

ANALYTIC PROCEDURES

While checking on whether the quality of the individual product batch conforms with the parameters declared, the following three characteristics are being assessed.

They are:

1. the content of involatile fractions (the content of solid matter, dry substance),
2. the consistency (viscosity)
3. the density

However, there are different procedures to determine these parameters and they may not provide identical final results. This is why we, hereby, give you the ones we have been using in our laboratory. To check on the quality of our products we naturally utilize other methods too, yet we consider them to be our internal affair only.

At the request of our customer we then issue a document "The Certificate of Quality" for each batch in which we specify the values reached.

1. Measurement of involatile fraction content

The fundamental standard to determine this parameter is ČSN EN ISO 3251 – Paint materials and plastics – determining the content of involatile fractions. This standard is a Czech language version of the EN ISO 3251:2003 standard.

Note: For some practical reasons we opt to make slight deviations from the standard.

Procedure:

1. Three cleaned and dry dishes to be weighed with a maximum possible accuracy.
2. Using a dropper or otherwise, $1 \pm 0,1$ g of the sample is brought onto each dish to be spread evenly over the dish bottom and weighed with a maximum possible accuracy.
3. The dishes are then let to stand as they are at the ambient temperature for the period of 10 minutes.
4. The samples to be put into a drier which has been tempered to the prescribed temperature (see the table below).
5. The dishes to spend the prescribed period of time in the drier (see the table below).
6. The prescribed period having elapsed, the dishes to be removed from the drier.
7. The dishes are then weighed with a maximum possible accuracy.

The content of involatile fractions to be calculated according to the following formula:

$$NV = (m_2 - m_0) / (m_1 - m_0) \times 100$$

where NV is the percentage content of involatile fractions

m_0 is the weight of the empty dish in grams

m_1 is the weight of the dish with the test sample in grams

m_2 is the weight of the dish with the remainder in grams.

Prescribed values for individual lacquers

LACQUER	TEMPERATURE	TEMPERING TIME
PRIMER VIKTOR 400, 442	80°C	1 hour
ALL THE OTHER LACQUERS	105°C	1 hour

The value measured is given in weight percentage with the accuracy of 0,1%.

2. Determining the consistency (viscosity) of lacquers by finding out the discharge period through outflow crucibles

The procedure is based on the ČSN EN ISO 2431 standard – Paint materials – determining the discharge period through outflow crucibles. This standard is a Czech language version of the EN ISO 2431:1996 standard.

Note: For some practical reasons we opt to make slight deviations from the standard. Primarily, the outflow crucible does not altogether conform with the standard; the outflow nozzle is different length. The standard demands the length to be 20 mm. Our company utilizes one which has 4 mm in length and 4 mm in diameter. The aim here is to reach compatibility with the measurement procedures in our customers. As far as we know, they all use crucibles with the \varnothing 4mm x 4mm nozzle.

The measurement temperature: $20 \pm 2^\circ\text{C}$.

Procedure:

1. Both the sample and the crucible to be tempered to the temperature of $20 \pm 2^\circ\text{C}$. The temperature reached to be checked by measuring the sample.
2. The crucible to be clamped in the frame and filled with the lacquer in such a way as to eliminate creation and content of bubbles. The nozzle shall be plugged up with a finger.
3. The meniscus which has developed to be wiped off with a spatula into the groove.
4. An appropriate vessel to be placed under the crucible and the finger goes out of the nozzle. At the same moment the stop watch is started.
5. A flow of the lacquer out of the crucible is observed and the stop watch to be stopped once the flow has been discontinued for the first time.
6. The time measured to be rounded off to the whole seconds.

Note: The consistency of some lacquers may be partly altered in the course of time. This is why there may be deviations from the values declared in the Certificate of Quality. The resulting value is given in seconds at the temperature of $20 \pm 2^\circ\text{C}$.

The value measured is given with the accuracy of the whole seconds.

3. Determining the density of lacquers through the pycnometric method

The procedure is based on the ČSN EN ISO 2811-1 standard – Paint materials – determining the density – Pycnometric method. This standard is a Czech language version of the EN ISO 2411-1:2001 standard. We apply a Gay-Lussac 25 or 50 ml pycnometer.

Procedure:

1. Both the sample and the pycnometer to be tempered to the temperature of $20 \pm 0,5^{\circ}\text{C}$. The pycnometer to be weighed with a maximum possible accuracy using an analytical balance.
2. The pycnometer to be filled with a lacquer sample in such a way as to eliminate creation and content of bubbles.
3. The pycnometer is carefully sealed so that the ground joint is fully fitting. The lacquer which has outflowed from the pycnometer to be thoroughly cleaned with a solvent.
4. The pycnometer that contains the tested lacquer to be weighed with a maximum possible accuracy.

The lacquer's density ρ expressed in grams per milliliter at the test temperature of $20 \pm 0,5^{\circ}\text{C}$ shall be calculated according to the following equation.

$$\rho = (m_2 - m_1) / V_t$$

where ρ - density expressed in grams per milliliter
 m_1 - weight of empty pycnometer in grams
 m_2 - weight of pycnometer with the test sample at $20 \pm 0,5^{\circ}\text{C}$ in grams
 V_t - volume of the pycnometer in milliliters at $20 \pm 0,5^{\circ}\text{C}$.

The value measured is given with the accuracy of 0,01 grams per milliliter.