



TapTone

APPLICATION NOTES

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

LEAK DETECTION ON STAND-UP POUCHES

Tested: Stand-up pouch container with gussett.

Inspection: Inspection of seal integrity.

TapTone's PRO Series DSC-TB pouch inspection technology finds and rejects leaking containers caused by defects in the seams or fitment closure.

DSC-TB technology can be used for leak inspection on the following flexible pouch types:

Containers:

- Stand-up Pouches

Closures:

- Plastic Fitment
- Induction seal



Stand-Up Pouch

Equipment: TapTone PRO Series DSC-Twin Belt Pouch Inspector

TECHNOLOGY CORNER *HOW IT WORKS*

The TapTone PRO Series Pouch Inspector system finds and rejects leaking and damaged pouches at production line speeds up to 200 feet per minute. The patented system is designed with dual pairs of parallel belts suspended over the customers' existing conveying system. As the pouch passes through the system, the dual pairs of parallel belts apply force to the sidewall of the pouch. This action increases the internal pressure of the pouch, evacuating a small amount of product out any leak areas, thus allowing a comparative measurement to be taken at both the infeed and the discharge of the system. Comparing the pouch to itself eliminates typical variations seen in the production environment (Fill Level, Product Temperature, and Seal width).

Utilizing advanced DSP technology the TapTone PRO Series controller analyzes each of the individual sensors as well as their comparative measurement and assigns three resulting merit values to each pouch. If any merit value is outside of the acceptable range, a reject signal activates a remote reject system.



▲ TapTone PRO Series Pouch Inspector



LEAK DETECTION ON FLEXIBLE POUCHES

Tested: Aluminum Foil Pouches

Apple Juice Pouch Testing

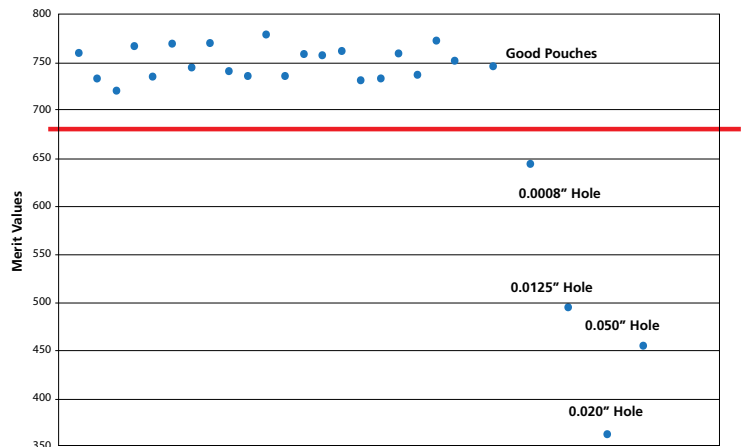
The purpose of this test was to prove the effectiveness of the DSC-TB pouch inspection sensor in testing flexible pouches for leaks. Leaking pouches can offer contamination a point of entry into your product, which can cause product spoilage and potential health concerns for your consumers. The DSC-TB sensor can test stand-up or gusseted pouches either hot or cold filled. Then DSC-TB Sensor is ideal for finding potential leakers in flexible drink pouches in the seams or fitment closure before they leave your processing plant.



▲ Flexible drink pouches pass through the compression belts of the PRO Series DSC-TB

All testing performed compared non-leaking pouches to pouches with leaks. In the first test, the leaking pouches had precision hole sizes that ranged from 0.008 to 0.020 inches (0.203 mm to 0.508 mm). The “good” pouches were tested several times to get a larger population of non-leaking merit value readings. The “bad” leaking pouches were tested only once because of the loss of headspace, which is limited even in the good pouches.

In the second test, eight (8) “good” pouches of Apple Juice were tested to obtain a “good” average merit value. In this test, the leaking pouches had hole sizes that ranged from 0.10 to 0.20 inches (0.330 mm to 0.508 mm). Again, the leaking pouches returned values easily distinguishable from the non-leaking pouches, though these values were entry and exit values, not leak values.

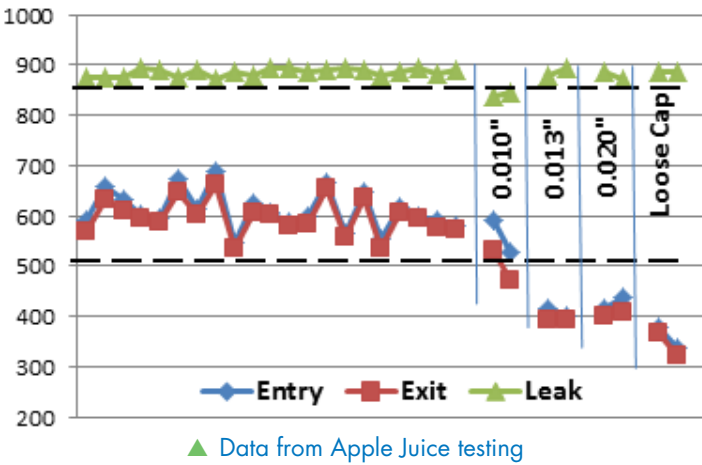


▲ * Merit value is a calculated number determined using an algorithm to compute a resultant from a set of data values. Merit values shown in the above graph represent “leak” values

During the compression cycle the sealed, non-leaking pouches generated an average merit value* of 750. The leaking pouches all showed good separation in values from the population of “good” pouches. The smallest hole size of 0.008” (0.203 mm) had a merit value of 643, which was 77 merit value points below a “good”, non-leaking pouch and was easily distinguishable from the values of the good pouches.

SUMMARY

These tests demonstrate that in certain applications, the TapTone Dual Sensor Compression Twin Belt (DSC-TB) sensor can successfully detect leaks as small as 0.008 - 0.010 inches (0.203 - 0.330 mm). It is important to note that the DSC-TB sensor requires the pouches to enter in a specific orientation. Sample testing is required for each product application to determine which set of merit values are to be used in detecting leaks because results may vary between products as seen in testing.



◀ The Twin Belt (TB) conveyor set is designed specifically for stand-up pouch inspection.

PRO Series DSC-TB Specifications

- Stand-up pouches
- 4" (101mm) minimum pouch height
- 17" (432mm) maximum pouch height
- 5" (127mm) maximum pouch width
- Belt Speed 25 – 350 feet/minute
7 – 106 meters/minute



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