Title: Active Content

1. Normative References / Bibliography

Not identified.

2. Terms / Definitions

Active content: Effective part of the product.

3. Scope

Those parts of a product, which are not the effective parts of the product, are determined using other analytical methods and deducted from the 100%-content.
For NaCl containing products this has to be deducted as well.

4. Interferences

Not verified.

5. Reagents and Materials

Not identified.

6. Procedure

See methods of the adequate parameters.

7. Calculation

% Active content = 100 % - % H2O (- % NaCl)

8. Remarks

Not identified.

9. Changes

Replacing EA.45.04 and 04-06 (Goldschmidt.Rewo).

10. Enforcement

Step	**Org.-Unit / Site**	**Name**	**Date**	**Signature** *[on original copy only]*
Prepared by	B-CS P (QKL) / Essen	Käseborn	26.11.03	
Checked by	CS -STN- QKL, Steinau	Christ	26.11.03	
Approved by	B-CS P (QKL) / Essen	Käseborn	26.11.03	

Reviewed regarding validity *[on original copy only]*

Date	*Signature*	*Date*	*Signature*	*Date*	*Signature*

Title: Determination of Color Indices

1. Normative References / Bibliography

For Gardner Color: DGF C-IV-4c; DIN-ISO 4630; DIN EN 1557; DGK F 010
For Lovibond-Color: DGF C-IV 4b; DIN 53995; DGK F 020
For Hazen-Color: DIN-ISO 6271; DIN EN 1557; ASTM D 1209 - 84; DGK F 040
For Hess-Ives Color: DGK F 050

Device manual for service

2. Terms / Definitions

Not verified.

3. Scope

Measurement of the colors of clear liquids or melted masses.

For cloudy liquids only the Gardner color index following the Komperator method (GM_0140_02) can be applied.

4. Interferences

Following this method clouds and air bubbles can lead to mistakes.

5. Materials and Reagents

Measurement device : Lico 200 (Dr. Lange) **or comparable device**; eventually with printer (LD 200)

Cuvettes :
1 cm rectangle cuvettes; (e.g. Dr. Lange LYY 214)
11 mm round cuvettes; (e.g. Dr. Lange LYY 621); especially for products, which have to be heated
For very light-colored products (Hazen < 120 : 5 cm rectangular cuvettes); (e.g. Dr. Lange LZM 130)

6. Procedure

6.1. Calibration
A calibration has to be processed before starting any series of measurements with the particular type of cuvette.

6.2. Measurement

The measurement is allowed to be done only after proper calibration.

The photometer is adjusted following the manual in that way, that the color mentioned in the test plan to be tested is measured.

The following color indices are possible **among other things**: (detailed information see manual)

Gardner – Color Index
Iodine Color Index
Hazen – Color Index
Hess-Ives Color Index
Lovibond - Color Indices

For some products the transmission at a given wave length e.g. 440, 460, and 550 nm is documented as well. This is measured strictly with a 1 cm rectangular cuvette.

The product is filled in the particular cuvette, if necessary heated and then put in the device.

7. Calculation

The color indices are given directly in the required scale.

8. **Remarks**

Not verified.

9. Changes

Replacing edition EA.008.06 and Rewo 05-01; 05-02, and 05-03

10. Enforcement

Step	**Org.-Unit / Site**	**Name**	**Date**	**Signature** *[on original copy only]*
Prepared	B-CS P (QKL) / Essen	Käseborn	23.09.2002	X X X X X
Checked by	CS P; QKL / Steinau	Hr. Kirschner	23.09.02	X X X X X
Checked by	B-OS P (QKL) / Essen	Dr. Weibels	23.09.02	X X X X X
Approved by	B-CS P (QKL) / Essen	Käseborn	19.11.02	

Reviewed regarding validity *[on original copy only]*

Date	*Signature*	*Date*	*Signature*	*Date*	*Signature*

Title: Solids Content

1. Normative References /Bibliography
Not verified.

2. Terms / Definitions
The solids content by this method is defined as : 100 % - % water content

3. Scope
Not verified

4. Interferences
Not verified.

5. Materials and Reagents
Not verified.

6. Procedure
See methods for the individual parameters

7. Calculation
% Solids content = 100 % - % H2O

8. Remarks
Not verified.

9. Changes
New edition.

10. Enforcement

Step	**Org.-Unit / Site**	**Name**	**Date**	**Signature** *[on original copy only]*
Prepared by	B-CS P (QKL) / Essen	Käseborn	02.12.2002	X X X X X
Checked by	CS P; QKL / Steinau	Hr. Kirschner	11.12.2002	X X X X X
Approved by	B-CS P (QKL) / Essen	Käseborn	11.12.2002	

Reviewed regarding validity *[on original copy only]*

Date	*Signature*	*Date*	*Signature*	*Date*	*Signature*

Title: Potentiometric Determination of Chloride / Sodium Chloride Content

1. Normative References / Bibliography

DGF H-III 9

2. Terms / Definitions

Not identified.

3. Scope

The chloride / sodium chloride content of surfactants and the active content of methyl chloride quats determined by potentiometric titration with silver nitrate solution.

4. Interferences

Not verified.

5. Reagents and Materials

All reagents have to be, if not mentioned differently, for analysis.
Titroprocessor e.g. Modell 686 or Titrino 716 by Metrohm
Combined silver electrode e.g. Metrohm 6.0404.100
Analytical balance; Beakers; etc.
Silver nitrate solution 0.1 N (e.g. Fa. Kraft: 50263, Fa. Baker: 7096)
Nitric acid 5 N
Distilled water
Sodium chloride for analysis
Propanol – 2 for analysis

6. Procedure

An adequate sample weight (GM_0001_01) is dissolved in a beaker in distilled water (hard to dissolve quats are pre-dissolved in approx. 20 ml propanol – 2 with heating). Approx 10 ml nitric acid 5 N are added to create an acid level. Titrate potentiometrically with 0.1 N silver nitrate solution.

7. Calculation

$$\frac{V \times 0.355 \times F}{E} = \text{Chloride [\%]}$$

$$\frac{V \times 0.585 \times F}{E} = \text{Sodium chloride [\%]}$$

$$\frac{V \times MW \times F}{E \times 10} = \text{Active content [\%]}$$

V = Consumption 0.1 N silver nitrate solution (ml)
E = Sample weight (g)
F = Factor silver nitrate solution
MW = Molecular mass

8. Remarks

Titrator settings are to document in a laboratory specific work instruction.

9. Changes

Replacing analytical methods EA.044.01, 06-01, 04-11 (Goldschmidt Rewo) and JV-13A (Janesville)

10. Enforcement

Step	**Org.-Unit / Site**	**Name**	**Date**	**Signature** *[on original copy only]*
Prepared by	CS; QKL / Steinau	Kirschner	27.11.2002	
Checked by	B-CS P; QKL / Essen	Käseborn	28.11.2002	
Approved by	CS; QKL / Steinau	Kirschner	05.12.2002	

Reviewed regarding validity *[on original copy only]*

Date	*Signature*	*Date*	*Signature*	*Date*	*Signature*

Title: pH-Value (100%); as is

1. Normative References / Bibliography

According DIN EN 1262
DGF H – III 1
ISO 4316
Ph.Eur. 2.2.3

2. Terms / Definitions

The pH value is the negative decade logarithm of the hydrogen-ion concentration.

3. Scope

With this method the pH-value of a product can be measured.

4. Interferences

Not verified.

5. Reagents and Materials

pH-Measurement device with glass electrode
Beaker
Magnetic stirrer with heating plate

6. Procedure

The measurement has to be processed at room temperature between 20 – 25 °C.
The clean glass electrode is put into the sample. One minute after the measurement value has reached a constant level this value is red off.

7. Calculation

The pH-value is documented with one decimal place in SAP.

8. Remarks

Not applicable.

9. Changes

Replacing EA.006.08 and 02-01 Goldschmidt Rewo

10. Enforcement

Step	**Org.-Unit / Site**	**Name**	**Date**	**Signature** *[on original copy only]*
Prepared by	B-CS P (QKL) / Essen	Käseborn	07.12.02	X X X X X
Checked by	CS P; QKL / Steinau	Hr. Kirschner	11.12.02	X X X X X
Checked by	B-OS P (QKL) / Essen	Dr. Weibels	09.12.02	X X X X X
Approved by	B-CS P (QKL) / Essen	Käseborn	11.12.02	

Reviewed regarding validity *[on original copy only]*

Date	*Signature*	*Date*	*Signature*	*Date*	*Signature*

Title: Water Determination by Karl Fischer (Standard Method)

1. Normative References / Bibliography

Following DIN 51777, DGF E-III 10, and DGF C-III 13a

2. Terms / Definitions

The water content, expressed in percentage by weight, is the amount of water calculated by the following method considering the iodine consumption.
The sample is titrated with a solution containing sulphur dioxide and iodine in presence of methanol. Since sulphur dioxide and iodine react to equivalent amounts of sulphur trioxide and hydrogen-iodine only in presence of water, the water content can be calculated in percentage by weight by the iodine consumption.

1.1 Chemical Equation

$J_2 + SO_2 + H_2O = 2\ HJ + SO_3$

3. Scope

This method is used to determine the water content of fats, oils, polyethers, and surfactants.

4. Interferences

This method can be used for all products without contamination's which could lead to side reactions. Such contamination's are alkaline compounds and peroxides. By conversion with the reagent solution they deliver too high values.

5. Materials and Reagents

Unless otherwise noted, use analytical-reagent-grade quality material.
Karl Fischer reagent : Hydranal Composite 5, Riedel de Haen; 34805
The factor of KF-solution is determined by the laboratory specific testing agent supervision!
Methanol reagent grade; e.g. Baker ; 2045
Chloroform reagent grade; e.g. Baker;7386
Karl Fischer titration apparatus; (e.g. Metrohm; KF-Titrino 701 or 758)
Titration stand; Metrohm; 2.703.0010
Changing unit 20 ml with ceramic cock **(for water contents < 10 %)**
Changing unit 50 ml with ceramic cock (**for water contents > 10 %)**
Magnetic stirrer, 25mm; e.g. Metrohm: 6.1903.030
Double-Pt-electrode; Metrohm; 6.0338.100
Analytical balance; e.g. Sartorius AC210S
Drying pistol with activated molecular sieves ; Metrohm; 6.2811.000
The molecular sieves should be changed with every change of titration solution or monthly. The regeneration of the molecular sieves is processed in the drying-oven at 180 - 240°C for 48 hours.

6. Procedure

The sample is to homogenize by thoroughly stirring. For this solid fats are melted carefully, it should be taken care, that they are not heated higher than just necessary for melting.

Methanol or methanol / chloroform (1:1) are provided in a titration vessel (fill heigth 1/3 to ¼ of the vessel) and titrated with Composite 5. An adequate sample (GM_0001_01) is weight with an analytical balance directly or with a disposable syringe by difference weighing in the titration vessel. Titrate to the electrometric dead stop.

7. Calculation

$$\frac{V \times F}{10 \times E} = \text{Water content [\%]}$$

V = Consumption Composite 5 solution (ml)
F = Factor of Composite 5 solution
E = Sample weight (g)

8. Remarks

Solvents and instrument parameter are to document in a laboratory specific work instruction.

9. Changes

Replacing method EA.04.01 and 28-02 (Goldschmidt Rewo)

10. Enforcement

Step	**Org.-Unit / Site**	**Name**	**Date**	**Signature** *[on original copy only]*
Prepared by	CS; QKL / Steinau	Kirschner	28.03.2003	
Checked by	B-CS P; QKL / Essen	Käseborn	28.03.2003	
Checked by	S2 AL / Essen	Dr. Keune	28.03.2003	
Checked by	B-OS P SE / Essen	Hörnlein	28.03.2003	
Approved by	CS; QKL / Steinau	Kirschner	28.03.2003	

Reviewed regarding validity *[on original copy only]*

Date	*Signature*	*Date*	*Signature*	*Date*	*Signature*