

Title: Appearance

1. References / bibliography

Patterned acc. to DGF C-II 1

2. Definitions

Not documented

3. Scope

The appearance of a product is tested visually.
The test temperature and the appearance are described in the product specification.

4. Interferences

Not documented

5. Reagents and Materials

As test-vessel translucent and spotless beakers and sample bottles are applied.

6. Procedure

The appearance-test is performed at the required temperature and compared with the description of the product specification.

Conformity is noted with an „OK“.

Is there no conformity with the description of the product specification it is noted with a „NOT OK“ and described detailed (e.g.: opaque, turbid, turbid with a settle, test sample is separated, test sample contains particles etc.).

In the case of doubts standard samples of the production are applied as a reference. The age of this reference-sample is limited on max. 6 months.

7. Calculation

The result is noted on the analysis form.

8. Remarks

Not documented

9. Changes

The analytical method GM_0170_00_E_E substitutes the analytical methods 48-01, SM0008 and EA 051.01 of Goldschmidt and Goldschmidt Rewo.

10. Approvals

step	org.-unit / location	name	date	signature <i>[on the original only]</i>
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Title: Refraction Index

1. Normative References / Bibliography

Following DIN 51423 and DGF C-IV 5 and USP (831) Chemical Tests.

2. Terms / Definitions

The relative index of refraction n is the relation of the speed of the light in the air and in the material to investigate. He can be also defined as a relation of the sine of light angle of the incidence to the sine of the light angle of refraction when the light enters from the air into the material to investigate. The absolute index of refraction of a substance is referred to the empty space. He can be calculated from the relative value by multiplication with the factor 1.00027.

3. Scope

Some drops of a liquid product are brought on the measuring prism of the refractometer. Wait until measuring prism and product have the same temperature and read off the index.

4. Interference's

Not verified.

5. Materials and Reagents

1. Abbe-Refractometer

Water bath, controlled with thermostat

Light source: Sodium-spectral lamp, tungsten filament lamp, day light

2. PTR-Refractometer (e.g. Fa. Index Instruments Ltd.)

with build-in Peltier-element

6. Procedure

1. 1. The sample to investigate is applied on the clean measuring prism. The lighting prism is closed carefully. In the Abbe-Refractometer prism and sample are irradiated with the source of light. The temperature balance is carried out with the thermostat.

After one till two minutes the bright-darkness border is adjusted achromatically and sharply in the observation field on the crosshair of the refractometer. If the so adjusted scale value does not change anymore, this is red off.

2. At first the PTR-refractometer is adjusted at the temperature given in the test plan. When this is reached, some drops of the sample to investigate are applied on the prism and the lids are closed. If the value of the index of refraction on the display does not change anymore it is red off.

The prism and the lid of the refractometer are cleaned after every measurement with a suitable solvent (e.g., ethanol or water) and a soft cloth.

7. Calculation

The value red off is documented with 4 decimal places in SAP.

8. Remarks

Not verified.

9. Changes

additional reference in point 1.

10. Enforcement

Step	Org.-Unit / Site	Name	Date	Signature <i>[on original copy only]</i>
<i>Prepared by</i>	B-OS P SE / Essen	Hr. Götz	10.03.2005	X X X X X
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Title: Density Determination

1. Normative References / Bibliography

similar to DIN 51757 ; Ph. Eur: 2.2.5 and USP (841) Chemical Tests

2. Terms / Definitions

The density of a material is the quotient from masses and volume.

3. Scope

Determination of the density of liquid products

The determination can be carried out with three different procedures:

- a) with the flexible swing
- b) with the spindle (Aerometer)
- c) with the pycnometer

4. Interferences

Not verified.

5. Materials and Reagents

5.1. For determination with the flexible swing:

Density measuring instrument e.g. DMA 48, Fa. Anton Paar KG
One-way syringe 10 ml with Luer – Konus,
Abatement container e.g. beaker 600 ml,
Water p. a. Fa. Merck Art. 16754
Alcohol for cleaning

5.2. For determination with the spindle:

Spindle with density scale, calibrated at 20 °C
Plain cylinder
Thermometer

5.3. For determination with the pycnometer:

Pycnometer
Thermometer
Analytical balance

6. Procedure

6.1. For determination with the flexible swing:

To get valid measuring results, the density measuring instrument is to be calibrated basically.

The sample to be measured is brought by a plastic syringe free of air bubbles through the pour in device in the swing. Also in the syringe no air bubbles should be. The necessary volume amounts are approximately 0.7 ml. The filling process can be observed by the show glass with switched on lighting. The filling is finished when the liquid thread has transgressed the opposite recumbent thickening of the swing pipe. Leave the syringe in the pour in device. The lighting has to be switched off to hold the temperature on a constant level. After reaching the period duration stability (light beam expires) the value is indicated on the display.

After every measurement the measuring cell is to be cleaned carefully and to dry.
The drying is processed with the built-in air pump.

6.2. For determination with the spindle:

The product is tempered on 20 °C, filled in a plain cylinder free of bubbles and the spindle is dipped carefully. So that the spindle does not get stuck in the plain cylinder, move her in slow rotation and then read the scale, while looking levelly above the surface of the liquid.

6.3. For determination with the pyknometer:

The clean and well dehydrated pyknometer is weighed on the analytical balance with 1 mg accuracy (weight C), is filled with the sample carefully and free of bubbles, tempered on 20 °C, and weighed out (weight A). After thorough cleaning of the pyknometer it is filled with water, tempered on 20 °C, and weighed out (weight B).

7. Calculation

7.1. For determination with the flexible swing

The density can be read off directly at the device.

7.2. For determination with the spindle

Red off scale value = Density [g/ml]

7.3. For determination with the pyknometer

$$\frac{\text{Mass (m)}}{\text{Volume (V)}} = \text{Density [g/ml]}$$

m = Weight A - weight C

V = Weight B - weight C; with density of water at 20° = 1.00 g/ml dimension is ml!

8. Remarks

- 8.1. The information of the density following this method occurs with max. 4 decimal places.
8.2. To avoid the risk of glass break of the measuring cell of the flexible swing by improper filling in of the sample, the provided pour in device must be used always. Basically only syringes with Luer-Konus are to be used.

9. Changes

Adding some references in Point 1

10. Enforcement

Step	Org.-Unit / Site	Name	Date	Signature <i>[on original copy only]</i>
<i>Prepared by</i>	B-CS P (QKL) / Essen	Käseborn	10.03.05	X X X X X
<i>Checked by</i>	S2 AL / Essen	Fr. Dr. Keune	10.03.05	X X X X X
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<i>Checked by</i>	B-OS P (QKL) / Essen	Dr. Weibels	10.03.05	X X X X X
<i>Approved by</i>	B-CS P (QKL) / Essen	Käseborn	10.03.05	

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Date	Signature	Date	Signature	Date	Signature

Title: Gardner – Color Index (Komperator)

1. Normative References / Bibliography

DGF - C - IV - 4c; DIN ISO 4630

2. Terms / Definitions

The color index is defined as number of that color glass, which is most similar to the color of the sample.

3. Scope

The following method serves for the determination of products which can be measured as liquids. Small opacities are allowed to occur.

The color of the sample is compared in translucent light to standard stained glasses. The comparison series consists of 18 consecutively numbered stained glasses whose color depth increases with rising identity number.

4. Interferences

Not verified.

5. Materials and Reagents

Komperator with lightning and color panes with standard stained glasses according the Gardner series.

Lovibond 2000 (Fa. Tintometer) or comparable devices.

11 mm round cuvettes (e.g. Fa. Lange) or adequate rectangle 10 mm cuvettes

5. Procedure

Solid fats are investigated melted.

The sample to investigate is filled in an **adequate cuvette**. By comparison with the stained glasses in the translucent light that one is determined, which shows the highest conformity with the sample color.

6. Calculation

As Gardner – Color Index the number of the determined standard stained glass is documented. If the sample has a color depth deeper than the measurement range of the scale, the color index is noted as deeper than 18.

8. Remarks

Not verified.

9. Changes

Replacing EA. 08.02 and 05-01 (Goldschmidt Rewo)

10. Enforcement

Step	Org.-Unit / Site	Name	Date	Signature <i>[on original copy only]</i>
<i>Prepared by</i>	B-CS P (QKL) / Essen	Käseborn	10.11.03	X X X X X
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Reviewed regarding validity <i>[on original copy only]</i>				
Date	Signature	Date	Signature	Date

Title: Viscosity by Höppler**1. Normative References / Bibliography**

Following DIN 53015.

2. Terms / Definitions

Not verified.

3. Scope

Rolling and sliding movements of a ball in an inclined cylindrical tube, filled with the fluid to investigate.

This method is valid for measurements of the dynamic viscosity of Newton fluids.

4. Interferences

Not verified.

5. Materials and Reagents

Falling-ball viscosimeter according to DIN 53015

Ball set according to DIN 53015

Cleaning brush

Cleaning flask

Thermostat

Stop watch

6. Procedure

All parts coming in touch with the fluid to investigate have to be clean and dry. Therefore the parts have to be cleaned with an appropriate solvent mixture (e.g. toluene/ethanol tech.).

Use the cleaning brush and the cleaning flask to clean the down pipe.

Align the apparatus using the built-in level.

The fluid to investigate is filled in the measuring pipe, then the measuring ball is put in. After put the closing cap on the measuring pipe it is closed using the coupling nut. The fluid has to be free of bubbles and has to be hold at the in the test plan required temperature for minimum 15 minutes.

Before starting a test series the ball has to run once through the liquid, to guarantee a good stirring. After that start the measurement. The time is measured, the ball needs to run through the measuring distance restricted by two ring brands. The mean falling time is calculated by at least three single measurements.

7. Calculation

Calculate the dynamic viscosity η in millipascalseconds (mPas) with the following equation:

$$\eta = K * (\rho_K - \rho_F) * t$$

With:

η = Dynamic viscosity in mPas

K = Ball constant

ρ_K = Ball density

ρ_F = Fluid density

t = Ball falling time

If the kinematic viscosity ν is mentioned in $\text{mm}^2 * \text{s}^{-1}$, the dynamic viscosity is divided by the fluid density.

$$\nu = \frac{\eta}{\rho_F}$$

8. Remarks

If the test plan does not mention a measure temperature, this is given by the customer. In this case the determination has to be processed minimum five times.

9. Changes

New edition.

10. Enforcement

Step	Org.-Unit / Site	Name	Date	Signature [on original copy only]
Prepared by	B-OS P SE / Essen	Hörnlein	17.10.2002	X X X X X
Checked by	B-OS P SE / Essen	Dr. Weibels	17.10.2002	X X X X X
Checked by	B-CS P /Essen	Käseborn	23.10.2002	X X X X X
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Approved by	B - OS P SE / Essen	Dr. Weibels	17.10.2002	

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