ATP TESTING

Removing Surface Contamination with Aqueous Ozone

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Sanzonate Global, Inc. partnered with Melbec Microbiology Laboratory to test Aqueous Ozone (ozonated water) as an effective cleaning solution on stainless steel surfaces using ATP testing. Melbec Microbiology is an independent and accredited testing and contract research laboratory in Kingsway, U.K.

What is ATP Testing?

The ATP test is a process of rapidly measuring actively growing microorganisms through detection of adenosine triphosphate, or ATP.

Adenosine Triphosphate, or ATP, is the energy molecule found in all living things, making it a perfect indicator when trying to determine if a surface is clean or not. ... Light is then emitted in direct proportion to the amount of ATP present in the sample, providing information on the level of contamination in seconds. By testing for the presence of ATP on a surface, you're testing for the presence or growth of microorganisms like bacteria.

ATP systems use relative light units (RLU) as the unit of measure for adenosine triphosphate (ATP). Though the ratio of RLU to ATP varies per manufacturer, the greater the ATP, the higher the RLU. The cut-off scores for acceptable or unacceptable RLU scores are called thresholds, or limits.

Most ATP test systems come preset with Pass and Fail limits of 10 and 30 respectively. Any score of 10 RLU or less is a Pass. Scores from 11 to 30 RLU are a Caution. Any score greater than 30 RLU is a Fail.

Test Overview

Prior to each test, the stainless-steel surface was cleaned with laboratory disinfectant and the RLU value determined to ensure the surface was clean and there was no interference from the disinfectant with the RLU measurement.

The chicken was placed on the stainless-steel test surface and was left for the required time (5 min, 30 min and 1 hour for freshly collected Aqueous Ozone or AO and 5 min for 8-hour aged AO) so that two 5cm x 5cm test squares were covered. Average ozone in the water across the four dwell times was 1.18 ppm-mg/L or 893 mV-orp.

Microfiber cloths were dampened in AO test solution.

The chicken was then removed from the surface.

Why do we need to verify cleaning?

"A surface may look clean, but that does not necessarily mean it is clean. Some contamination and debris cannot be seen with the naked eye... it is important to mitigate risk of contamination from that site."

-3M, Food and Safety News

Test Process 1 (1st Square) – The first square was swabbed with an ATP test kit without any addition of AO solution. This is the baseline ATP level.

Test process 2 (2nd Square) – On the second square, 15 ml of fresh AO solution was added, and then wiped using a microfiber cloth. The second quadrant was then swabbed with a test kit measuring ATP/RLU values.

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ATP TESTING RESEARCH RESULTS

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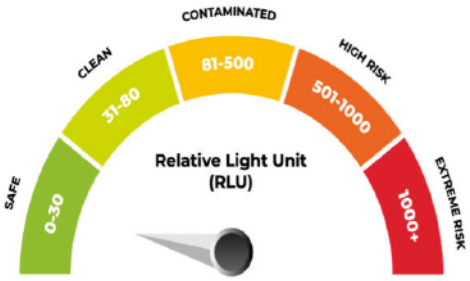
ATP Readings and RLU Values

Chicken on Raw Surface Dwell Time	ATP Count/RLU Value	
	Test Process 1 (Square 1) without AO applied	Test Process 2 (Square 2) with AO applied
5 mins	614	3
30 mins	322	2
1 hour	202	0
5 mins (8 hours aged AO)	453	1

Conclusions

The RLU values obtained after cleaning the surface with the test product, Aqueous Ozone Solution (produced at point of use), were significantly lower than the untreated surface indicating that the test product effectively removed soiling from the surface.

The test results also indicate that the aged sample (tested 8 hours after collection) was still effective at removing soiling from the surface and gave comparable results to the fresh samples.



What are the benefits of testing for ATP as a way to verify cleaning?

"ATP is a highly efficient way to verify cleaning because it can identify beyond than a visual inspection and provides quick, sensitive and easy quantitative information that verifies that cleaning procedures are working. It also detects food product residues which is important, because if this is not removed from the surface, it can leave behind nutrients that help surviving organisms grow."

-3M, Food and Safety News

Industries Adopt ATP Testing for New Safety Protocols

Companies have had to make a lot of changes in their operations to keep their employees and customers safe. While ATP testing has been used in the food service industry for years, it's now being widely adopted by numerous industries as part of their enhanced cleaning protocols.

Industries that have implemented ATP testing include:

- Long-term Care Facilities and Hospitals
- Restaurants
- Athletic Facilities and Stadiums
- Schools and Universities
- Transportation
- Community Spaces

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