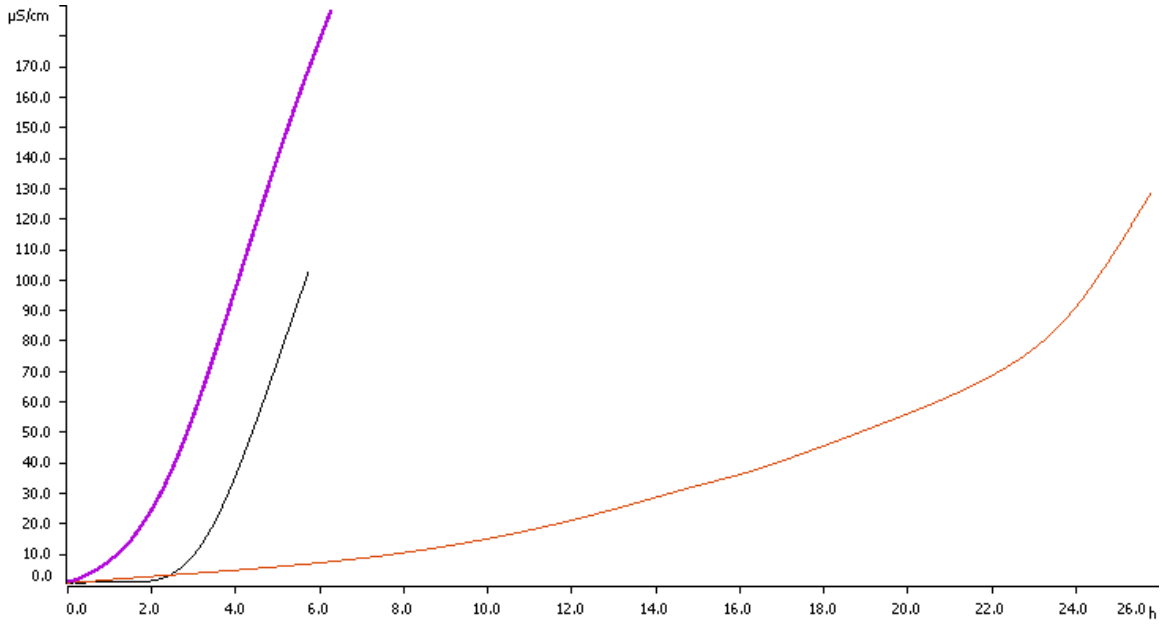
Stability Application Note R-017

Determination of the oxidation stability of different waxes



Wax has theoretically an unlimited shelf life, however many additives (flavor, softener, etc.) can affect it negatively. Since both synthetic and natural waxes are used in various products, such as cosmetics and foods, expiry dates have to be specified. The oxidation stability can give an approximate indication for the shelf life.

A reproducible and accurate determination of the oxidation stability using the 892 Professional Rancimat can be realized.

Metrohm

Method description

Samples

Tea light candle wax without additives

Tea light candle wax with dimethylmyrcetone (tetramethyl acetyloctahydronaphthalenes)

Beeswax

Sample preparation

For homogeneous wax no sample preparation is required. Otherwise, the wax is previously completely melted in a glass beaker placed in a water bath (at approximately 90 °C).

Configuration

892 Professional Rancimat	2.892.0010
Equipment for the determination of the temperature correction	6.5616.100
Reaction vessel long for stability measurements	6.1429.050
Air tube long for biodiesel measurements	6.2418.130
Clamp for temperature sensor, 4x	6.2042.040
Wash glass, 4x	6.2405.030
Thread for wash glass, 4x	4.647.0471
Sealing ring, 4x	A.254.0103
FEP tubing M6, 18 cm, 4x	6.1805.050
FEP tubing M6, 25 cm, 4x	6.1805.080
FEP tube 14.5 cm, 4x	6.1819.090

Analysis

Before the analysis is started, a temperature correction for each block is performed.

3 g ± 0.02 g wax is weighed in a reaction vessel. Afterwards the oil trap is inserted between the Rancimat and the reaction vessel and the analysis is started.

Parameters

Sample size	3 ± 0.02 g
Measuring solution	60 mL
Temperature	140 °C
Temperature correction	auto
Gas flow (air)	7.0 L/h
Conductivity change	50 µS/cm
Endpoint(s)	yes
Stop once all the criteria have been fulfilled	yes

Results

Sample (n = 4)	Mean value / h	s(abs) / h	s(rel) / %
Tea light candle wax without stated additives	3.07	0.10	3.3
Tea light candle wax with dimethylmyrcetone	2.20	0.13	6.1
Beeswax	23.64	0.48	2.0

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