

How to carry out Wet Sieving

Sieve analysis is a simple but proven method of separating bulk materials of all kinds into size fractions and to ascertain the particle size and distribution through weighing the single fractions. Usually, sieving processes are carried out on dry material. However, **when dry sieving cannot produce an adequate degree of separation between the individual fractions and even sieving aids cannot improve the quality, wet sieving is called for.**

In addition to the sieve set, wet sieving requires a clamping cover with spray nozzle as well as a collector with outlet. The sieving process is supported by water from the spray nozzle which is located above the uppermost sieve. The water leaves the sieve stack together with the last fraction through the outlet in the collector. Rinsing is carried out until the liquid leaving the sieve stack outlet is no longer turbid with solid particles.

When high-quality analytical test sieves are used **air cushions** may be formed between the individual sieves during wet sieving. This is caused by the combination of sieves forming a dustproof and waterproof sieve stack which prevents loss of material and cross contamination. **Mesh sizes < 100 µm are particularly affected.**

The solution is provided by the use of **“venting rings”**; these are included between the analytical test sieves in the sieve stack. These rings permit the expansion of the air cushion without the escape and loss of liquid or sample material. The required degree of sieving quality is usually achieved within 2 – 3 minutes. The use of venting rings guarantees gentle treatment of both the sample material and the sieves as well as short sieving times.

Typical applications for wet sieving:

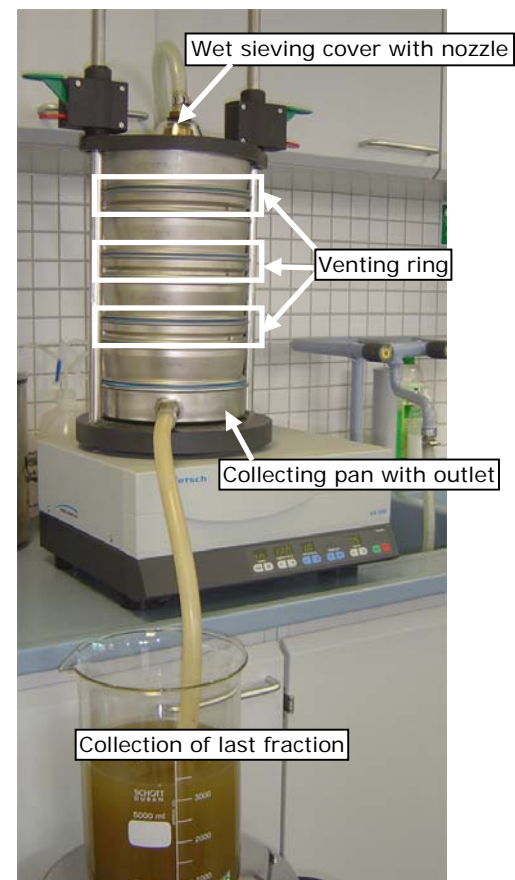
- agricultural soil with a high clay content
- contaminated soil (brownfields)
- clay suspensions
- river sediments
- sludge and glazes
- kaolin and fillers
- abrasives
- micro granulations

Wet sieving step by step:

- The material to be sieved is mixed with water until it becomes a suspension. To reduce the surface tension and facilitate passage of the material, a few drops of tenside can be added.



- Prepare the sieve stack: Moisten each sieve with water and place them on top of the collector with outlet.
- Place venting rings between the sieves to permit the expansion of air cushion.
- Put the complete stack into the sieve shaker.
- If the smallest fraction that leaves the sieve stack should be collected, make the required preparations.



- Place the suspension on the uppermost sieve (cover must be open).



- Fix the clamping device.
- Recommended parameters:
Amplitude of 1 – 1.2 mm in interval mode,
Time: 5 min
(In most cases, 2-3 min is sufficient for a sieving process).
- Start the sieve shaker.
- Turn on the water supply.



- Observe the liquid leaving the outlet. Sieving is finished when the liquid is clear.
- Turn off water supply and sieve shaker



- Put the fractions from each sieve into a paper filter and into a drying oven (at 105 °C, until weight remains constant).



- Weigh the fractions and evaluate the results with EasySieve[®]
- If the initial weight of the dry material is known, the smallest fraction can be calculated:

"initial weight" – "total of fractions" = "smallest fraction"

If it is not known, the smallest fraction must be collected and dried as well.

