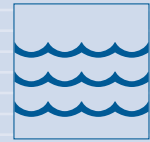


# GROUNDWATER SAMPLING CONSUMABLES



**P2.53**  
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## 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<sup>2</sup>. 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

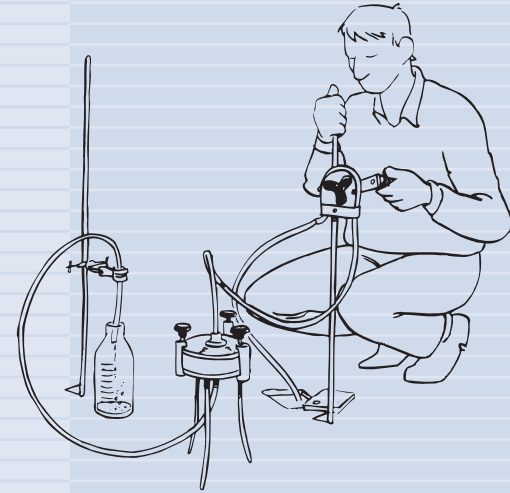
membrane is used, very aggressive fluids and gasses can also be filtered.

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.

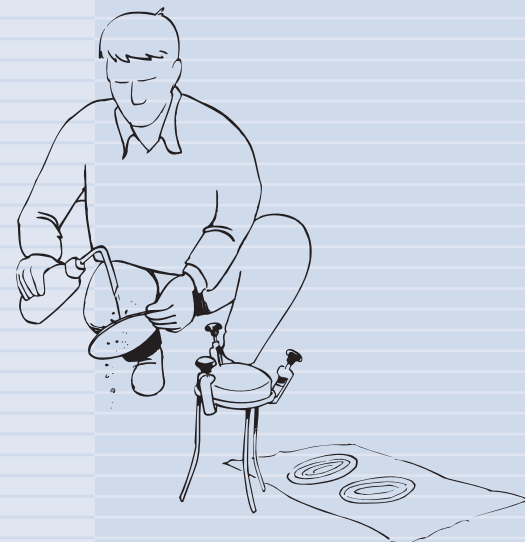
## Advantages

- ❑ 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

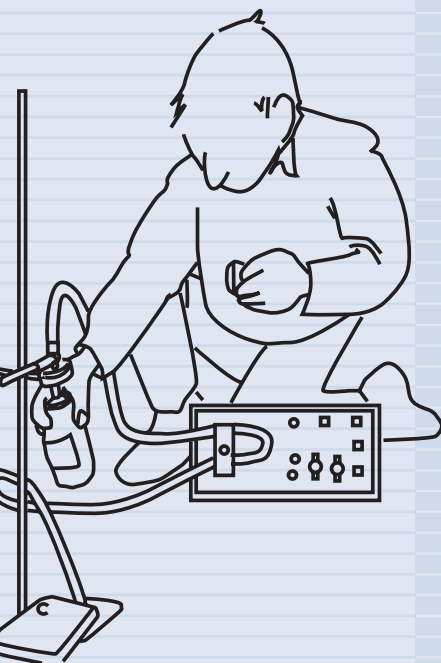


## P2.53 Parts List

The water sampling tube is pressed  
to the disposable filter.



Using the peristaltic pump 12 Vdc and  
disposable filter the water sample  
is filtrated immediately in the field.



# GROUNDWATER SAMPLING



## 12.30 Disposable filters for in-line filtration

Four disposable filters for the filtration of groundwater are available: two with a limited, one with a medium and one with an extensive capacity.

The small filter (art. no.:12.30.01) has an effective filtration area of 20 cm<sup>2</sup> and is suitable for the filtration of a limited quantity of groundwater with not too many fine particles.

The second small filter (art. no.: 12.30.15) differs from the pre-mentioned because of its pore size of 0.20 micron.

The medium filter (art. no.: 12.30.10) has an effective filtration area of 300 cm<sup>2</sup> and universal hose barb connections.

The larger filter (art. no.:12.30.05) has an effective filtration area of 700 cm<sup>2</sup> (35 x the capacity of the smallest filter). Because of this large capacity it will not be necessary to exchange blocked filters.

It also allows for quick filtration.

All filters have a pore size of 0.45 micron, a maximum working pressure of 4310 hPa and a maximum momentary pressure of 6865 hPa.

The smallest filter is also available with a pore size of 20 cm<sup>2</sup>.

A tube with an internal diameter of 6-12 mm can be shoved on the inlet and outlet (large filter only 10 mm internal diameter).

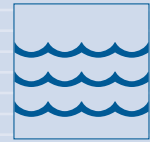
The highest efficiency is reached if a filter is connected to the pressure-side of a peristaltic pump, adjusted to a low speed.

All filters are available in cost effective bulk packages.



Disposable filters for in-line filtration

# GROUNDWATER SAMPLING CONSUMABLES



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## Advantages

- ❑ Efficient: decontamination and exchanging of a filter membrane are not necessary.
- ❑ Reliability: every filter has been tested for quality.
- ❑ Simple to apply: by single-use the risk of cross-contamination is eliminated.
- ❑ For filter holder and membrane very high grade inert materials have been used.
- ❑ High yield: filter membranes with a very high porosity.

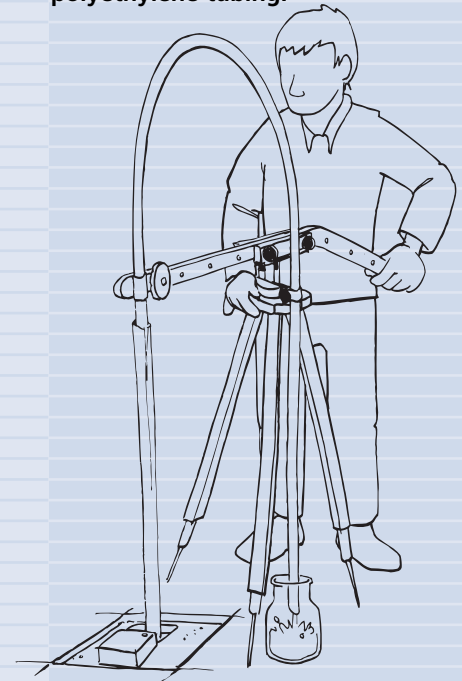
establishing the degree of discharge of toxicological substances to water.

Polyethylene tube is most commonly used as a transport tube for groundwater samples. To avoid cross contamination to other wells the tube is used only once. The tube meets the physical-chemical requirements as laid down in the DIN 8072 standard and the ETU-hallmark.

Furthermore there are teflon (fully inert) tubes available as transport tubes in various diameters.

A silicon rubber tube (in various diameters) is applied as pumping tube in combination with the peristaltic pump (manual or electrical). Here too, the tube is replaced before every sampling to avoid cross-contamination. The tube meets the requirements as set by the pharmaceutical- and food industry and the ETU-hallmark.

**Water is sampled using a hand operated foot valve pump with polyethylene tubing.**



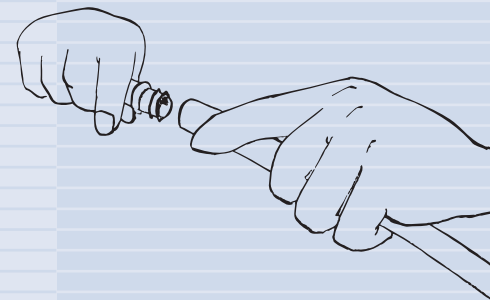
## Tubes and flasks

### 12.20 Tubes and accessories

Depending on the application, various tubes are available for groundwater sampling. The tubes vary in diameter, length, type of material and package. Polyethylene and silicon rubber tubes are tested within the ETU-hallmark.

During this test the products are subjected to a strict, selective leaching procedure for

**Mounting a ball valve in a polyethylene tubing.**



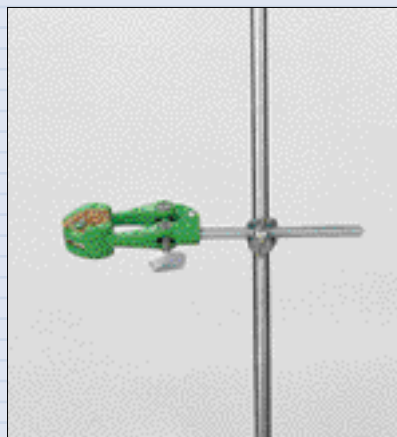
Various tubes



Tube dispenser



ETU-hallmark



Third hand to hold sample flasks



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## GROUNDWATER SAMPLING CONSUMABLES

To prevent that during unrolling the tube gets in a knot, it is recommended to apply a tube dispenser. The tube dispenser is suitable for tubes in various diameters.

To avoid that tube endings are contaminated by touching the soil (or slide from the sampler flask) the so called 'third hand' can be applied. It can also be used to clamp 0.45 micron groundwater filters.

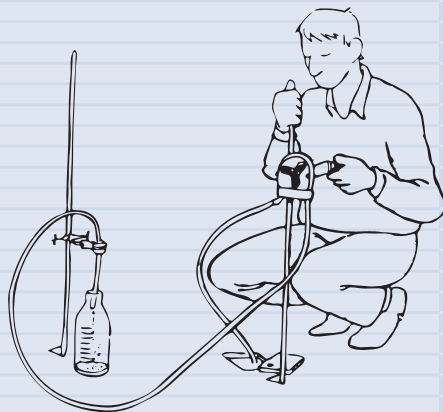
### 99.08 Sample flasks

During the procedure of taking soil, sediment or water samples these samples can be stored in glass sample flasks (depending on the purpose and the required quantity of the sample). For purposes of storage and transport of all kinds of samples to the laboratory, flasks and vessels can be delivered of various material and sizes.

**Without getting in a knot the tube is led directly from the dispenser into the monitoring well.**



**Using the 'third hand' the tube is held over the flask.**



Sample flasks and aluminium sample boxes