

INVESTIGATE SHELF LIFE

Determination of the Oxidation Stability of
Fats and Oils with the OXITEST

AOCS International Standard Procedure
(Cd 12c-16)

AOCS 
Since 1909
Your Global Fats and Oils Connection



Predictive Study of Fat Oxidation

The Oxitest Method is an International recognized analytical technique for the determination of the oxidation stability of food, fats and oils.

Every food, feed and other products containing lipids (creams, lip balms, body lotions, wax etc...) undergoes oxidation of the contained fat portion, which causes unpleasant flavor, bad smell and the loss of its natural sensorial qualities.

Many factors have influence in lipid oxidation (and in the shelf life of the sample) such as the ambient temperature, the exposure to heat, the composition of Fatty Acids and its degree of saturation, the concentration of oxygen etc.

Especially for the food industries, the prediction of the stability to oxidation of raw material and finished products is a crucial information with lots of operational and economic implications.

The stability tests performed with the OXITEST reactor accelerate the oxidation process that in normal conditions can last weeks or months and provide fast, accurate and reliable results.

Internationally Recognized

The Oxitest Method has been recognized as an **AOCS International Standard Procedure (Cd 12c-16)** for the determination of oxidation stability of food, fats and oil and, effective from May 2017, will be published in the 7th Edition of the **Official Methods and Recommended Practices of the AOCS**, (American Oil Chemist's Society).

This is only the last step of a long run that have seen the cooperation of VELP Scientifica with research centers, universities and laboratories from all over the world for developing the instrument and the method and tailor it to their needs.



Sample As It Is

The OXITEST reactor subjects the sample to a high-oxidative stress environment in order to evaluate, in a short period of time, the resistance to fat oxidation.

With the OXITEST Method, the stability test is performed directly on the sample as it is be it solid, liquid or doughy.

The method key advantage is that preliminary fat extraction is never required and this guarantees **representative results**.

In fact, other components of a product like chemical oxidants or transition metal can promote oxidation and the use of extracted matter may not be a suitable predictor of stability.

The OXITEST reactor is entirely controlled via PC through the intuitive **OXISoft™** software and for the set-up of the analysis, the reactor needs to be connected to Oxygen (Grade 5.0) as shown in figure 1.

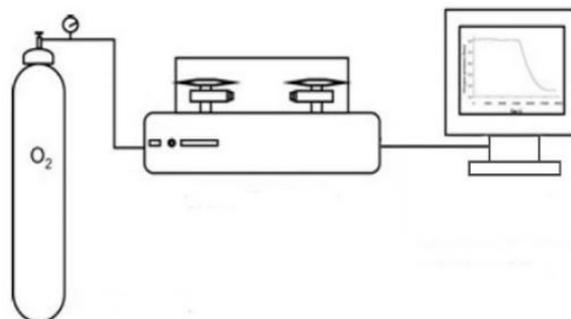


Figure 1- OXITEST Configuration

The instrument features two thermostated and hermetically sealed titanium chambers in which oxygen is purged until the pressure within both chambers is between 0–8 bar. The temperature is then set to the desired level (room temp. to 110 °C).

The Oxitest measures the absolute pressure change inside the two chambers monitoring the oxygen uptake of the active components of the samples, and automatically generates a value expressed in time, called the Induction Period (IP). The longer the IP, the more resistant a sample is to oxidation over the life of the sample.

Best Before...

The information provided by the Oxitest method along with other tests (i.e. microbial analysis, peroxide values etc.) are crucial for the shelf life study of the products.

The OXITEST comes with several pre-installed methods and it is also possible to create your own customized analysis.

The OXISoft™ manages all the analysis steps and easily provides valuable data to enable researchers to:

- Estimate shelf-life by testing the sample at different temperatures and elaborating an experimental curve that predicts the behavior at room temperature;
- Study oxidation at different storage time intervals;
- Evaluate the adequacy of storage conditions;
- Evaluate the best packaging solution;
- Compare the oxidative stability of different formulas for food preparations;
- Evaluate the oxidative stability of vegetable oils of different botanical origin;
- Evaluate the effectiveness of antioxidants
- Control the quality of incoming raw materials and outgoing finished products.