testing is recommended

- Real time results. Forget the time and hassle required of incubation or microbiological reading in a certified lab.
- It involves fewer variables compared to other test methods, increasing reliability and accuracy.
- Far less expensive and requires fewer materials.
- The incidence of outliers (data that cannot be explained) is much lower.

The challenge of pass/fail limits

In fact, most ATP test device companies have not developed a protocol or a pass/fail RLU limit for the testing of hand or skin hygiene because it is nearly impossible to determine a standard limit that takes all environments, individual characteristics, and processes into account. Those that do have a protocol typically recommend that a realistic pass/fail limit be established which factors in the specific population to be tested as well as the type of hygiene that will be occurring (e.g., surgical scrub, alcohol rub, healthcare hygiene, manual wash, soap type, automated hand wash, other).

A standard rule of thumb is to aim for under 100 RLUs after a regular 30--40 manual wash. However, if an individual is tested and has a very high pre-wash RLU reading, they may still achieve a sufficiently high percentage reduction if compared with the post-wash RLU reading. For example, Worker #4 in Figure 2 would fail in a process where the pass/fail limit is 100 RLUs, however when you compare this person's post-wash RLU count to their pre-wash RLU count, the reduction percentage is significant (91%). Individuals that have naturally-occurring high RLU counts may not be able to achieve an RLU reading under 100 without suffering damage to the skin. Some individuals with high readings should be tested multiple times to establish their individual pass/fail level.

Setting your targets

One way for a facility to establish its own baseline percentage reduction goal and/ or its own Pass/Fail RLU limit is to perform a 10 subject ATP test protocol and use the average percentage reduction found among the 10 test subjects when comparing prewash RLUs to post-wash results. See below the 14 subject test conducted by Meritech as an example.

Worker	Pre---Wash RLU Count	Post---Wash RLU Count	Percent Reduction	**Pass/Fail 100 RLU Limit**
1	780	103	87%	**Fail**
2	140	21	85%	**Pass**
3	391	39	88%	**Pass**
4	1548	142	91%	**Fail**
5	1188	49	96%	**Pass**
6	436	41	91%	**Pass**
7	452	53	88%	**Pass**
8	233	18	92%	**Pass**
9	128	19	85%	**Pass**
10	110	19	83%	**Pass**
11	20	27	Invalid test	**Invalid**
12	41	7	83%	**Pass**
13	568	115	80%	**Fail**
14	124	46	**63%/Fail**	**Pass**

FIGURE 2

A comparison of percentage reduction and pass/fail limit results.