GROUNDWATER SAMPLING CONSUMABLES
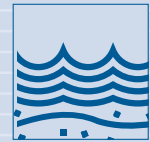
Filtration

The filtration of groundwater immediately in the field is necessary to allow for analysis, later in the laboratory, for, for instance heavy metals. If, for example, you have a sample containing groundwater with soil particles then there is a very high risk that, if the sample is analysed (as water), very high concentrations of heavy metals are recorded. This is caused by the fact that lutum and humus particles hold relatively high concentrations of these substances. During in-line filtration, floating particles (0.45 micron) are removed from the groundwater. There are two types of filters: a filter holder with exchangeable membranes and disposable filters.

12.31   Filter holder for in-line filtration

The filter apparatus, suitable for field and laboratory, has a net filtration area of 130 cm^2. The medium to be filtered only has contact with the chemically inert teflon. The rest of the apparatus consist of stainless steel. If the proper filter membrane is used, very agressive fluids and gasses can also be filtered.

The filter apparatus can be connected in-line to a peristaltic pump, nitrogen powered gas-lift pump or a bladder pump. Also vacuum filtrations are possible; any vacuum pump can be used to that purpose.

Advantages

❒ Simple but adequate construction; can be decontaminated very fast.

❒ Contamination of the filtrate by internal leakages is impossible.

❒ Because of the presence of a deaeration valve the apparatus can be assembled wet.

❒ The contaminated 'wet' parts can be exchanged quickly with prepared clean filter units. This makes cleaning in the field unnecessary.

❒ Use of a pre-filter is possible.

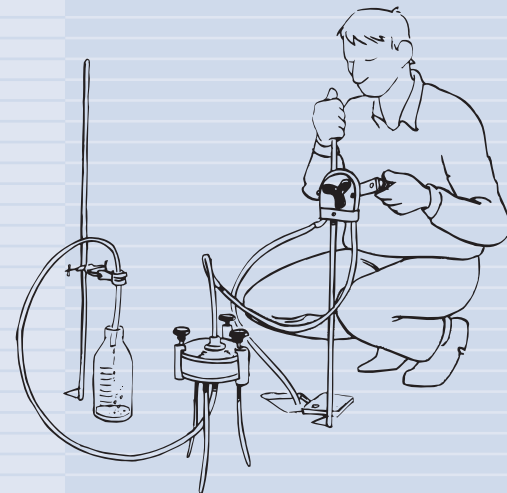❒ Fast operating tube connection for a tube with an external diameter of 8 mm.

During sampling the groundwater is filtrated in-line under anaerobe conditions.

For every next filtration the filter unit needs to be cleaned and a new filter membrane needs to be put in place.

Filterholder for in-line filtration

Filterholder demounted

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