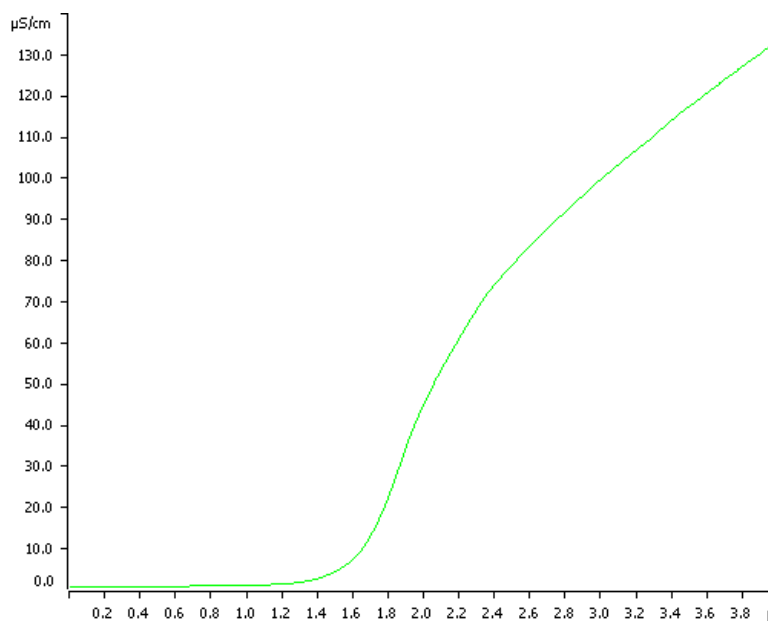


Stability Application Note R-021

# Oxidation stability of cosmetics and personal care products

Fast determination of oxidation stability without sample preparation



The oxidation stability is an important factor for the quality of cosmetics. It also provides information about the long-term and storage stability of the product. Most cosmetic formulations cannot be measured directly with the Rancimat as no evaluable induction time is obtained. There are many reasons for this, for example a high water content, a too low fat content or various matrix effects. However, using polyethylene glycol (PEG) as carrier material, many of these samples can be directly and reproducibly measured without sample preparation. This is due to the antioxidants that are naturally present in the sample matrix, and which stabilize the induction time of the PEG. The induction time can therefore be directly related to the oxidation stability of the sample.

In addition, this method eliminates a costly sample preparation. A reproducible and accurate determination of the oxidation stability using the 892 Professional Rancimat can be realized. In this Application Notes the oxidation stability of body care cream, moisturizer, body milk, body lotion, and toothpaste is determined in this way. More information on the Rancimat method can be found on the [Metrohm website](#).

# Method description

## Sample

Body care cream  
Moisturizer  
Body milk  
Toothpaste  
Body lotion

## Sample preparation

No sample preparation is required.

## Configuration

892 Professional Rancimat	2.892.0010
Equipment for the determination of the temperature correction	6.5616.100
Measuring vessel cover with built-in conductometric measuring cell	6.0913.130

## Analysis

3.0 g ± 0.10 g polyethylene glycol and 1.0 g ± 0.10 g sample is weighed in the reaction vessel and the analysis is started.

## Parameters

Sample size	1.0 ± 0.10 g
Measuring solution	60 mL
Temperature	110 °C
Temperature correction	auto
Gas flow (air)	20.0 L/h
Conductivity	300 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) / %
Body care cream	1.51	0.06	3.8
Moisturizer	1.72	0.11	6.5
Body milk	1.62	0.09	5.3
Toothpaste	1.20	0.03	2.6
Body lotion	1.58	0.03	1.7