

Capillary viscometry

FAQ – Frequently Asked Questions

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Systematic measurement error: flow time too large with short flow times

Error causes:

after-flow error, Hagenbach correction too small

Possible error elimination:

experimental determination of the Hagenbach correction using substances having a similar viscosity and a surface tension as the measurement product

Systematic measurement error: flow time too small with short flow times

Error causes:

after-flow error, Hagenbach correction too large

Possible error elimination:

experimental determination of the Hagenbach correction using substances having a similar viscosity and a surface tension as the measurement product; better: Viscometer with a smaller capillary diameter

Systematic measurement error: flow time too small (with Ostwald, CANNON-FENSKE or BS/IPRF U-Tube Reverse Flow Viscometer)

Error causes:

substance quantity filled in was too small

Possible error elimination:

empty, clean and refill viscometer

Systematic measurement error: flow time too small (with Ostwald, CANNON-FENSKE or BS/IPRF U-Tube Reverse Flow Viscometer)

Error causes:

substance quantity filled in was too small

Possible error elimination:

empty, clean and refill viscometer

Systematic measurement error: flow time too small with short flow times (UBBELOHDE Viscometer)

Error causes:

disturbance of the suspended level

Possible error elimination:

select viscometer with a smaller capillary diameter

Systematic measurement error: flow time too small

Error causes:

temperature of the bath liquid too high

Possible error elimination:

check temperature; if necessary, readjust thermostat

Systematic measurement error: flow time too large

Error causes:

contamination in the capillaries

Possible error elimination:

empty and clean viscometer, repeat measurement

Error causes:

temperature of the bath liquid too low

Possible error elimination:

check temperature, if necessary, readjust thermostat

Drift of the flow times

Error causes:

drift of the bath temperature

Possible error elimination:

protect the thermostat from direct radiation exposure, if necessary, replace thermostat

Error causes:

temperature-adjustment of the measurement substance not completed

Possible error elimination:

continue temperature adjustment until the time values are stable

Error causes:

evaporation of a highly volatile component; reaction of the product being analysed with the air

Possible error elimination:

apply pressing operating mode

Increased stochastic scattering of the measurement values

Error causes:

contamination in the viscometer

Possible error elimination:

empty and clean viscometer; repeat measurement

Error causes:

contamination in the product being analysed

Possible error elimination:

empty and clean viscometer; repeat the measurement with a filtered sample; if necessary, use a filter with a smaller pore width

Error causes:

air bubbles in the viscometer

Possible error elimination:

in the case of pure matters with chemical and physical heat resistance, drive out bubbles by a shorter time increase of temperature clean and empty viscometer; during refilling, ensure absence of bubbles

Excessive stochastic scattering occurring during automatic measurements using optoelectric barriers (possibility of total malfunction)

Error causes:

contamination of the optical sensors

Possible error elimination:

remove the viscometer tripod from the thermostat bath; clean optical system using non-denatured alcohol on a soft cloth

Error causes:

errors triggered by the optoelectric barriers as a result of the formation of bubbles, foam, or liquid lamellae

Possible error elimination:

use a TC-UBBELOHDE, OSTWALD, or CANNON-FENSKE Routine Viscometer

Excessive stochastic scattering occurring during automatic measurements using TC Viscometer (possibility of total malfunction)

Error causes:

Incrustation of the sensors (in the case of thermally instable media)

Possible error elimination:

transparent media: use optical flow-time measurement opaque media: use Reverse Flow Viscometer

Error causes:

wear and tear of the sensors

Possible error elimination:

replace viscometer

Increased stochastic scattering in the case of short flow times (UBBELOHDE Viscometers)

Error causes:

beginning deformation of the suspended level

Possible error elimination:

select a viscometer with a smaller capillary diameter

Periodically fluctuating flow times

Error causes:

heating-up or cooling-down phases of the thermostats too long

Possible error elimination:

set the heating and cooling of the thermostat in such a manner that at least two complete temperature cycles are completed during one viscosity measurement cycle

Error causes:

no timely stability of the bath-liquid temperature (defective thermostat)

Possible error elimination:

replace the thermostat

Malfunction caused by air bubbles during the sucking-in process of the liquid into the delivery vessel

Error causes:

substance quantity filled in was too small

Possible error elimination:

UBBELOHDE Viscometer: fill up the measurement substance; others: empty and clean viscometer; repeat measurement