

SOIL SAMPLE RING KITS

Soil research is a very important aspect of the planning as well as the execution of agricultural and civil engineering projects.

The basis of a soil research is making a study of:

- The soil profile.
- The physical properties of the soil.

The physical properties of soils are largely determined in the laboratory. Such laboratory studies usually require undisturbed soil samples, preferably with uniform dimensions. To meet these needs, soil samples are taken in rings of known volume and diameter.

For the collection of undisturbed soil samples in soil sample rings, various sampling sets have been developed.

Soil sample ring kits

The various sets are different from each other because of the ring holder applied, the diameter of the rings, the connection selected and the sampling method.

07.53.SA Sample ring kit, model A, for soft soils to a depth of up to 2 m

The sample sets with the postfix SA are applied to fill the soil sample rings in soft soils above the groundwater level.

The samples can be taken on the surface, in bore holes or in profile pits. The open ring holder in this set is fitted with a bayonet connection and is driven into the soil manually.

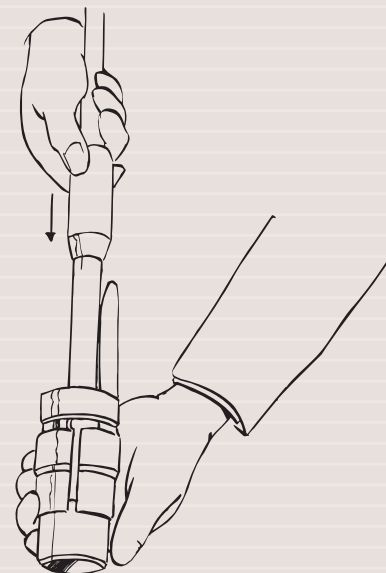
The set, among other items, contains: an open ring holder, an Edelman- and a Riverside auger, a handle and extension rods, an aluminium case with soil sample rings, various accessories and a carrying bag.

The sample sets with the postfix SA can be obtained for soil sample rings with a diameter of 53 and 60 mm. The most commonly applied (standard) diameter is 53 mm.

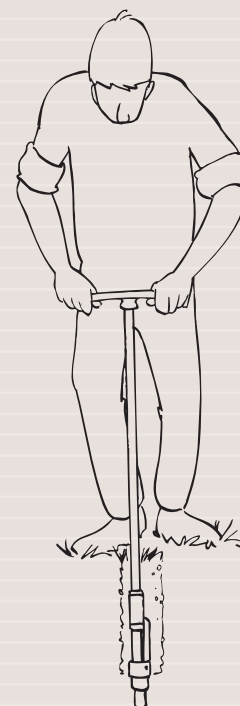


P1.31
Parts List
Pg 318

After the ring has been placed in the open ring holder it is locked with the lever.



The soil sample ring is driven into the bottom of the pre-augered hole.



Sample ring kit for soft soils



P1.31
Parts List
Pg 318-319



SOIL SAMPLE RING KITS

07.53.SC Sample ring kit, model C, for all soils to a depth of up to 2 m

The sample sets with a postfix SC can be used to take samples in virtually all soils. The samples can be taken on the surface, in auger holes or in profile pits, above as well as under the ground-water level. The closed ring holder in this set is fitted with a conical threaded connection which means that the ring holder may also be hammered into the soil with an impact absorbing hammer.

The set, among other items, contains: a closed ring holder, a handle with beating head, an Edelman- and a Riverside auger, extension rods, a hammering head with a guide cylinder, an aluminium case with soil sample rings and various accessories.

The sample sets with the postfix SC can be obtained for soil sample rings with a diameter of 53, 60 and 84 mm. The most commonly applied (standard) diameter is 53 mm.

Soil sample rings

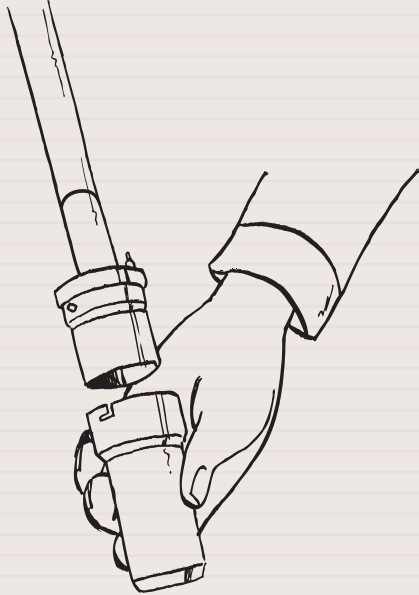
Soil sample rings are stainless steel rings made of seamless tubes, smooth inside and out. The bottom of the ring has a cutting edge. The dimensions, and thus the volume content, of soil sample rings are exactly known, which makes them highly suitable for laboratory studies. With soil sample rings undisturbed samples are taken.

These are then used for, for example:

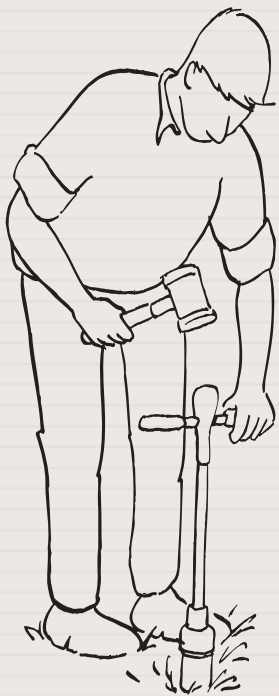
- The moisture content at various moisture tensions, from which a pF-curve can be made.
- The water permeability.
- The air permeability.
- The weight by volume.
- The density.
- The soil-water-air relationship at field capacity.
- The pore distribution.
- The oxygen diffusion.

Soil sample rings are transported in special aluminium cases, strong and resistant against humidity and heat.

The soil sample ring is placed in a closed ring holder.



The soil sample ring is hammered into the soil applying an impact absorbing hammer.



Sample ring kit for all soils

SOIL SAMPLE RING KITS

Open ring holder

In case of an open ring holder, the ring is locked in the holder by means of a lever.

Over the ring about 4 cm headroom is left, allowing for an oversize sample to be taken.

Advantages of the ring holder are:

- ❑ The soil sample ring is very easily replaced.
- ❑ The ring holder is relatively insensitive to dust and dirt.
- ❑ Little resistance to penetration.

Disadvantages of the ring holder are:

- ❑ The sample is not oversized at the bottom end of the ring.
- ❑ In very weak soils, or below the water table, there is a great risk of the sample falling out of the ring.
- ❑ Sample rings may be lost through being overloaded and/or being incorrectly clamped.
- ❑ Because the sample ring is not protected, it can be damaged.



Soil sample rings in case

Closed ring holder

With this type of ring holder, the soil sample ring is placed in a cutting shoe. The ring is clamped inside the cutting shoe and no water or soil can come into the ring from the top side.

Advantages of this ring holder are:

- ❑ The sample is oversized on both sides.
- ❑ No risk of losing a sample.
- ❑ The sample ring is in a protected position inside the cutting shoe, there is no risk of losing or damaging the ring.

Hammering head with guide cylinder

The hammering head with guide cylinder is used for filling soil sample rings in hard soil layers both on the surface and in profile pits. The sample ring is clamped to the hammering head by means of a retaining ring. The guide cylinder ensures that the sample is taken in a true straight line. The soil sample ring can simply be dug out or extruded using the bent spatula.



Soil sample rings



Closed and open ringholder



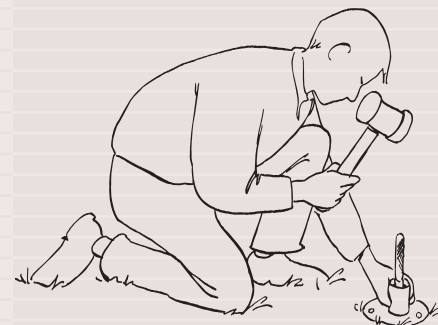
Hammering head with guide cylinder



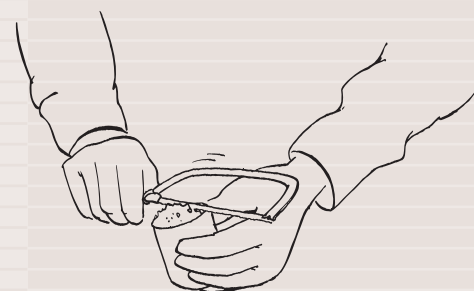
P1.31

Parts List
Pg 320

The soil sample ring is hammered into the soil from the surface using an impact absorbing hammer and guide cylinder.



The sample is trimmed using a small frame saw.





P1.31
Parts List
Pg 321



SOIL SAMPLE RING KITS

08.09 Core cutter method according to Dutch RAW standard 2000, test 4.4

The set with the equipment for the core cutter method is used for other applications as the soil sample ring kits described before. The set is especially used for works of civil engineering construction.

The core cutter method is used for the determination of the density and the soil moisture content of embankment- or foundation material according to the Dutch RAW-standard 2000.

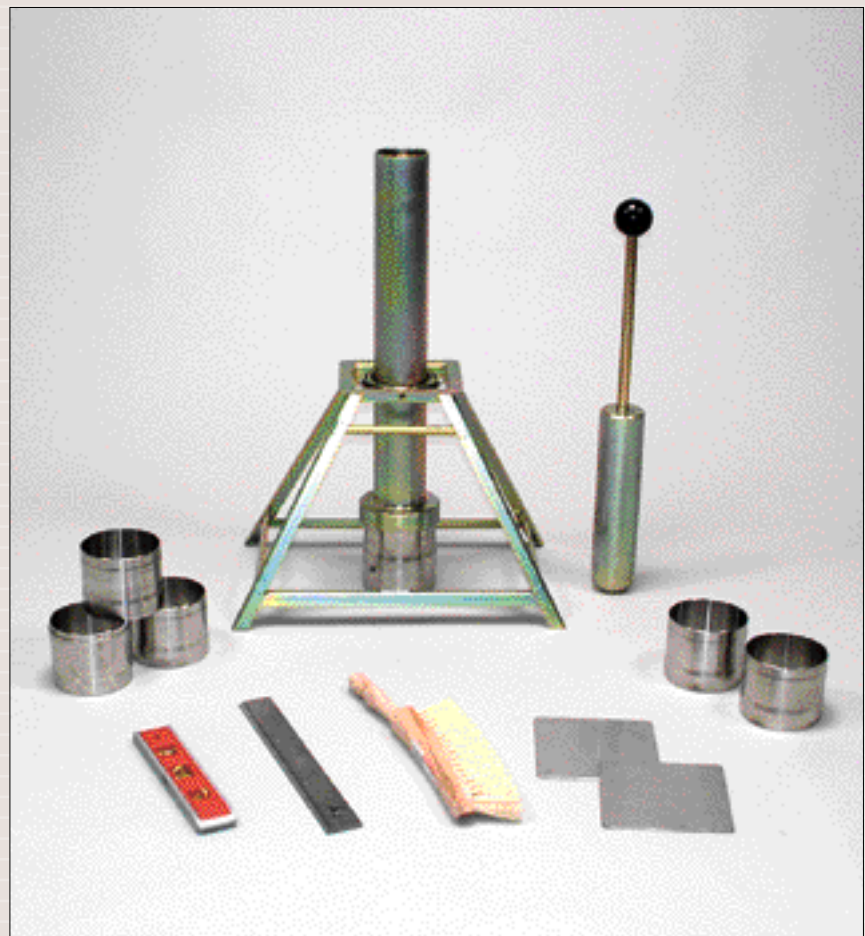
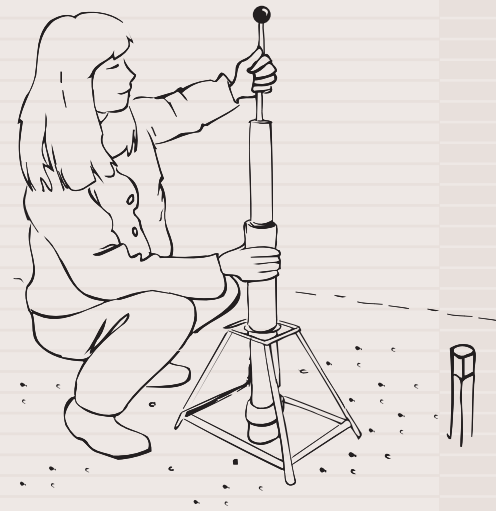
With a drop weight and a guide cylinder a special stainless steel sample ring, with a diameter of 95.7x102 mm and a height of 81.5 mm, is hammered into the soil surface.

The sampled material is transported to the laboratory, where after weighing and drying, the density and soil moisture content is determined.

The standard set includes (according to RAW-2000, test 4.4): a stainless steel sample ring with cutting edge for non-cohesive material and one for clay and clayey light gravely sand, a collar for the sample ring, a guide cylinder for the drop weight, a drop weight, a frame for the guide cylinder a steel rule , a flat stainless steel plate, a flat brush and a water level.

Note: the core cutter method is only suited for material without stones.

The ring is hammered into the soil using the drop weight.



Core cutter method according to Dutch RAW standard