



Application Note AN-T-110

# Peroxide value in edible oils

Fully automated determination according to the current EN ISO, AOAC, Ph. Eur, and USP standards

The peroxide number or peroxide value is an important sum parameter for assessing the quality of edible fats and oils. It provides quantitative information about the presence of peroxides or hydroperoxides, which are formed when unsaturated fatty acids in fats and oils react with oxygen. Peroxide and hydroperoxides can lead to a rancid taste in oils, thus the peroxide number provides information about the freshness of the sample.

This Application Note describes the titrimetric determination of the peroxide value in canola and olive oil according to EN ISO 27107, EN ISO 3960, AOAC 965.33, Ph.Eur. 2.5.5, as well as USP<401>. Using the DIS-Cover technique all sample preparation steps can be fully automated, freeing up valuable time of the operator and thus increasing the productivity in the lab.

**Find more information in the video:**

## SAMPLE AND SAMPLE PREPARATION

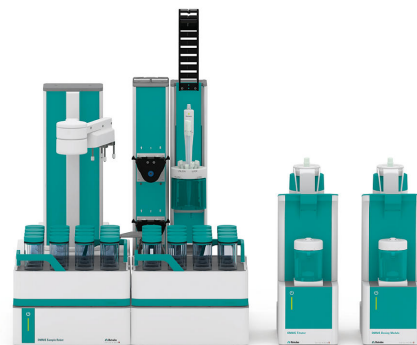
The method is demonstrated for two different edible oils: canola oil (rapeseed oil) and olive oil.

For both samples, no sample preparation is necessary.

## EXPERIMENTAL

This analysis is carried out on an automated system consisting of an OMNIS Advanced Titrator and an OMNIS Sample Robot S with Dis-Cover equipped with a dPt Titrode (**Figure 1**).

To a reasonable amount of sample, solvent mixture and auxiliary solution are automatically added and the solution is stirred for 1 minute to complete the reaction. Deionized water is added and the sample is titrated with standardized titrant until after the equivalence point is reached.



**Figure 1.** Sample Robot with Dis-Cover functionality, Dosing module and OMNIS Advanced Titrator equipped with dPt Titrode for the determination of peroxide value.

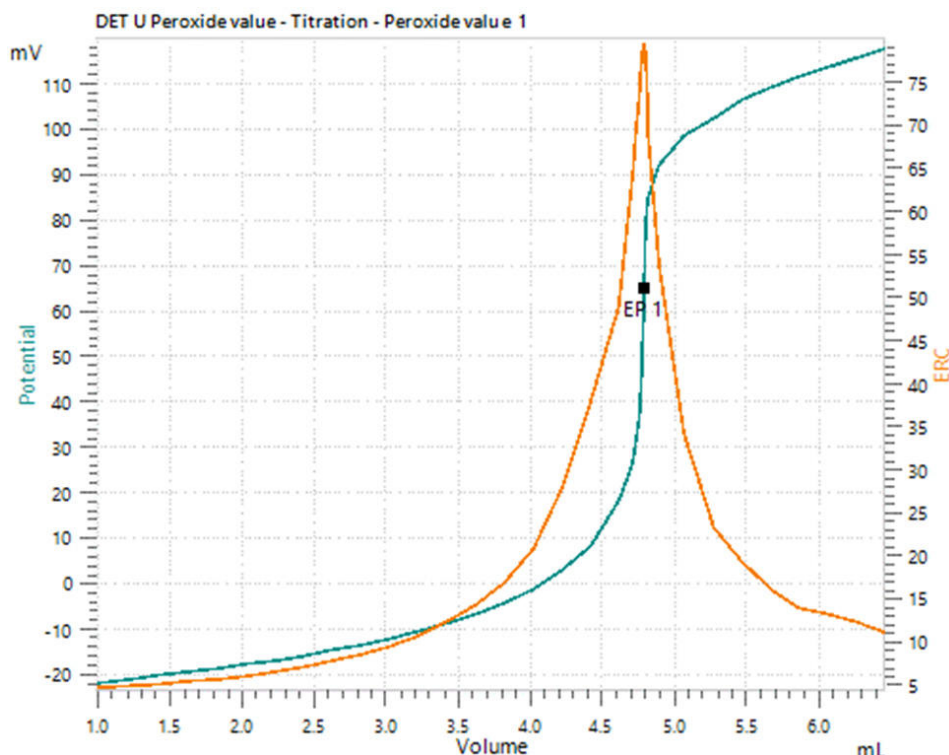
## RESULTS

The analysis demonstrates acceptable results with  $SD(rel) < 2\%$  and well defined titration curves. The results and an example titration

curve are displayed in **Table 1** and **Figure 2**, respectively.

**Table 1.** Mean peroxide value for canola oil and olive oil determined with an automated OMNIS system ( $n = 5$ ).

	Canola oil	Olive oil
Peroxide value in $mq\ O_2/kg$	1.9	6.4
$SD(rel)$ in %	1.05	0.86



**Figure 2.** Example titration determination in olive oil.

## CONCLUSION

Titration is a precise and reliable method to determine the peroxide value in various edible oils according to various international standards. Using an OMNIS Sample Robot with Dis-Cover functionality allows a fully automated determination of up to four samples simultaneously, freeing up valuable time of the

operator and thus increasing the productivity in the lab. The OMNIS system offers the opportunity to customize the system according to your needs and expand it for other required titration applications on edible oils, such as the acid value or iodine value.

Internal reference: AW TI CH1-1277-062019

## CONTACT

瑞士万通中国  
 北京市海淀区上地路1号院  
 1号楼7702  
 100085 北京

marketing@metrohm.com.cn

## CONFIGURATION



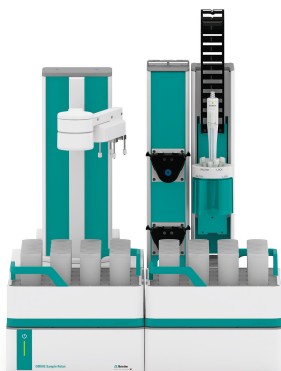
### OMNIS Professional Titrator

新型、模式位分析 OMNIS Titrator 滴定,用于行点和等当点滴定(一/)。由于采用 3S 瓶配器技,理化学品很安全。可以使用量模和量管元自由配置滴定,并在需要展一台拌器。包括用于使用其他滴定或加液模平行滴定的“Professional”功能可。

- 通算机或本地网控制
- 可以其他用或助溶液外接四个滴定模或加液模
- 可以展磁力拌器和/或螺旋拌器
- 可提供不同大小的量管:5、10、20 或 50 mL
- 采用 3S 技的瓶配器:安全理化学品,自生商的原始数据

#### 量模式和件:

- 点定滴定:“Basic” 功能可
- 点和等当点滴定(一/):“Advanced” 功能可
- 点和等当点滴定(一/),包括平行滴定
- “Professional” 功能可



### OMNIS Sample Robot S Pick and Place

OMNIS Sample Robot S 具有一个“蠕”模(2 通道)和一个 Pick&Place 模以及大量附件,可直接入全自滴定。此系具有个品位置,可用于 32 个 120 mL 的品。此模化系供已完全安装完,因此可在短内投入行。

系也可根据需展配外台蠕以及多加一个 Pick&Place 模,由此使通量翻倍。如果需要更多工作台,可将此 Sample Robot 展 L 格款型的 OMNIS Sample Robot,由此可使七个品的品在多四个 Pick&Place 模上并行理,将品通量大四倍。



### dPt Titrode

pH 玻璃膜的 OMNIS 用数字合式形,用作参比。免用于 pH 恒定的化原滴定,例如:

- 量法
- 重酸法
- 量法
- 高酸滴定法

存放在蒸水中。

dTodes 可在 OMNIS Titratoren 上使用。