



TapTone

APPLICATION NOTES

News and information from Teledyne TapTone, a leader in the package inspection industry.

SEAL INTEGRITY FOR FOIL SEALS

Tested: A Variety of Plastic Containers with Aluminum Foil Seals

Tested with: TapTone Dual Sensor Compression (DSC) System

Inspection: The purpose of this test was to prove the effectiveness of the DSC Sensor in testing plastic containers with foil seals for seal integrity. Poor seal integrity can offer contamination a point of entry into your product, which can cause product spoilage and potential health concerns for your consumers. The DSC Sensor is ideal for finding compromised seals in plastic bottles and containers with aluminum foil seals before they leave your facility.



One type of plastic bottle is squeezed by the TapTone DSC system

TECHNOLOGY CORNER *HOW IT WORKS*

The Dual Sensor Compression system finds and rejects leaking and damaged flexible bottles at production line speeds up to 250 feet per minute. The system is designed with dual parallel belts suspended over the customers' existing conveying system.

As the container passes through the system, the dual parallel belts apply force to the sidewall of the container. This action compresses the headspace of the container which allows a comparative measurement to be taken at both the infeed and the discharge of the system. Comparing the container to itself between the infeed and discharge of the system eliminates typical variations seen in the production environment (Fill Level, Product Temperature, and Container Density).

Utilizing advanced patented DSP technology the system analyzes the comparative measurement and assigns a merit* value to each container. If the merit value is outside the acceptable range, a reject signal activates a remote reject system.



TapTone DSC sensor and user interface

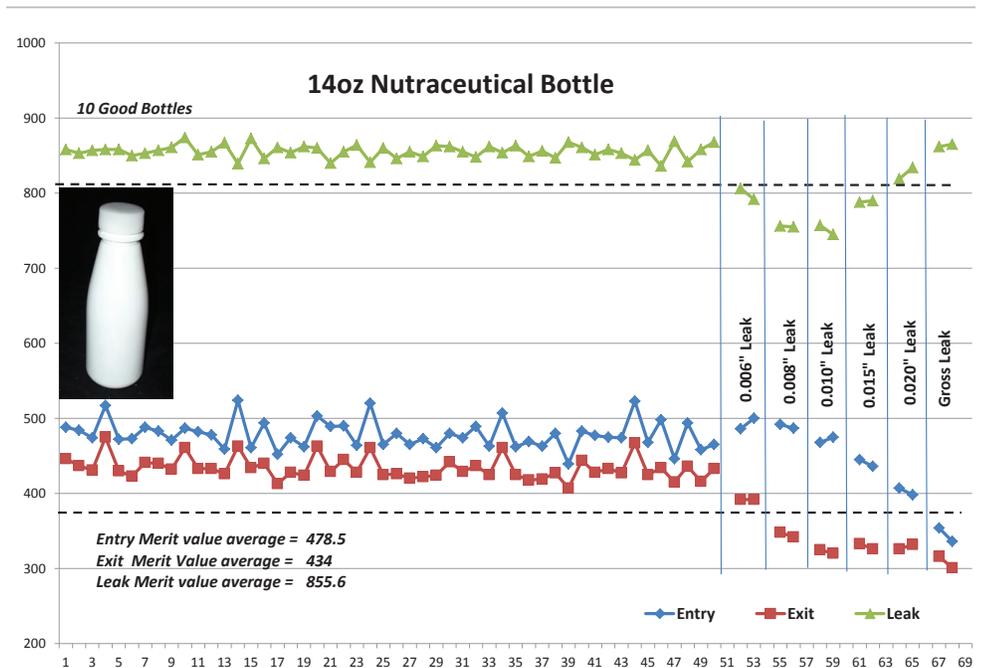


TESTING

Several tests were conducted on similar style containers, but the most important test was conducted on a particularly rigid container, compared to the others. This rigidity was predicted to be problematic for the DSC, but testing proved otherwise.

During the test, twelve (12) containers were used for leak and seal evaluation. In order to access the aluminum foil seal, testing was conducted with the caps of the containers removed. For this specific style of bottle, the unit obtained the best results by squeezing closer to the bottom of the container. First, ten (10) good bottles were run through the unit five (5) times each to find the average merit values of “good” non-leaking containers. Leaks were then induced in the containers by puncturing the aluminum foil seals with precision sized drills, and the leaking containers were then passed through the unit again.

Results of test conducted on rigid container.



SUMMARY

This test, as well as four (4) separate tests on a variety of plastic bottles, determined that the DSC sensor is fully capable of detecting compromised seals in these plastic containers. This test specifically, demonstrates the system’s capability in finding leaking containers even when the container itself is more rigid than standard plastic bottles. The TapTone DSC was able to detect 0.006 inch (0.152mm) leaks and greater at a line speed of 75 feet per minute. During all testing, no visual damage to the bottle was observed. The TapTone Dual Sensor Compression System is highly recommended for this application.



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