



IDM Instruments, in conjunction with AMCOR Research and Technology, have designed and manufactured FLEXSEAL®, an advanced leak detection system designed for monitoring the seal performance of flexible and semi rigid packages.

### **The Necessity for Flexseal:**

The design and development of the packaging system has come under close scrutiny with a great deal of emphasis placed on the integrity of the final product. Although factors such as type of package, materials of construction, size and desired outcome all add to the equation of flexible package integrity, the seal leak strength is an important element.

FLEXSEAL® was developed in response to an industry wide need for improved quality assurance of packaged food products. FLEXSEAL® is a useful tool for the manufacturer of product, needing an airtight package, where protection of the internal product from environmental elements is necessary to ensure the end user of quality.

Once all considerations of package material and design have been finalised and a validated sealing process employed, one of the ways of effectively monitoring the integrity of the package is to test the condition of the seal via FLEXSEAL®. Other testing methods, such as the Hot Tack Test, can evaluate the strength of the seal, whereas FLEXSEAL® can detect the integrity of the seal ie: the seal may be strong but will still allow air to pass through.

### **Benefits:**

- FLEXSEAL® provides the user with a valuable visual method of determining the integrity of the package and seal.
- The simple process is quick and easy to monitor the heat-sealing process in production.
- Allows rapid detection of failures.
- Enables early corrective action to be taken.
- Product programmable.
- Adjustable air pressure.

FLEXSEAL® operates up to 50 programmable menus involving various selections of submersion time, applied air pressure and product selection. Once the operator has loaded the menu relevant to the product under examination, FLEXSEAL® can proceed to perform the test cycle. The product will then be subjected to selected air pressure while submerged in a bath of water, where the operator can view the location and leak rate of any bubbles emanating from the package.

FLEXSEAL® can also be used to determine the creep and burst properties of seals. These are two other important factors in seal integrity.





### Other Testing Methods:

Some testing labs use Dye Penetration to test the seal integrity. A low surface-tension solution and dye indicator is used to flow through any channels in the seal. Although this is a sensitive leak indicator, it is very slow and messy for quick results on a production line.

The Vacuum Leak test involves submersing the package in water in such a way that it is difficult to detect the location of the leak. The vacuum method has been shown to be an inadequate test to accurately qualify and quantify the seal performance of snack bar products. Again, like the dye penetration test, the vacuum leak test is more time consuming than using FLEXSEAL® and not suitable for porous material.

Tracer Gas Systems have proven to be not only expensive, but complex and present many problems where reproducibility and sensitivity affect the outcome of testing.

FLEXSEAL®, being very economical in comparison, is the quickest and easiest visual way to test the integrity of flexible and semi rigid packages, although it is not the only test needed to determine the overall package integrity.

### Connections:

- **Air:** 450 – 600 kpa
- **Electrical:** 220/240 VAC @ 50 HZ or  
110 VAC @ 60 HZ  
(please specify when ordering)

### Results in the Field:

A comparison between FLEXSEAL® and a vacuum test was performed at an on-line processing plant resulting in an eye-opening conclusion. Samples were taken from selected lines and tested for the specified adequate result of >-20kPa using the vacuum method. More than 70% of samples were proven to not reach the specified test results.

Similar samples were tested using FLEXSEAL® and the results showed visually the reasoning behind the vacuum testing results. Channel leaks across end seals were predominant in the testing failures while a few samples had visible leaks in the T Junction across FIN seals or pinholes in the material.

By analysing these results, it is clear to see where the heat sealing on line is not performing adequate seal layer fusion. Adjustments can then be made easily to amend the temperature or pressure of the sealing bars to ensure seal integrity of finished product.



**Programmable Control Panel**



Seal leak integrity is a vital element of the total package integrity. A validated demonstration that the seals are continuous and impermeable can only determine seal integrity and the cleanest, quickest way to check such traits on line is by using FLEXSEAL®.

For package sealing, a validated range of control limits, (temperature, pressure and dwell time) are required to produce an acceptable seal.

Although proper selection of materials, incoming component inspection, a validated sealing process and control of key sealing parameters may positively impact seal strengths, only a test or observation of a sealed package can effectively monitor integrity.

### Features:

- Simple/Rapid Operation
- Positive pressure technology
- Accurate measurement of seal performance
- Visual identification of seal defects
- Rapid feedback to production line
- Improved product safety
- Lower scrap rates and greater package reliability
- Savings in cost and time
- PLC Controlled
- Sample in place sensors
- Vacuum holding of samples in place
- Adjustable test air pressure: 0.0 to 20.0 psi
- Stainless Steel Construction
- 15 litre water capacity
- 180° sample rotation
- Needle penetration of samples
- Transparent test chamber
- Bench top operation
- 50 programmable scripts

### Options:

- N/A

### Dimensions:

- **H:** 750mm
- **W:** 500mm
- **D:** 500mm
- **Weight:** 50kg



**Bubbles emanating from a leak**