TELEDYNE TAPTONE
Everywhereyoulook™

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TapTone APPLICATION NOTES

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

Leak Detection for Yogurt Cups

Tested: Various Single and Multi-serve Plastic Yogurt Cups with Foil and Plastic Seals
Tested with: T4000-C/T4000-CLP with TDLC sensor configuration

As the demand for single serve yogurt continues to grow, the need to reliably inspect these products for seal integrity is critical. An improperly sealed yogurt cup will promote mold growth and shorten the shelf life of the yogurt. Product recalls for leaking cups can be both expensive and damage brand image. Therefore, online leak inspection is a key consideration for yogurt manufacturers to maintain the highest quality standards and protect brand image.

Teledyne TapTone offers both the T4000 Compression and T4000 Compression Low Profile sensors with our patented TDLC sensor for leak detection of typical yogurt cups. To demonstrate this capability, several popular size and style containers were evaluated to determine the effectiveness of the system and minimum size leaks that can be detected.

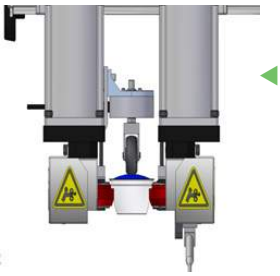
TECHNOLOGY CORNER *How it works*

Compression Technology - Compression technology detects leaks in plastic containers. As a container passes through the system, dual parallel belts apply force to the sidewalls of the container. This action compresses the head space of the container, which allows a sensor to take a force measurement at the discharge of the system. Utilizing DSP technology; the controller analyzes the measurement and assigns a merit value to each container. If the merit value is outside of the acceptable range, a reject signal activates a remote reject system.

▲ T4000 Compression System

TDLC sensor - The patented TDLC sensor is the latest innovation for TapTone's Compression machines and was designed specifically for containers with a flexible plastic or foil seal.

The squeezing action of the compression system increases the head space pressure in the container, causing the foil or plastic seal to dome upward. This doming allows for a force measurement directly from the seal using the TDLC assembly. This technology allows for even more accurate and reliable leak inspection of a variety of cups and containers with these flexible seals.



◀ The TapTone TDLC sensor.

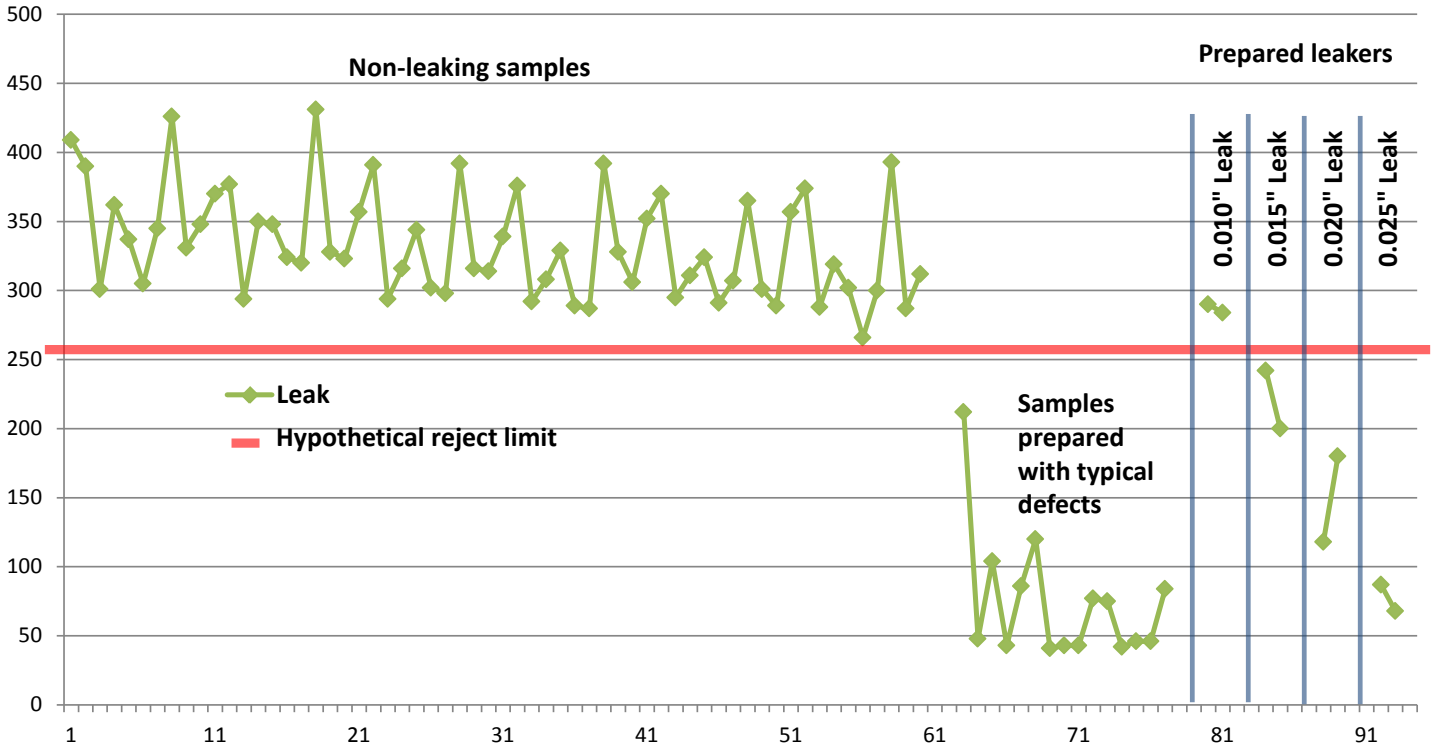
TEST SUMMARY

Several popular size and style yogurt containers were used for the test. Results below are from a 5.3 oz. typical single serve yogurt cup being tested in the picture. For this test, ten good cups were run through the system multiple times to establish a base line for the non-leaking cups. After the "good" non-leaking cups were tested with all merit values recorded, five cups with typical leak-causing defects were run through the system 3 times each with values recorded.

In the final phase of the test, a .010 inch leak was introduced into the foil membrane of a good cup using a precision drill bit. This cup was then run through the system two times with values recorded. This procedure was then repeated using a 0.015 inch, 0.020 inch, and 0.025 inch drill bit.

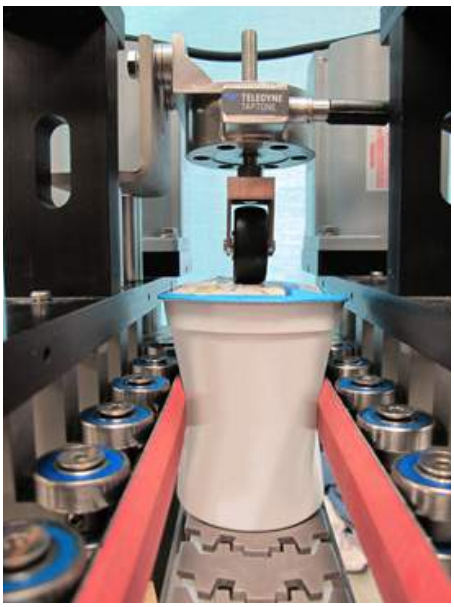
◀ Picture showing a cup prepared with a typical leak.

◀ Typical single serve yogurt cup during testing.



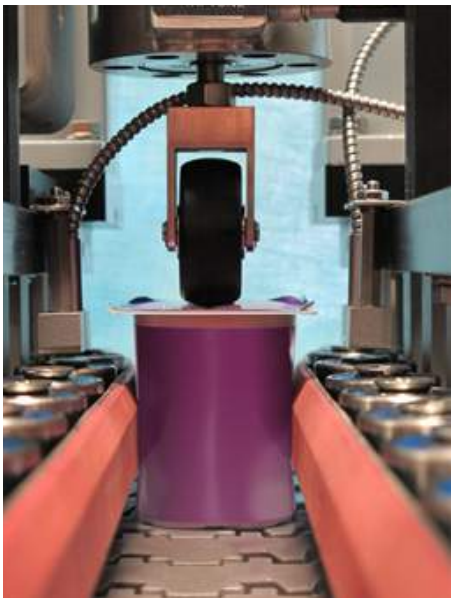
TEST SUMMARY (Continued)

Results achieved for other popular sizes and styles of yogurt cups (pictured below) were similar to those shown in the graph.



32 oz. cup with foil seal

5.3 oz. cup with foil seal



8 oz. cup with foil seal

RESULTS

The testing demonstrated that the TapTone T4000 C equipped with the TDLC sensor is capable of reliable leak inspection down to .006 inches and greater (size and container dependent) for yogurt containers ranging from 5 oz. to 32 oz at production speeds. Sample testing is required to determine exact results for specific containers and to determine the optimum machine configuration.

Test results achieved in the test laboratory may be different from results seen in the production environment.

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