TELEDYNE TAPTONE
Package Inspection Systems
A Teledyne Technologies Company

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TapTone APPLICATION NOTES

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

IDENTIFYING LEAKS IN PLASTIC ANTIFREEZE CONTAINERS

Tested: Plastic antifreeze bottles Tested with: TapTone 4000 Compression Sensor

Inspection: The purpose of this test was to find leaks in plastic antifreeze bottles using the TapTone 4000-C compression system. Leaking antifreeze bottles can be hazardous for consumers since they contain harsh chemicals. The T4000-C Compression Sensor is ideal for finding potential leakers in antifreeze containers before they leave the processing plant.

Tested with: TapTone T4000 Compression System

▲ Plastic antifreeze container

◀ Container being tested with the T4000-C

TECHNOLOGY CORNER *HOW IT WORKS*

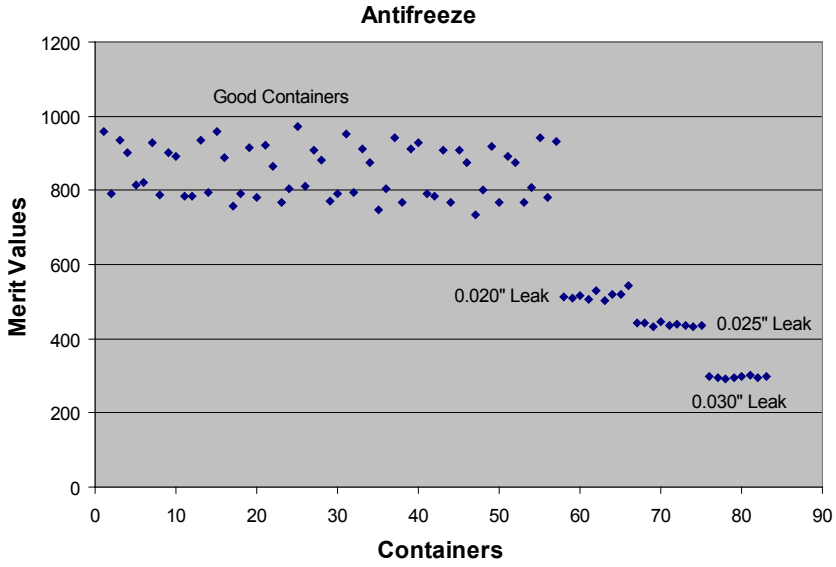
The T4000 Compression technology is used to find leaks in flexible containers. As a container passes through the system, dual parallel belts apply force to the sidewalls of the container. This action compresses the headspace of the container, which allows a load cell to take a force measurement at the 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.

T-4000 Controller and Compression Sensor. Sensor has a cantilever design that suspends over the existing conveyor. ▶

TEST

Empty flexible plastic containers were supplied for this evaluation. The plastic twist-off caps have an induction seal lining that is affixed to the containers after filling. For testing purposes, leaks of three different sizes were evaluated: 0.51 mm, 0.64 mm, 0.76 mm (0.020, 0.025 and 0.030 inches). The plastic bottles were oriented to pass through the compression belts with the sides of the container against the belt, allowing for a wider surface area against the compression sensor.

During the compression cycle, the sealed, non-leaking containers generated an average merit value* of 875. When leaking containers were introduced, those with hole sizes of 0.51 mm, 0.64 mm and 0.76 mm (0.020, 0.025 and 0.030 inches) produced average merit values of 500, 425, and 300 respectively.



* Merit value is a calculated number determined using an algorithim to compute a resultant from a set of data values.

Note: It is possible for the plastic cap to be torqued tight enough to create a seal on the container even if the foil seal inside is leaking. In this case the system would consider the container to be a non-leaker.

SUMMARY

Testing was successful with the T4000-C. In the samples provided, the system was capable of consistently detecting leaks with a diameter as small as 0.51mm (0.020 inch).

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