

VEREIN FÜR BEWEGUNGSFORSCHUNG e.V. INSTITUT FÜR STRÖMUNGSWISSENSCHAFTEN

HERRISCHRIED IM SÜDSCHWARZWALD

CONDITIONS FOR ANALYSIS OF WATER SAMPLES USING THE DROP PICTURE METHOD

2021

Introduction

Methodology; Quality related Statements

The drop picture method is a diagnostic tool for supplementary water analysis using flow physics. Its images reveal the water's response to the complex systemic interaction of its inner factors and components.

In this method falling drops of distilled water excite motion in a thin horizontal layer of the water sample mixed with 13 per cent pure glycerine, under standardized conditions. The flow patterns that arise through instabilities are made visible and documented. The formative potential revealed in the flowing water is regarded as a quality aspect in its own right.

The reference for comparison and assessment is pure natural groundwater (specified as the standard for good, fresh drinking water in DIN 2000). Such water demonstrates optimum formative potential in its flows, by a particular intensity and diversity of formative processes; this is interpreted as an expression of its spring freshness and liveliness. The development, shape and arrangement of the shapes of the flows in the drop picture tells us to which extent the water sample is comparable with a pure, natural, untainted groundwater in terms of the formative potential of its flows.

A list of specialist literature on the drop picture method and drop picture research is included below, and further details can be found at www.stroemungsinstitut.de.

Limits of the Method

The drop picture method says nothing about the presence or concentration of individual substances in the water. It does not apply the criteria of purity on which the chemical and bacteriological quality standards for drinking water are based, which must instead be determined separately using the tried and tested analytical methods. We also conduct analytical and biological tests on request. Please contact us for further information. The drop picture method cannot substitute purity analyses, but offers a holistic complement, examining the formative potential of the flow as an aspect of spring freshness.

We recommend that the purity and potability of the drinking water be determined by us or a competent local laboratory before it is investigated by the drop picture method.

Orders and Lab Dates

The Institute of Flow Sciences is a non-profit research institute, not a commercial provider of product testing services. We are pleased to conduct analyses and provide consultation.

In order to schedule our laboratory capacities to ensure that water samples are analysed in the freshest possible condition we require firmly agreed schedules. We conduct drop picture investigations only after an order complying with these Conditions for Analysis has been made in writing, dates agreed and an advance payment received. We do not investigate water samples received without prior notice.

The agreed dates are binding for both parties. On the agreed lab dates extensive preparatory work is conducted in the laboratory even before the water samples have arrived. If scheduled water samples have not arrived by the agreed date and were not cancelled by the Friday of the preceding week the Institute of Flow Sciences is relieved from the obligation and the advance payment expires. If the analysis is reconsidered new dates must be arranged and new samples should be taken.

Sampling and Containers

Type and timing of the samples and analyses must be agreed in advance. We provide the client with the required bottles complying with our laboratory standards, without which we cannot ensure comparability with other water samples. If, against our advice, the client insists on supplying samples in other bottles he or she is responsible for all resulting consequences including restricted applicability of the results. Please follow our Instructions for Taking and Sending Water Samples. The bottles and the accompanying delivery notes must be labelled according to those instructions.

If the samples are to be treated specially in terms of packaging, storage, handling, etc. this must be stated in the order.

We conduct the investigations with the utmost of care, but without guarantee. We cannot be held responsible for deficiencies or damage caused by unsuitable filling and packaging, contamination of samples or improper transport.

Declaration of Purity of Samples

The client must confirm that the samples are equivalent to pure drinking water in hygienic and toxicological terms. Any deviations must be stated in the order, independent of whether the water samples are coded. The client is liable for any direct or indirect expenses or damages that may be suffered by us or our staff through handling undeclared substances or samples with incorrect declarations. We reserve the right to refuse to conduct an investigation where we have hygienic or toxicological misgivings or doubts about whether the sample is of drinking water quality.

Prices

The price for a drop picture study of a water sample of drinking water quality delivered to our institute is currently **€480.00 plus VAT**, including provision of sample bottles, a short consultation and the lab report.

For additional services we charge the labour and material costs involved, which can vary greatly depending on the type of work involved, especially if meetings, travel, investigations, extra work or time-consuming cleaning and verification are required. In such cases we recommend first asking for an estimate. We charge additional time at an hourly rate of €65.00. Our prices are cost prices, to which statutory VAT must be added. We have to charge VAT even on orders from abroad because our services are not classified as merchandise export.

Terms of Payment

The client agrees to pay an advance of 30 per cent of the order volume on receipt of our confirmation of order. If the order is cancelled not less than two weeks before the agreed lab date the advance will be returned.

The remainder is due on receipt of our invoice. Payment is due within 14 days or 30 days as invoiced. Payments from abroad must be free of charges. We reserve the right to withhold the lab report until payment has been received.

Results

We supply a written lab report with the findings, photographs and an assessment of the samples (coded samples are assessed and analysed comparatively). The lab report is prepared within four weeks of the analysis. Statements in the report are made to the best of our knowledge and belief, and are in line with the latest research. They relate only to the received samples and allow no general conclusions. Water supplies are subject to fluctuations in quality depending on the time of sampling, so no conclusions about the long-term quality of the water or its origins can be drawn from the results of our investigations of samples. A generalization can only be made after investigation of a representative number of samples. More information on the possibilities and limits of the drop picture method can be found in the introduction above. Decoding of coded water samples is made known to us by the client after receipt of the lab report.

Copyright

The text and photographs in the lab report are for the client's personal use. The Institute of Flow Sciences retains the copyright of the report and photographs. Publication or use in commercial advertising of results and photographs requires a separate written agreement specifying the scope, content and duration of the right of utilization and the payment due.

If our copyright is breached we are entitled to demand cessation and damages. We may charge three times the fee for the investigation to cover damages without affecting any larger claim for damages or other legal claim.

The Institute of Flow Sciences is entitled to use the results as anonymous examples in scientific publications unless otherwise stated in the confirmation of order. Third parties will not be given access to the lab report.

Storage and Return of Samples

Water samples and packaging will only be returned to the client if this is specifically requested and the costs are covered. They will be kept for one month after completion of the lab report.

Applicability and Jurisdiction

These Conditions for Analysis are part of the contract for every investigation. Any deviations or additions must be stated in writing when the order is made, and confirmed by us.

The law of the Federal Republic of Germany shall apply exclusively. The place of jurisdiction for disputes arising from this contract is Bad Säckingen.

Earlier versions of these Conditions for Analysis lose their validity upon publication of this version.

Specialist Publications on the Drop Picture Method (selection, more at www.stroemungsinstitut.de):

WILKENS, Andreas, Michael JACOBI and Wolfram SCHWENK. *Die Versuchstechnik der Tropfbildmethode—Dokumentation und Anleitung*. Sensibles Wasser 5. Approx. 400 pages with approx. 100 diagrams and approx. 400 photographs. Herrischried, 2000; ISBN 3-931719-04-9.

———. *Wasser verstehen lernen*. Exhibition catalogue, Sensibles Wasser special issue 1995 (German), 64 pages, Herrischried, 1995; ISBN 3-931719-05-7.

———. *Understanding Water. Developments from the Work of Theodor Schwenk*. Revised edition of the Exhibition Catalogue, Sensibles Wasser special issue 1995 (English), with about 300 photos and drawings and introductory texts. 112 pages, Floris Books, Edinburgh 2005, ISBN 0-86315-540-5

SCHWENK, Wolfram, ed. *Schritte zur positiven Charakterisierung des Wassers als Lebensvermittler: Ausgewählte Texte aus 40 Jahren Wasserforschung mit der Tropfbildmethode*. Sensibles Wasser 6. 192 pages, bibliography. Herrischried, 2001; ISBN 3-931719-06-5.

———. *The Mobility of Water as an Aspect of Quality and its Visualization by Means of the Drop Picture Method*. KOZISEK F. (Ed.): *Living Water 95*, p. 85-95 & 21-27. Prague 1995, ISBN 80-20-01062-0

———. *Water as an Open System*. Herbert DREISEITL et al.(Eds): *Waterscapes, Planning, Building and Designing with Water*, p.106-107. Basel & Boston 2001 ISBN 3-7643-6410-6

VOIGT, Beatrice, ed. *Wasser: Schatz der Zukunft*. Munich, 2004; ISBN 3-936581-51-7. Includes:

SCHWENK, Wolfram. "Tropfbildmethode." (pp. 142–5);

HITSCH, Eckart "Vergleichende Untersuchung zu inneren und äußeren Einflüssen auf Eigenschaften des Wassers: Ein Untersuchungsbericht." (pp. 46–52);

VOIGT, Beatrice and Hartmut SCHENKLUHN. "Vergleichende Untersuchung zu inneren und äußeren Einflüssen auf Eigenschaften des Wassers: Konzeption und Ergebnisse." (pp. 38–45).

INSTRUCTIONS FOR TAKING AND SENDING WATER SAMPLES FOR INVESTIGATION BY THE DROP PICTURE METHOD

In the interests of reliable sampling, please follow these instructions to the letter.

- 1 Only use the bottles we provide for taking samples. We do not investigate water samples provided in other bottles.
Wash your hands thoroughly before taking samples, making sure to wash off all residues of soap.
Keep the bottle closed until immediately before it is to be filled. Do not touch the opening, the thread or the inside of the lid with your fingers.
- 2 Preparation for sampling: With tap water, open the tap and allow the water to flow at medium strength for at least five minutes until its temperature is steady and cool; with springs dip the bottle into the most calmly flowing area with the opening pointing into the flow. Do not use any other vessel (scoop, ladle, etc.) to draw the water and do not allow the water to pass over your fingers or other objects as it flows into the bottle.
- 3 Rinse the bottle by filling it 1/4 to 1/2 with sample water, shutting the screw top and shaking well. Open the bottle, empty it and repeat the procedure.
- 4 Now fill the bottle with the water sample: Allow the water to flow in as gently as possible without bubbling. Fill the container without bubbles to approx. 1 cm below the lip and close it tightly.
- 5 Marking of samples: Number the bottles and note the exact designation of the sample and the place, time and date of sampling on the delivery note using a waterproof pencil or pen. Send us the delivery note together with the samples.
- 6 Forwarding: Keep the filled bottles upright in a dark and cool place. Do not chill. Post immediately. Put the bottles in a waterproof bag to protect the paper packaging if there is a leak. Put the bag in an adequately padded envelope or box and send it to us, marking the address label "water sample." Within Germany send the bottles as a letter or small packet, and remember that the post may take several days.
When sending samples from abroad please use a courier or express service and mark the customs declaration: "Water samples for analysis."