Application Note AN-R-028

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.

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).

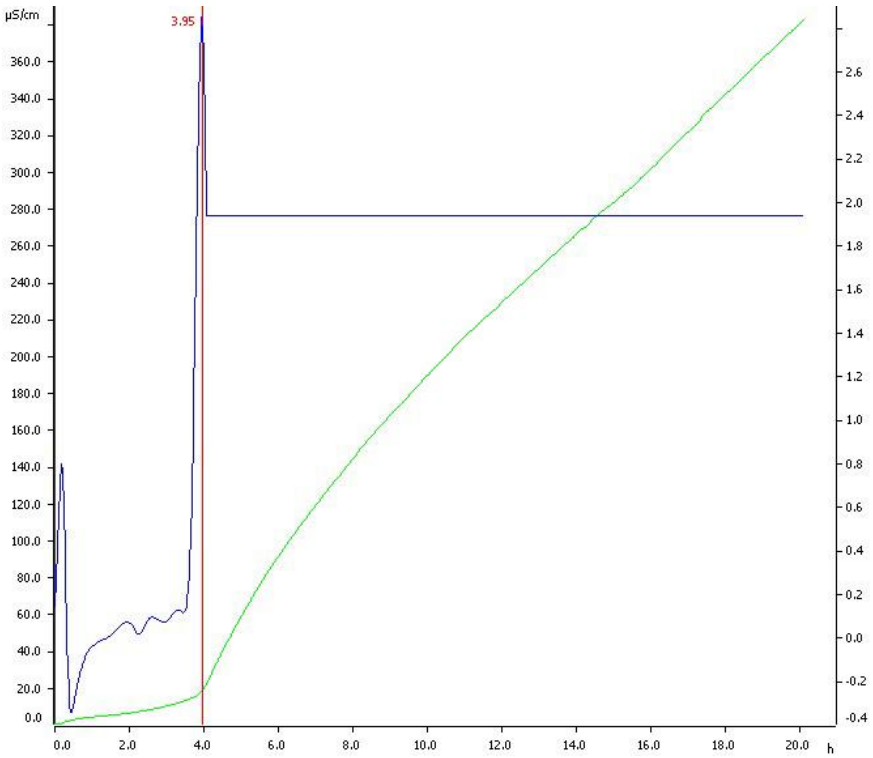

Figure 1. Determination of the oxidation stability of a flavored gin (Table 1, sample 4). Induction time is determined at 3.95 h.

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

メトロームジャパン株式会社
143-0006 東京都大田区平和島6-1-1
null 東京流通センター アネックス9階
metrohm.jp@metrohm.jp

CONFIGURATION

892 Professional Rancimat

892 フロフェッショナルランシマットは、長年世界て使われているランシマットメソットによって自然の油脂および油の酸化安定性を簡単かつ安全に測定するための分析システムてす。加熱フロック2つに8つの測定ホシションかあります。内蔵式ティスフレイには装置およひそれそれの個々の測定ホシションのステータスか表示されます。各測定ホシションのスタートキーによって装置の測定をスタートてきます。洗浄にかかる手間およひコストは、実用的てある使い捨て反応容器および洗浄機に耐えられる付属品の使用によって最小限に抑えることかてきます。これによって時間とコストを削減し、精度と再現性を著しく改善することかてきます。測定実施のために必要な全ての付属品は同梱されています。装置の制御、テータの記録、評価、保存のためには、StabNetソフトウェアか必要てす。