



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).

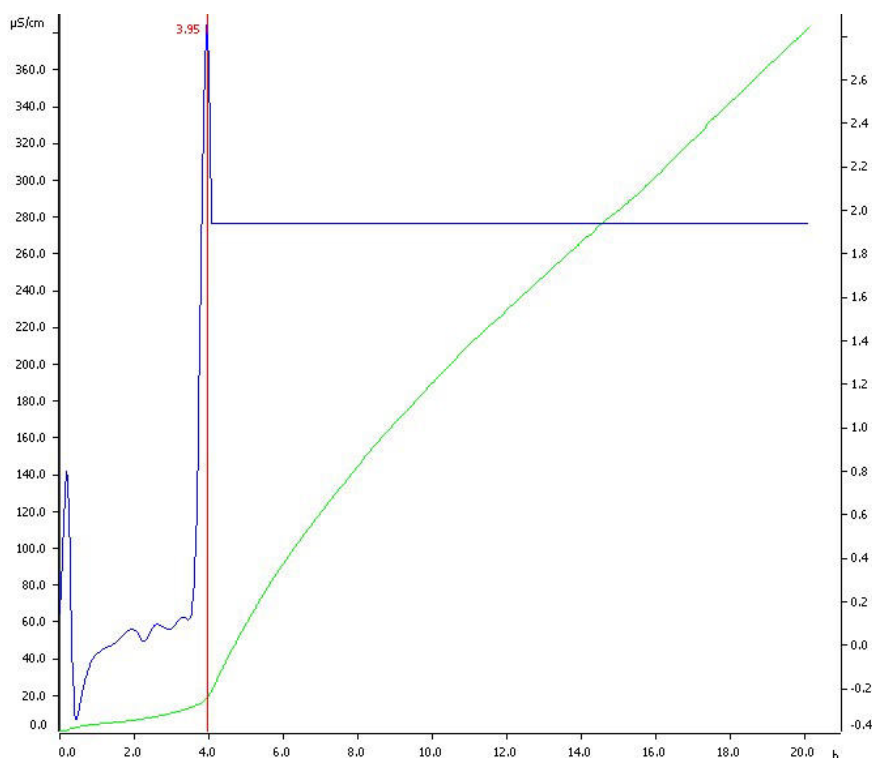


Figure 1. Determination of the oxidation stability of a flavored gin (Table 1, sample 4). Induction time is determined at 3.95 h.

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.

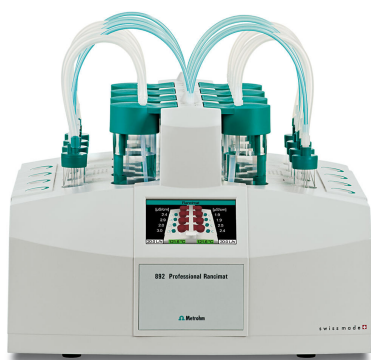
Internal reference: AW ST CH-0176-012022

CONTACT

Metrohm France
13, avenue du Québec -
CS 90038
91978 VILLEBON
COURTABOEUF CEDEX

info@metrohm.fr

CONFIGURATION



892 Professional Rancimat

Le 892 Professional Rancimat est un système d'analyse moderne permettant une détermination simple et fiable de la stabilité à l'oxydation des graisses et huiles naturelles par application de la méthode Rancimat, bien établie depuis de nombreuses années. Doté de 8 positions de mesure réparties dans 2 blocs de chauffage. L'afficheur intégré indique l'état de l'appareil et de chacune des positions de mesure. Les touches de démarrage pour chaque position de mesure permettent le démarrage de la mesure sur l'appareil. Des récipients à réaction à usage unique et des accessoires lavables en machine réduisent les coûts et le travail de nettoyage à un minimum. Ceci fait économiser du temps et de l'argent tout en améliorant l'exactitude et la reproductibilité de manière considérable.

Tous les accessoires nécessaires aux déterminations sont fournis. Le logiciel StabNet est requis pour le contrôle de l'appareil, l'enregistrement des données et leur évaluation, ainsi que pour leur sauvegarde.