

Application Note

Oxygen time study on minced meat package

Gasporox presents GPX1500 Film Food for headspace oxygen measurements in transparent food packages like bags, pouches, and trays.

Modified Atmosphere Packaging (MAP) is widely used in the food sector, to guarantee the freshness and shelf life of food packages. This involves frequent reduction or increase of oxygen during the packaging process. As a part of the quality system, a HACCP scheme is implemented. The verification of the MAP process is monitored using an at-line measurement or a sampling process using lab equipment. These are often done by a destructive method.

The Gasporox's GPX1500 Film Food instrument measures gas concentrations in a non-destructive way. This laser-based Headspace Analyzer (HSA) method does not require any special sample preparation.



Application Example

The oxygen level in a minced meat tray was measured as a time study over the “best before” date and some days later. The study required only one package. This was due to the fact that the GPX1500 Film Food instrument measures non-destructively the oxygen concentration.

The minced meat package was bought from a shop on May 19th. This is two days before the “best before” date printed as May 21st. It was stored in a fridge at the requested +5°C for the full time of the study. It was only taken out of the fridge for doing the measurements which took max. 30 minutes.

Once a day the oxygen content of the meat tray was measured three times consecutively. It started at a level of 80% O₂ and was still at the same level at the “best before” date. Three days after the “best before” date, the oxygen level started to decrease. The slope of the oxygen decrease is 10% O₂ per day. It is also remarkable that with the decrease of the oxygen the film of the tray started to indent, which indicates a vacuum is generated in the package.



The study demonstrates that the use of a non-destructive method generates a major benefit to minimize the number of packages used. When using a destructive method, it additionally generates an uncertainty that all the packages are the same at the beginning of the study.

- Product: Minced meat tray 500g
- Gas: 80%-20% Oxygen/ Nitrogen
- Measurement time: 4 seconds
- Precision: ± 0,2% O₂
- Sample handling: Placing the meat tray manually on the instrument, repeated 3 times

