Oxidation stability of flavored spirits using PEG as carrier material

Reliable and accurate determination of the oxidation stability of flavored spirits with the polyethylene glycol method

Distilled alcohol is otherwise known as «hard liquor» or «spirits». Classic spirits are often mixed with different flavors in order to reach new customers – thereby expanding a brand's market share. One such spirit, gin, is distilled from juniper berries and contains no additives. However, raspberry and blackberry flavored gin is also available. Such flavor additives often contain antioxidants and can affect the shelf life of the product. Using the Rancimat method with polyethylene glycol (PEG) as carrier material, the oxidation stability of flavored and unflavored gin can be determined quickly and reliably. The sample is analyzed without any preparation, and the induction time can be related directly to the oxidation stability of the sample.

Ω Metrohm

This Application Note demonstrates the feasibility of the Rancimat method. Reproducible and accurate determination of the oxidation stability of flavored spirits is possible with the 892 Professional Rancimat.

SAMPLE AND SAMPLE PREPARATION

This application is demonstrated on different flavored and unflavored (plain) gins. No sample preparation is required.

EXPERIMENTAL

First, an appropriate amount of gin and PEG are weighed into the reaction vessel, and then the analysis is started.

The Rancimat method exposes the sample to an airflow at a constant temperature between 100–180 °C. Highly volatile secondary oxidation products are transferred with the airflow into the measuring vessel where they are absorbed in the measuring solution. Here, the conductivity is continuously measured since the secondary oxidation products lead to an increase in the conductivity. The time until occurrence of this marked conductivity increase is referred to as the «induction time», which is a reliable indicator for the oxidation stability (Figure 1).
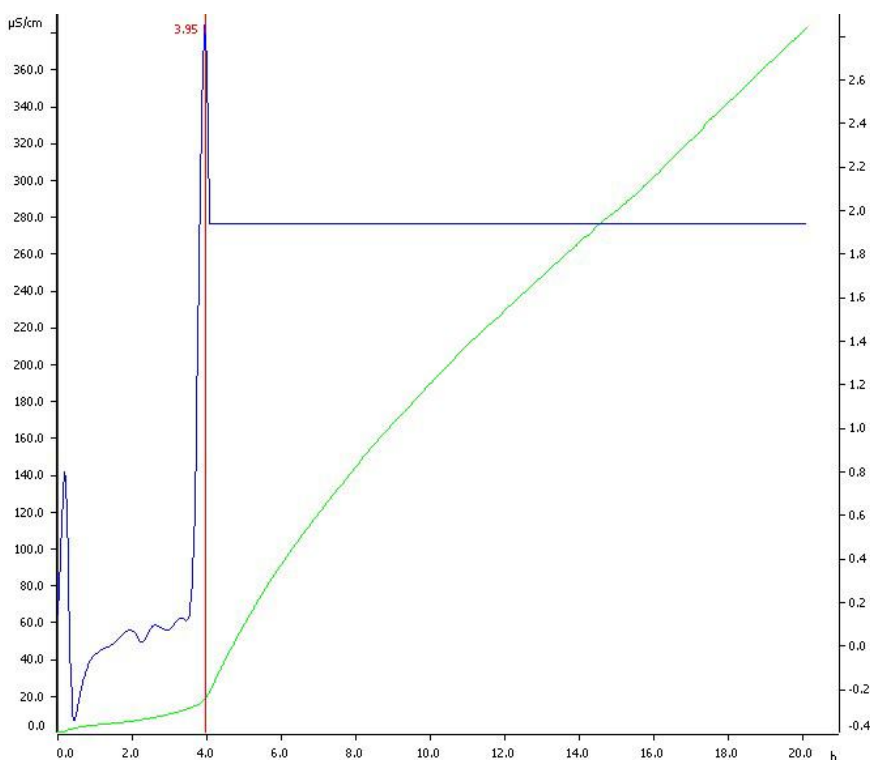

Figure 1. Determination of the oxidation stability of a flavored gin (Table 1, sample 4). Induction time is determined at 3.95 h.

Ω Metrohm

Table 1. Summarized results for oxidation stability of different flavored and unflavored gins.

Sample	Mean value in hours	SD(rel) in %
1 (flavored, n = 4)	5.04	3.6
2 (flavored, n = 4)	4.20	3.5
3 (flavored, n = 6)	2.89	7.0
4 (flavored, n = 6)	3.87	4.0
5 (flavored, n = 6)	5.60	3.3
6 (unflavored, n = 4)	0.52	1.1
7 (unflavored, n = 4)	0.52	1.5

CONCLUSION

Most flavored spirits can be measured directly with the Rancimat for their oxidation stability in order to guarantee a consistent high quality of the finished product. With the Rancimat, this parameter can easily and simultaneously be determined on eight different samples at a time.
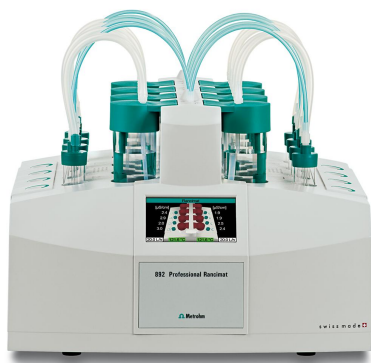
Internal reference: AW ST CH-0176-012022

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

Ω Metrohm

CONFIGURATION

892 Professional Rancimat

892 Professional Rancimat 是用于通已使用多年的 Rancimat 方法来定天然油脂的化定性的分析系,即便又安全。2 个加中共有 8 个量位置。内置示屏可示状和每个量位置。每个量位置都有按,可在器上量。采用用的一次性反管和可使用洗碗机清洗的附件可将清洗工作降至最低。即可省和用,并且也可著提高。

行定所需的所有附件均已包括在准配置内。需要使用 StabNet 件来行器控制、数据和估以及数据保存。

Ω Metrohm