

GASANALYSIS H2000/AP33

Leakage rate - determination by hydrogen-method

Tight packaging

With regard to the durability of products, the tightness of packaging is of fundamental importance in food- and pharma-industry. An exchange of atmospheres, caused by leakages, influences the durability of products consequently. Therefore, the determination of a packaging's leakage rate is helpful for a change of concentration in modified atmosphere. A hydrogen molecule is the smallest elementary compound in the universe. Based on this fact, micro-leakages are to determine and to localize by hydrogen too. In addition, due to the low concentration of H₂ in our atmosphere (0,5 ppm), we can detect small concentration changes due to leakage.

Hydrogen as a test gas

As a test gas, there is a mixture of 5-10 Vol% H₂ in N₂ (forming gas) used. A concentration of 5% H₂ in N₂ is not combustible. The liability to explode for hydrogen is about a concentration of more than 18 Vol %. Forming gas is very cheap because of its various application and its simple kind of production. Additionally, hydrogen is legally qualified as a food additive. In most of all cases, an amount of about 1% hydrogen in the protecting atmosphere of a packaging is sufficient for testing. All of these advantages qualify hydrogen as a test gas for leakage checks at packagings.

Incomparable selectivity

The new hydrogen analyser H2000/AP33 ensures the most quickly and the easiest way to analyse low hydrogen concentration. The appliance has an incomparably selectivity for hydrogen and does a measurement within seconds. Hydrocarbons and water vapour have no influence to the measurement. The measurement unit AP33 is combined to the leak detector H2000 for detection of concentration in a test chamber.

Automatic security function

An automatic security function arises, in case of hydrogen-concentration exceeding a certain limit value. Therewith, the recovering time is reduced while there is a higher precision of measurement.



Hydrogen leak detector H2000/AP33

Features

- Result within minutes
- High sensitivity
- High selectivity
- Automatic monitoring
- Automatic calibration
- PC / printer - port
- Compact and robust
- Integral test chamber

Packaging

Integral test chamber

To determine a leak in a small object, f.i. a package, made out of foil or tin plate, this is to put into an integral test chamber. If hydrogen escapes out of a leakage, the concentration in the test chamber will rise. Based on the time-factor, you can determine the leakage rate. Even using multiple test chambers with single inquiry is possible by using the analyser. In this case, the process is carried out by PC. If the leak of an object is discovered, there is the possibility to determine the location by the handsensor.

Results within seconds

Simple measurements can be done very fast. After pressing one button, the hydrogen analyser sucks in a gas sample. The result of the measurement is shown within 2-3 seconds on the high-definition display of H2000. Results (date, time and hydrogen concentration) can be given to a printer or a PC too. The results can be diagrammed on a Windows PC by Microsoft Excel.

Simple and fast

Set up and operating of the hydrogen-analyser is very simple. Warm-up is done within a minute. Calibration takes only seconds and is done by pressing one button. The measurement is started by pressing a further button. Compared with the gas-chromatography, the measurement can be done much easier and faster. Because of its low dimensions and robust construction, the unit is suited for industrial locations.

Modular construction

The hydrogen analysis-unit is composed of two devices: one is the hydrogen-analysator AP33, the other one is the hydrogen-leakdetector H2000. Using test chambers, measurement is done automatically after fitting the test chamber. A complete measurement cycle is done within 2-3 seconds. The highest precision can be achieved by keeping a distance of 30 seconds between two measurements.

Simple calibration

Calibration is done automatically by pressing a button. Therefore, a sample of the calibration gas is sucked in by a separate calibration input. In case of a high deviation of the test-value, there will be a demand to repeat the calibration process. Time and result of the calibration are sent automatically to an installed printer or PC. Periodical calibrations can be programmed over the menu of H2000.

Calibrated leaks

Calibrated leaks are supplied as accessories. They can be used for calibration in a test chamber. An exact detection of leak rates is possible by using them.

Performance data

Measurement range

0,5 - 500 ppm Hydrogen (H₂)

Repeatability

± 15 %

Resolution

2 significant digits

Measuring period

2 - 3 seconds

Measuring principle

Hydrogen selective FET (field effect transistor)

Integral chamber

Size is adjustable to the object-size

Physical specifications

Dimensions

255 x 282 x 205 mm

Net Weight

11 kg

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