

Sigma-2 passive sampler for airborne particulate matter

Setup of measuring site

The Sigma-2 passive sampler is designed for outdoor sampling and requires a minimal air stream as it is the case for ambient air. Therefore, the distance between sampler and small obstacles should be at least 30 cm. Big obstacles should be avoided if they disturb considerably the air circulation.

The housing should be positioned vertically in a recommended height for immission measurements (2-4 m).

The Sigma-2 passive sampler can be stuck on a tube / pole with a max. outer diameter of 32 mm. It can also be fixed with a bracket (inner diameter = 50 mm) and a threaded bar at any surface (Fig. 1).



Fig. 1: Sigma-2 passive sampler stuck on a tube (left). Sigma-2 passive sampler fixed with a bracket (right).

The samplers should not be easily accessible for unauthorized persons and should be protected against robbery and vandalism.

Description of measuring site

The measurement is representative for the immediate measuring site only. For data interpretation it is important to describe the measuring site as detailed as possible (pictures can be very useful).

Handling of adhesive surface

Please do not touch the adhesive surface (Fig. 2). If the adhesive surface gets wet, it should be dried at a dust-free place (In that case the box must be slightly open).

Changing of adhesive surfaces

- In case of a wet housing, it must be dried with a flannel to avoid water dripping on the adhesive

surface while opening the sampler (there should be no water between the cylinder and the lower part of the housing).

- Lifting and twisting off the upper part of the housing for obtaining access to the adhesive surface box.
- Take out the box and close it with the cap
- Open a new box and put it into the sampler. The cap must be stored.



Fig. 2: Sigma-2 adhesive surfaces for light- (glass) and electron microscopy (C-Pad) analysis (left). Sigma-2 adhesive surfaces for light- (glass) and electron microscopy (C-Pad and boron substrate) analysis (right).

Changing the adhesive surface in the rain

Changing the adhesive surfaces in the rain is only recommended with help of a second person equipped with an umbrella or at a protected place.

Logging

The adhesive surfaces are provided with a code. This code should be noted together with the measuring site in the enclosed protocol.

Any difficulties during the handling of adhesive surfaces and any observations of events with a potential impact on measurements should be noted in the protocol. They can be helpful for the interpretation of measuring results.

Storage and shipping

Exposed and new boxes must be stored in a dry, dark place at room temperature.

Boxes should be sent at the latest 8 weeks after exposure for analysis.

Results

Delivered results contain particle size distributions of dark (= mostly anthropogenic) and bright (= mostly geogenic and/or biogenic) particles with sizes between 2.5 and 80 μm , as well as modelled PM10 values.