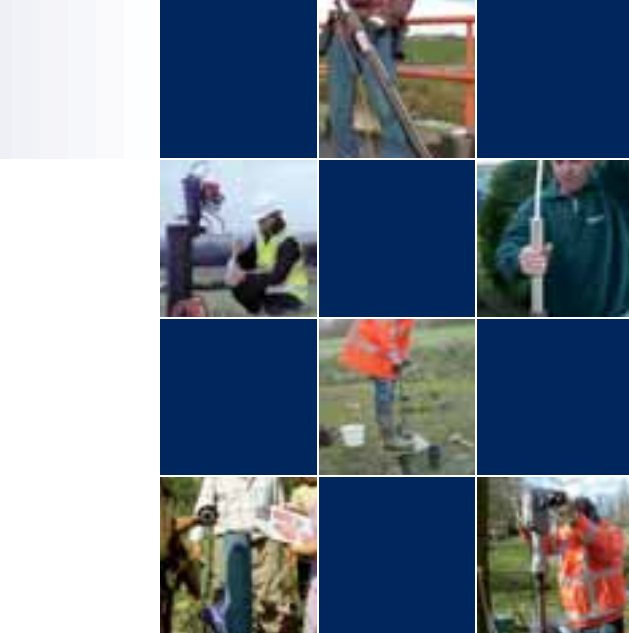


Basic equipment for General Environmental Soil Research

from Eijkelkamp Agrisearch Equipment



All it takes for
environmental research





Knowledge of the quality of the soil, the groundwater and the beds of lakes and watercourses is of importance, and should not be underestimated, for the value of real estate, liability and risks of environmental pollution. The objective of general environmental soil research is to gain insight into the environmental hygiene quality of the soil and to map out any contamination it contains.

Based on the results of the research and the intended use of the land, a decision can be taken on whether or not to remediate. Environmental research is indispensable to arrive at a good qualitative and/or quantitative assessment with respect to the soil quality, the quality of (ground)water and the beds of lakes and watercourses.

This brochure is split into four categories, being Soil, Water, Beds of lakes and Watercourses and Other. In every group you will find all basic requirements for carrying out research into the category concerned. Pages 9, 10 and 11 give a summary of all of the products mentioned in this brochure, complete with product numbers. You can also find three sets that we have put together for you so that you can choose a complete basic set of equipment for environmental research. Dependent on the type of monitoring well that you want to use (HDPE, PVC or quality monitoring wells), you can make your choice from the three sets.

Eijkelpamp Agrisearch Equipment's wide product range (consisting of more than 2,500 products) provides you with the opportunity to purchase all of the equipment you require from a single supplier. The quality of all of our products is constant and is guaranteed by the ISO 9001, ETU and KIWA hallmarks.

Soil

■ Soil sampling (and installation of monitoring wells)

01.12.SA Hand-operated bailer boring auger set for heterogeneous soils

The set is extremely suitable - in addition to exploratory trial borings and soil sampling - for installing monitoring wells for determining groundwater levels and for taking groundwater samples. The bailer boring auger set can be used in soils that are not too stony and can operate both above and below groundwater level. The pipes are very strong and made of very durable and light-weight material. All augers are unpainted to allow them to be used for environmental research. Standard version for borings to a depth of 7 m. (A steel lifting jack and lever with chain (for pulling casings out of the ground) are not included in the set and must be purchased separately).

04.16 Soil coring kit for soil containing volatile components

Using this special kit, the evaporation and oxidation of volatile components in soil samples (such as benzene, toluene, xylene and chlorinated hydrocarbons) is prevented as much as possible. The samples are taken using a small core sampler that has thin-walled, stainless steel, sample tubes. The sample tubes are preferably pressed into the soil. After the sample has been taken, the sample tubes can be sealed and cooled for transport to the laboratory. Using this set, samples can be taken to a depth of approximately 5 m.

04.01.SB Single gouge auger set

Standard set for sampling in hard soils to a depth of 1 m. The set contains a heavy-duty core sampler that can cut through brick and doesn't break on stone. The set also includes a robust impact absorbing hammer and accessories all in a carrying bag.

■ Soil analysis

08.04.03 Sand ruler with 10 fractions

This sand ruler made of transparent material containing standard samples of particles is an excellent tool to obtain the first indications of the particle size distribution. A representative part of the sample to be analysed is rubbed dry with the fingers in the palm of the other hand. The sample is then placed in the hollow part in the middle of the disc of the ruler. The average particle size is assessed by comparing it to the example samples in the ruler.

08.11.01 Soil colour book

The soil colour is determined by comparing the sample colour with the internationally standardised series of colours (in accordance with Munsell). The Japanese version (in English) of the soil colour book contains 12 charts and in total 389 colour chips.

08.05.04 Hand sieve set

This set is used, in the laboratory as well as in the field, to determine the particle size distribution in small amounts of soil. The set contains 6 interchangeable sieves, a cover and a bottom, a brush and a bag to hold the set.

20.02 Oil detection pan, type Arcadis-Eijkelpamp

The oil detection pan has been developed to allow rapid, on-site analysis of soil and groundwater, for floating contamination including soaps, colorants and all types of oil derivate including tar, lubricating oil, kerosene and gasoline. The oil detection pan lets one see immediately whether the soil contains oil, detects even the lowest oil concentrations and makes a distinction between four classes. The instrument is ideal for use during the first phases of soil research and for separating soil types.





Water

■ *Monitoring well pipes (and accessories)*

Eijkelpomp Agrisearch Equipment supplies various types of monitoring well pipe for use in groundwater monitoring. The monitoring well pipes are available in various materials and diameters and are supplied packed in PE. For general environmental soil research, the HDPE pipe, the PVC pipe and the quality pipe are most suitable. An explanation is given below, for all three types of pipe, of the situations in which they can best be used and which accessories are required when using them.

Optie A: HDPE monitoring well pipe

HDPE contains no metallic or organic substances, therefore it cannot contaminate the environment or the water samples. This means that high monitoring quality can be achieved. The pipes have a leak proof threaded connection and horizontal 0.3 mm slits. The HDPE pipes can be used in all standard and remediation research as well as in more complex environmental research.

This pipe is available in various sizes. However, a diameter of 63x51 mm has been chosen as standard for inclusion in the basic set of equipment for general environmental research. Accessories that are required when using this monitoring well pipe are a cap, top cap, bottom cap, filter sand, bentonite plugs and pellets and a protective casing.

Option B: PVC monitoring well pipe

The PVC monitoring well pipes are made using a completely organic stabiliser to ensure that no contamination occurs. The pipes have water-tight connection sockets that require no adhesive and can be used for standard groundwater research.

This pipe is available in various sizes. However, a diameter of 32x28 mm has been chosen as standard for inclusion in the basic set of equipment for general environmental research. Accessories that are required when using this monitoring well pipe are a cap, insert cap, top cap, bottom cap, filter sand, bentonite plugs and pellets and a protective casing.

Option C: Quality monitoring well pipe

The quality monitoring well pipe made of HDPE can be used for all conceivable types of research, and supplies water for years without problem, as long as the soil itself is somewhat water permeable. The monitoring well works with a ready-to-use filter section, therefore no contamination occurs during storage. We apply bentonite in advance to plain pipes. Therefore the bentonite is always in the right place and does not come up with the pipe during installation of the monitoring well.

This pipe is available in various sizes. However, a diameter of 32x25 mm has been chosen as standard for inclusion in the basic set of equipment for general environmental research. Several accessories that are required when using this monitoring well pipe are a plain pipe with bentonite collar, a sand/bentonite catcher, a top cap and a protective casing.



■ Accessories for installing monitoring wells in pavements

10.02.30 Monitoring well cover

To protect monitoring wells from traffic, damage, contamination and weather influences, we supply very practical monitoring well covers made of HDPE. The monitoring well covers are very large inside (Ø 135 mm), have ideal dimensions (200x200 mm) so that they easily fit in various types of paving, have a strong cover and a stable construction and can be made liquid-tight by installing an O-ring. Furthermore, it is possible to protect against burglary or sabotage by installing a specially designed bolt, and your company name can be applied to the cover.

■ Accessories for installing monitoring wells in liquid-tight floors

10.02.62 Liquid-tight floor cover, heavy-duty stainless steel, 4-mm cover plate

The heavy-duty version of the liquid-tight floor cover has a 4-mm thick stainless steel cover, a bearing capacity of 1750 kg in accordance with NEN/EN 124 and is used in liquid-tight floors that are subject to medium and heavy loads. The floor remains liquid tight due to the use of a chemically resistant rubber that seals the hole in the floor at the coating. The liquid-tight floor cover is used at among other locations petrol stations, factories, garages, car washes and chemical companies. The cover offers hardly any hindrance to passing traffic.

■ Groundwater sampling

12.26 COMPACT peristaltic pump

The COMPACT peristaltic pump can be used to take groundwater samples during environmental research. This peristaltic pump has been specially developed for field use; it has a watertight housing, is lightweight and has an ergonomic handle. The pump is suitable for different tube sizes and has an internal condensation alarm and a vented battery compartment. The battery itself can easily be exchanged and the charger can charge continuously.

To be able to use the peristaltic pump, you require a battery charger (230 V) as well as PE and silicone tubes and a tube dispenser. In addition, high capacity disposable filters (with pre-filter) for in-line filtration are available from Eijkelkamp.

12.14 Motorised foot valve pump

Foot valve pumps can be used for pumping up groundwater that must be analysed within the context of environmental research. A foot valve pump consists of a tube with at the bottom a non-return valve fitted with a ball valve. Once submerged, the water enters the tube via the valve. When the tube is then subject to a up- and downward motion, the inertia of the water causes new water to be sucked into the tube, while at the same time the water is forced further upward. This motorised pump pumps from a depth of approximately 60 m using 'standard flow' inert tubes and from a depth of approximately 40 m using 'high flow' tubes. The system is driven by a modern, very small Honda GX-series four-stroke engine. The pump weighs 13 kg and is supplied with a removable backpack frame.

12.16 Bailer sampler

Eijkelkamp also supplies bailer samplers made of hard, transparent Teflon in various sizes and diameters. A Teflon emptying device is available for all sizes to allow the sampler to be emptied without too much aeration or turbulence.





■ *Water analysis*

18.28.SA pH/mV/EC/Sal/T/O₂ measurement set

This meter measures acidity, redox, conductivity, salinity, temperature and oxygen. The meter has a very wide conductivity measurement range (up to 1000 mS/cm) and a direct read-out for the salinisation (the salinity in gram per litre). This CE-certified instrument has been specially developed for analytical measurements under field conditions or in a demanding laboratory environment. The set is supplied complete with synthetic pH and EC electrodes, temperature sensor, case, buffer fluids and batteries.

18.41 Reflectometer RQ-flex

The portable reflectometer RQ-flex is used to measure various anions and cations in water, mediums or in watery extracts, compost, vegetable tissue, etc. The associated analysis strips are separately available for a large number of parameters, such as ammonium, nitrate, iron, copper and potassium.

18.55 Flow-through cell

The objective of the flow-through cell is to improve the ease and precision of in-line measurements of pH, EC, temperature, oxygen, etc. The flow-through cell consists of a transparent chamber where water flows in a constant stream from the bottom to the top. The electrodes take measurements in water that has not yet come in contact with the air. Various electrodes can be installed in the flow-through cell. The cell can be simply disassembled and cleaned.

■ *Water level measurement*

11.03.21 Sounding apparatus for groundwater level measurement

has a centimetre scale. When the probe comes into contact with a conducting fluid, a clear acoustic and light signal is given. If the cable is lifted once more, the signal will stop. After this point has been determined, the depth can be read immediately on the measuring tape. The sounding apparatus is a cheap, simple, but reliable instrument. Due to the small diameter of the probe, the sounding apparatus can be used in almost all monitoring wells. The measuring tapes are available in various lengths on a reel, with or without a frame.

11.08.07 Floating layer thickness meter with acoustic and light signal

The probe of the floating layer thickness meter makes a distinction between conducting and non-conducting fluids. A light signal is used to indicate which fluid is currently in contact with the probe. The floating layer thickness meter can be used to determine the (ground) water level, the oil level and the thickness of the floating layer. The meter responds accurately to fluid by emitting an infrared light, is suitable for floating and sunken hydrocarbons and is available with various cable lengths.

Bed of lakes and watercourses

■ Sediment detection

13.50 Visibility disc according to Secchi

The Secchi visibility disc is a simple although not very accurate way of determining the visibility depth. The visibility disc is lowered into the water and when it disappears, the depth is read using the marks on the cable. The disc is then lowered another half metre and then slowly raised. The second measurement is read when the disc becomes visible again. The visibility depth is the average between the two measurements.

13.51 Sediment level stave

The sediment level stave is part of the standard set for measuring the sediment level to a depth of 4 m. The set contains four sediment measuring rods made of anodised aluminium with threaded connections. The sediment measuring rods are marked every 5 cm. A stainless steel grid and a core point enable you to find the lower boundary of the sediment layer. The set comes in a carrying bag.

■ Sediment sampling

04.09 Peat sampler

The stainless steel peat sampler is a type of gouge auger that is forced by hand into the soil. The part in which the sample is taken is a half cylinder. The peat sampler differs from the gouge auger because it has a solid core. The part that takes the sample is protected by a plate (fin) that can rotate around the axis of the sampler and that has a cutting edge on one side. When the correct sampling depth has been reached, the entire sampler is turned through half a turn (180°) clockwise. When turning, the fin remains in position, causing the half cylinder to be filled and then closed. The half-circular sample cylinder is kept closed by the other side of the fin when the sampler is removed. In this way a semi-disturbed sample can be taken with a length of exactly 50 cm at almost every desired depth. The peat sampler is only suitable for weak and very soft soil types (extremely suitable for beds of rivers, lakes, etc).

12.42 Multisampler

Using the multisampler you can take anaerobic samples in a large variety of wet material, both solid and liquid. Using the piston rod, you can move the piston in the sample tube, while the sample tube remains still. This maintains the original stratification of the sampled material. The materials used for the multisampler are stainless steel, NBR rubber (piston) and transparent acrylic plastic (sample tube). The standard set is suitable for sampling to a depth of 5 m.





04.23.SA Beeker sediment core sampler

The Beeker sediment core sampler is used to take undisturbed samples from the beds of lakes and watercourses. The Beeker sampler can sample many types of sediment that vary in composition from extremely aqueous and weak to unconsolidated sand, irrespective of the stratification of the bed. The samples are taken in a transparent tube that retains the stratification of the sampled material. As a result, a clear description of the profile can be given. The piston can be operated directly using a rod so that the sample can be pushed out of the device into a sample bucket on site. It is not necessary to assemble and disassemble the instrument for every new sample. The Beeker sampler takes samples quickly and reliably and is suitable for use in water to a maximum depth of 5 m. Using extra extension rods, in some cases samples can be taken at an even greater depth.

04.30.02 Van Veen bodemhapper (stainless steel)

The stainless steel Van Veen grab is used to take mixed samples from the beds of lakes, rivers, etc. The Van Veen grabs work as follows: the jaws are opened at the surface and fixed in place using a hook. To keep the hook in the correct position, the grab must be lowered at an even rate. There are holes in the jaw halves that allow the air to escape as the sampler is lowered, to prevent the sample being disturbed. As soon as the grab touches the bottom, the hook will release the jaws. As the rope is retracted, the jaws will close automatically due to the leverage effect. Sampling with the Van Veen grab is the fastest way of gaining an indication of the sediment types.



Other

99.14 Folding fieldcart for transport in the field

With this folding fieldcart you are also extremely mobile in the field. The strong aluminium construction makes the fieldcart extremely suitable for transporting all types of equipment in the field (max. loading weight 150 kg). The cart is suitable for transporting loads with a size of 120x56 cm. When folded, (107x27x58 cm) the cart takes little space and it weighs just 15 kg.

The products mentioned in this brochure are just a selection from Eijkelkamp Agrisearch Equipment's product range. Please contact us if you wish to have more information about Eijkelkamp's extensive product range that comprises more than 2,500 quality products.

OVERVIEW OF THE BASIC EQUIPMENT FOR GENERAL ENVIRONMENTAL SOIL RESEARCH

Below you will find an overview of all of the equipment mentioned in this brochure. We have put together three basic sets of equipment for you (HDPE set, PVC set and Quality set) with which you can be certain that you will have all you require to carry out general environmental soil research to a depth of 7 m. The type of monitoring well you need depends on the kind of research you are going to do. Once that is clear you can make a choice between these three sets. The coloured columns show how many of the particular article are required.

Soil

Soil sampling (and installation of monitoring wells)

		HDPE set	PVC set	Quality set
01.12.SA	Bailer boring auger set, complete set for boring to a depth of 7 m	1	1	1
05.07.03	Lifting jack for pulling casings out of the soil	1	1	1
05.07.14	Chain for lifting jack	1	1	1
04.16	Soil coring kit for sampling volatile substances	1	1	1
04.01.SB	Gouge auger set for sampling hard soils	1	1	1

Soil analysis

08.04.03	Sand ruler	1	1	1
08.11.01	Soil colour book	1	1	1
08.05.04	Hand sieve set	1	1	1
20.02	Oil detection pan	1	1	1

Water

Monitoring well pipe with accessories

HDPE monitoring well pipe, Ø 63x51 mm. (Accessories for 10 complete monitoring wells to a depth of 7 m)

10.01.42.02	HDPE monitoring well pipe, perforated, length 100 cm (set of 10)	1		
10.01.40.02	HDPE plain pipe, length 200 cm (set of 10)	3		
10.01.44	Cap (set of 10)	1		
10.01.45	Top cap (set of 10)	1		
10.01.46	Bottom cap, pointed model (set of 10)	1		
10.98.03	Filter sand, 25 kg bag	4		
10.94	Bentonite plugs, length 50 cm (set of 10)	2		
10.97	Bentonite pellets, 25 kg bag	4		
10.02.08	Steel protective casing, length 100 cm	10		

PVC monitoring well pipe, Ø 32x28 mm. (Accessories for 5 complete monitoring wells to a depth of 7 m)

10.01.72	PVC monitoring well pipe, perforated, length 100 cm (set of 5)		1	
10.01.70	PVC plain pipe, length 200 cm (set of 5)		3	
10.01.24	Cap (set of 20)		1	
10.01.24.02	Insert cap (set of 20)		1	
10.01.24.03	Bottom cap, pointed model (set of 10)		1	
10.01.25	Top cap (set of 10)		1	
10.98.03	Filter sand, 25 kg bag		2	
10.94	Bentonite plugs, length 50 cm (set of 10)		1	
10.97	Bentonite pellets, 25 kg bag		2	
10.02.07	Steel protective casing, length 100 cm		5	

Quality monitoring well pipe, Ø 32x25 mm. (Accessories for 5 complete monitoring wells to a depth of 7 m)

10.05.01.32	Quality monitoring well pipe, perforated, length 100 cm (set of 5)			1
10.05.05.32	Extension for quality monitoring well pipe, length 100 cm (set of 5)			1
10.04.03.32	Plain pipe with bentonite collar, length 100 cm (set of 5)			5
10.04.99.64	Sand-/bentonite catcher (set of 50)			1
10.01.25	Top cap (set of 10)			1
10.02.08	Steel protective casing, length 100 cm			5

Accessories for installing monitoring wells in pavements

10.02.30	Monitoring well cover, standard version (not liquid tight)	5	5	5
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Accessories for installing monitoring wells in liquid-tight floors

10.02.62	Floor cover, heavy duty	5	5	5
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Groundwater sampling

12.26	Peristaltic pump	1	1	1
12.26.22	Charger (230V)	1	1	1
12.20.05	PE tube, Ø 6x8 mm, 200 m	5	5	5
12.20.48	Silicone tube, 5 m (talced)	2	2	2
12.20.00	Tube dispenser	1	1	1
12.30.01	High-capacity disposable filter, filtering surface 20 cm ² (set of 5)	5	5	5
12.30.10	High-capacity disposable filter, filtering surface 300 cm ²	25	25	25
12.14	Motorised foot valve pump	1	1	1
12.16.05	Bailer sampler, Ø 35 mm, sample volume 0.45 litre	1	1	1
12.16.30	Bottom emptying device for bailer sampler	1	1	1

Water analysis

18.28.SA	pH/mV/EC/Sal/T/O ₂ -measuring set	1	1	1
18.41	Reflectometer RQ-flex	1	1	1
18.41.04	RQ ammonium test strips (set of 50)	1	1	1
18.41.10	RQ iron test strips, measuring range 0.5-20mg/l (set of 50)	1	1	1
18.41.11	RQ iron test strips, measuring range 20-200 mg/l (set of 50)	1	1	1
18.41.13	RQ potassium test strips (set of 50)	1	1	1
18.41.14	RQ copper test strips (set of 50)	1	1	1
18.41.18	RQ nitrate test strips (set of 50)	1	1	1
18.55	Flow-through cell	1	1	1

Water level measurement

11.03.21	Sounding apparatus, cable length 15 m, on reel	1	1	1
11.08.07	Floating layer thickness meter, cable length 30 m	1	1	1

Bed of lakes and watercourses

Sediment detection

13.50	Secchi visibility disc	1	1	1
13.51	Sediment level stave	1	1	1

Sediment sampling

04.09	Peat sampler, complete set for sampling to a depth of 10 m	1	1	1
12.42	Multisampler, complete set for sampling to a depth of 5 m	1	1	1
04.23.SA	Beeker sampler, complete set for sampling to a depth of 5 m	1	1	1
04.30.02	Van Veen grab, sample volume 2 litres	1	1	1

Other

99.14	Aluminium fieldcart	1	1	1
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