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ATP Product Presentation

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01

Product Background

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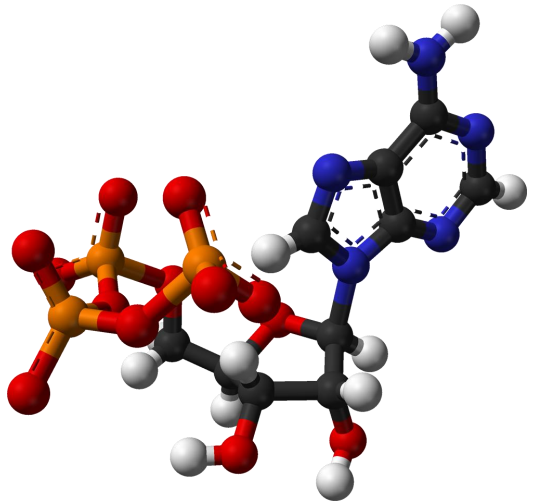
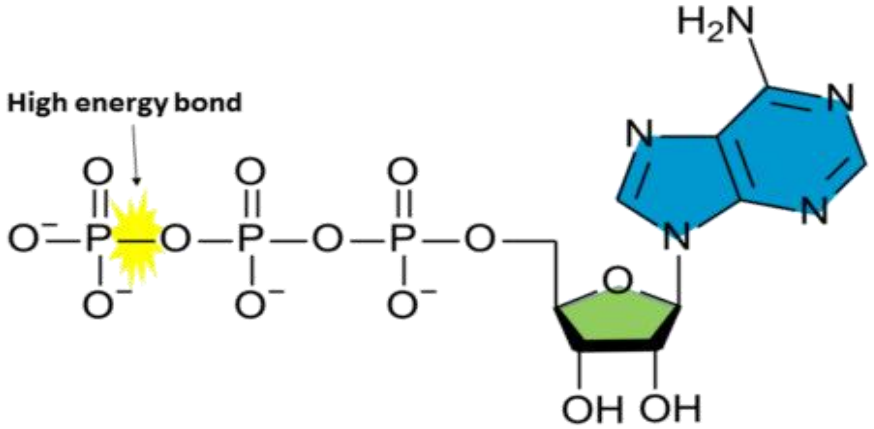
Product Background

Adenosine Triphosphate (ATP) is the primary energy carrier in all living organisms on earth. Microorganisms capture and store energy metabolized from food and light sources in the form of ATP.

When the cell requires energy, ATP is broken down through hydrolysis. The high energy bond is broken and a phosphoryl group is removed. The energy released from this process is used to drive various cellular processes. ATP is constantly formed and broken down as it participates in biological reactions and it is central to the health and growth of all life. Without it, cells could not transfer energy from one location to another, making it impossible for organisms to grow and reproduce!





Product Background

The relationship between fluorescence intensity and object surface cleanliness

Generally speaking, if the surface is cleaner, the fluorescence intensity will be higher and the ATP content will be less, because there are no contaminants or impurities to affect the detection of the fluorescence signal.

In some cases, contaminants or impurities on the surface may interfere with the detection of fluorescent signals, thereby reducing fluorescence intensity and increasing ATP content. For example, objects with dust, grease, or other impurities on their surfaces may hinder the binding of fluorescent dyes to target molecules, causing the fluorescence signal to weaken.

Therefore, under normal circumstances, if there is visible dust or stains on the surface of an object, it is not recommended or necessary to waste swabs for testing, and then test again after cleaning.

Product Background

Traditional Detection Method - Microbial Culture

Microbial culture is a laboratory technique used to cultivate and proliferate microorganisms such as bacteria and fungi. It involves the use of artificially prepared culture media and controlled culture conditions (such as temperature) to facilitate the rapid growth and reproduction of certain microorganisms, referred to as microbial culture.

Product Background

Disadvantages of Microbial Culture Methods

Long Detection Time

24-48 hours

Professional

It requires operation by trained professionals.

Risk

Cultivation leads to a substantial increase in bacteria, posing risks.

Unclean

Food residues contain abundant nutrients, and bacteria develop after cultivation.

Product Background

The difference between Bacteria Colony Count Plate and ATP detector

Bacteria Colony Count Plate and ATP detection are two different methods for microbial testing, used to assess the presence and activity levels of microorganisms in samples, but they differ in principles and applications. Typically used to assess the total number of microorganisms in samples, but **it cannot distinguish between viable and non-viable microorganisms**. This method **requires some time** for colony cultivation and counting, hence it may **not be suitable for situations requiring rapid results.**

The ATP detector provides **rapid and sensitive results**, thus finding **widespread application in areas** such as food safety, environmental monitoring, and bio-pharmaceuticals. In comparison to total viable count detection, the ATP detection method not only **identifies viable microorganisms** but also **detects ATP within cells**, making it **more suitable for assessing microbial activity levels**.

02

ATP Product

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ATP SurSwab

ATP SurSwab 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.

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

Test Procedure


Device self-checking


Checking the swab


Sampling


Installation


Injection


Mixing


Insertion


Measuring

ATP AqSwab

AqSwab is an easy to use ATP water test work with BioCleanse Hygiene monitoring system from Bioeasy. The swab is available in two formats: Free and Total. **AqSwab Free** measures dissolved ATP that is free in water(non-microbial ATP). **AqSwab Total** measures both free ATP and microbial ATP (non-microbial and microbial ATP) in the water. 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 months shelf life at 2-8°C, 4 weeks shelf life at 21-25°C**
4. **Detects down to 10^{-16}mol ATP**

Test Procedure

Device self-checking

Checking the swab

Sampling

Installation

Injection

Mixing

Insertion

Measuring

ATP BioCleanse Detector

Name	BioCleanse
Dimension	189mm*70mm*35mm
Weight	280g
Power supply	Rechargeable battery
Running time	Continuously work for > 8hrs, stand by for > 600hrs
Single Use Test	Yes
Shelf Life	12 months
Detection Limit	10^{-16} moles ATP
Detection Deviation	±5% or ±5 RLUs
Real-time Detection Time	10s
Memory Capacity	256 test plans, 256 user IDs, 2000 test program and 10000 results
Communication Interface	USB, Bluetooth
Correlation Coefficient	⩾0.995

Advantages of BioCleanse

Fast
Result in 10s for one test

Powerful Memory Capacity
256 test plans, 256 user IDs,
2000 test program, 10000 results

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

User-friendly
3.5 inch high resolution color screen, intuitive menus, simple to use

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 through Bluetooth

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

Highly Portable
Within 300g with battery

Advantages of ATP Products

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Efficient

Sampling + detection can be completed within half a minute, allowing timely response.

Simple

It is easy to operate and does not require professionals and does not need to be used in the laboratory.

Monitor

Active detection, monitoring whether the cleaning process is running normally based on the detection results.

Optimization

Based on the test results, the cleaning process can be optimized in a more targeted manner and the overall cleanliness can be improved.

03

Product Application

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Product Application

Food Processing Industry

1. Cleaning control during production and processing

2. Disinfection evaluation of packaging

3. Microbiological determination of finished products and raw materials

4. Processing environmental hygiene monitoring

Product Application

Food Industry

1. Cleanliness control of kitchen, dining table, operating table and operating tools, etc.

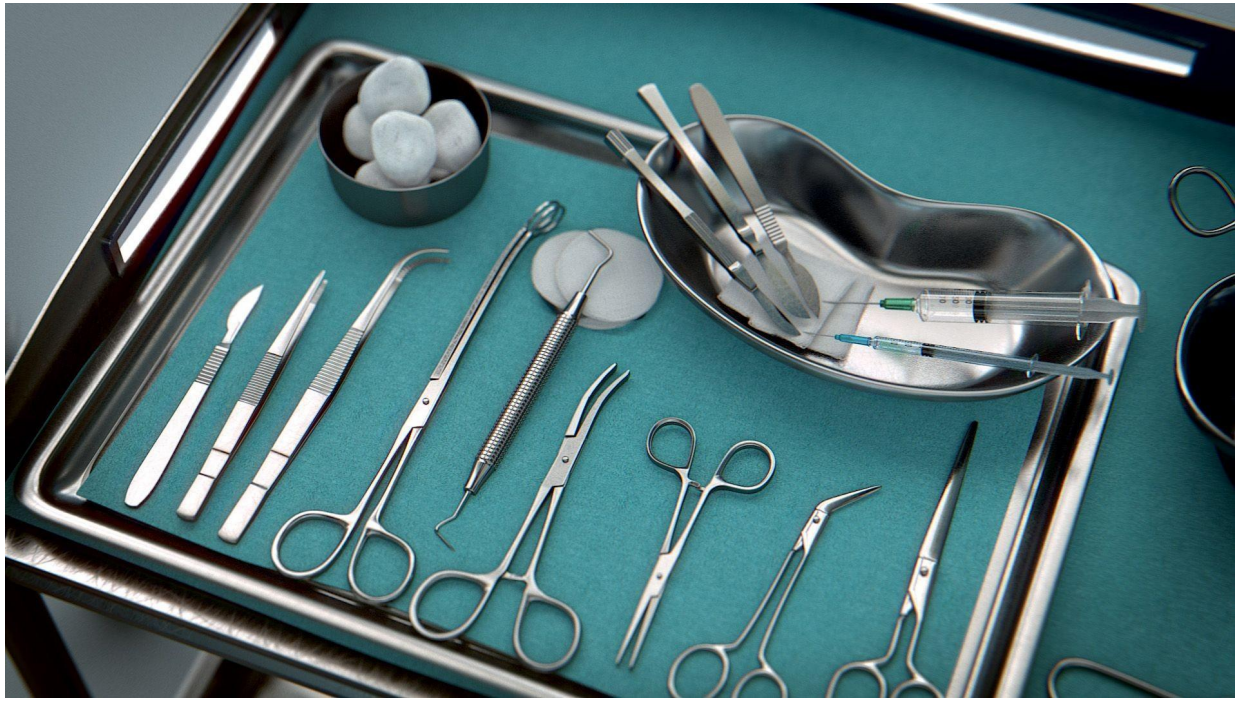
2. Disinfection evaluation of tableware

3. Hygiene control of airline catering

4. Health supervision by market supervision departments

Product Application

Medical and Health Industry



1. Surface inspection of objects in key departments of the hospital

2. Hand hygiene check of medical staff

3. Medical device cleaning and disinfection inspection

4. Detection of cleanliness of hospital environment

04

Instruction & Precaution

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Instruction & Precaution

Instruction

1. Cotton swab sampling
2. Installing the integrated tube
3. Injecting reagent
4. Shaking and mixing
5. Insert and read

Instruction & Precaution

Precautions before Testing

1. The test swab should be stored in a refrigerator at 2~8°C to avoid light and be sealed.

2. The swab should be allowed to return to room temperature(20-30°C) before use to avoid affecting sensitivity.

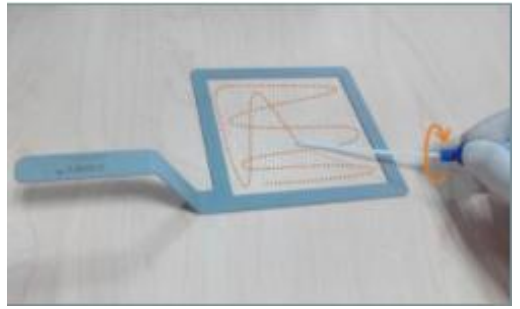
3. It is recommended to wear disposable gloves during experiments to avoid external ATP contamination.

4. Prepare the test area. If you need to test liquid, you can use a water sample swab to take a sample and put it into the ATP fluorescence detector for detection.

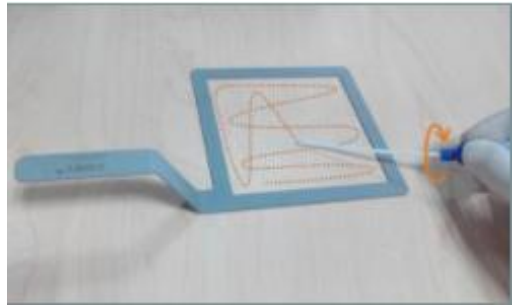
Instruction & Precaution

Precautions during Testing

1. Do not touch the swab or cotton swab during the sampling process, and ensure that the swab is in direct contact with the surface of the object being measured at the first time.



2. The standard operating application area is 10×10 cm^2. For irregular surfaces, it is most important to ensure that each control point is inspected in a consistent manner. Control points should be set according to the special structures of different surfaces, such as the smoothness of the tabletop, seams of instruments, sunken areas, whether there are cracks in tableware (which can easily hide dirt), etc.



3. After the sample and solution in the swab react, it should be placed in a fluorometer for inspection as soon as possible.

Instruction & Precaution

Other Precautions

1. This instrument detects the cleanliness of the object surface with a resolution lower than that of the naked eye. Therefore, if there is visible dirt on the measured control point, or the head of the swab turns obviously black after application, you can stop subsequent operations to avoid wasting the swab.

2. If there is excess liquid on the surface of the object to be inspected, wait for the surface liquid to dry slightly before testing to avoid diluting the reagent. (No special drying required)

3. The ATP fluorescence detector needs to be used in conjunction with the reagents, and the reagents need to be stored away from light.

Instruction & Precaution

Set Reference Value

1. Establish key detection points
   Draw a monitoring program flow diagram and identify hazard areas.
2. Collect sample data and set limit values
   Collect the data before cleaning, after cleaning, and after deep cleaning at the detection point.

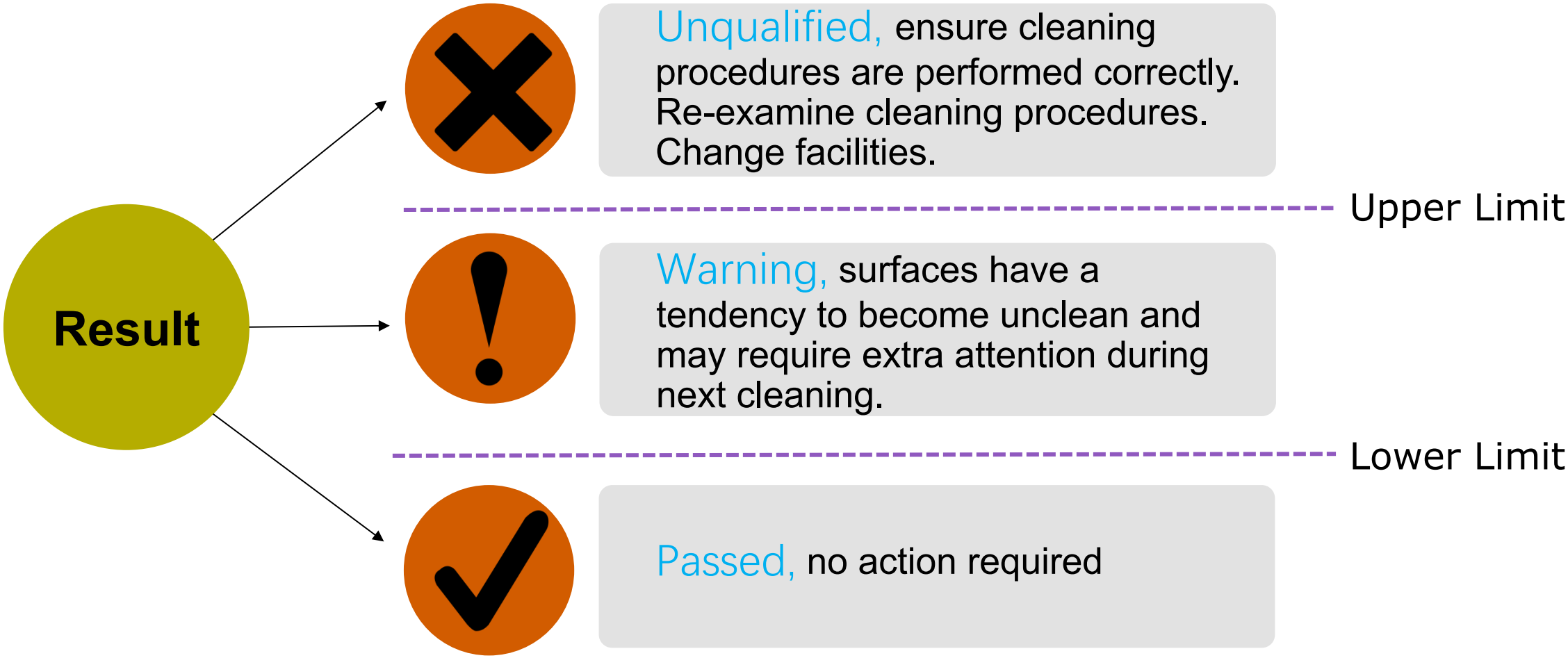
Key Detection Point "X"		First Time	Second Time	Third Time	Forth Time	Fifth Time
A	Before Cleaning	638	782	473	931	835
B	After Cleaning	40	45	38	52	35
C	Deep Cleaning	4	3	0	2	2

3. Lower limit is the average value after cleaning, and upper limit is lower limit × 2. Then according to above table data, we know the lower limit is 42, and the upper limit is 84.

Instruction & Precaution

Results Interpretation

1. After we set the lower limit and upper limit value. Then the result interpretation as below.



Instruction & Precaution

Test Time and Frequency

The frequency of specimen testing is directly related to the contamination risk of the key points to be tested.

Factors that determine the level of risk:

- The pollution resistance of the surface itself and whether it is susceptible to pollution.
- Is it difficult to clean?
- Frequency of contact with product.
- The types of food processed on the machine. When there are many types of food, the possibility of cross-contamination and allergens will increase.

Generally speaking, testing of high-risk critical points should be performed after each cleaning; while for low-risk critical points, frequent testing is not required.

Instruction & Precaution

The impact of disinfectants on testing

Each brand of disinfectants will affect the results of ATP testing products. This is a technical limitation. Different brands and different types of cleaning agents have different effects on the test results.

It is recommended to conduct testing after cleaning and before disinfection.

Main Ingredients	Active Ingredient Concentration	Test Average (RLU)	Value to be Measured/Control Value	The impact of disinfectants on ATP detection
Chlorhexidine acetate	1.45% ±1.6% (w/v)	1134	1.012	+1.2%
Didecyldimethylammonium chloride/ Benzalkonium chloride compound quaternary ammonium salt	2g/L-2.2g/L	700	0.624	-37.6%
Didecyldimethylammonium chloride/ Dodecyldimethylbenzyl ammonium chloride	0.002%	452.33	0.404	-59.6%
Dodecyldimethylbenzylammonium chloride	24.9g/L	566	0.505	-49.5%
Lysozyme	5.2g/mL-9.75g/mL	1048.5	0.935	-6.5%
Polyhexamethylene biguanide salt/Ethanol	PHMB: 0.36% -0.44% Ethanol: 52%-60%	935.75	0.835	-16.5%
Isopropyl alcohol	70%	1118	0.997	-0.3%
Peracetic acid	0.5% ±0.05% (v/v)	75	0.067	-93.3%
Polyhexamethylene biguanide salt	0.08% ±0.008%	1260.5	1.124	-12.4%
Hydrogen peroxide	2.2% ±3.3% (w/v)	381.5	0.340	-66%
Glutaraldehyde	2.2% ±0.2%	861.5	0.769	-23.1%
Hypochlorous acid	115mg/L±15mg/L	201	0.179	-82.1%
Sodium hypochlorite	250mg/L	611.5	0.545	-45.5%
P-Chloroxylenol	0.045%-0.055% (w/w)	877	0.782	-21.8%
Trichloroisocyanuric acid	500mg/L	618	0.551	-44.9%
Water	/	1121	1.000	0

THANK YOU

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