SAMPLING METHOD MC2

SAMPLING OF ASPHALT AND CONCRETE FROM A COMPLETED LAYER OR STRUCTURE

1 **SCOPE**

This method deals with the sampling of asphalt and concrete from a completed layer or structure by drilling it out with a diamond core drill or sawing out a sample with a power saw (only for layers of 200mm or less).

2 **APPARATUS**

2.1 A power drill capable of drilling out cores at right angles to the surface and which can be held firmly and perpendicularly while in use, equipped with a diamond bit 150 or 100 mm in diameter, a core barrel at least 300 mm long and a water supply under pressure to cool the bit, or
A hand-held power saw equipped with a high-speed carborundum, diamond or similar blade approximately 300 mm in diameter. (Only for layers of less than 100 mm. A blade with a larger diameter must be used for thicker layers.)

2.2 Suitable containers in which to transport the cores, such as plastic bags, tins or wooden boxes.

3 **SAMPLE SIZE**

3.1 **Drilled out samples:** A minimum diameter of 100 mm is recommended, depending on what tests are to be done on the sample and how thick the layer is.
For thin layers, or when the grading, binder content or cement content are to be determined, a core diameter of 150 mm is recommended.
For the determination of the compressive strength of concrete, the standard length of the cores is twice the diameter, which , in turn, should be four times the maximum coarse aggregate size.

3.2 **Sawn out samples:** The sample size will depend on the tests to be done on the sample. For density determinations, binder content determinations, etc, 150 mm square blocks are adequate. Concrete beams that are sawn out for the determination of flexural strength must be 150mm wide, 150mm thick and at least 530mm long.
Blocks of asphalt that are sawn out for the determination of fatique life must be at least 150mm wide and 300mm long.

4 **METHOD**

4.1 **Drilling out of cores**

Place the drill, equipped with the required bit, in position. Support the frame of the drill so that its weight is not resting on the wheels if it is mounted on a trailer, or dig or pack the frame in so that it rests solidly on the surface if it does not have wheels. Let down the bit until it rests on the surface and then adjust it so that it is exactly perpendicular to the surface. Turn on the water supply and start drilling. The rate at which the drill penetrates the material will depend on the hardness of the material and on the condition of the bit. The rate must be such that the drill does not lose speed but neither must it turn too fast.
The water supply must be under sufficient pressure to wash out the borings an to cool the bit.

As soon as the desired depth has been reached, the drill must be withdrawn slowly while it is still turning slowly.

If the core comes away with the barrel, it mist be carefully removed by tapping the sides of the barrel lightly, taking care that the core does not suddenly fall out of the barrel.

Should the core remain in the hole, it mist be carefully loosened by inserting a suitable lever into the drill groove and wiggling the core free. Take care that the lever does not damage the sides of the core.

To ensure that the core will come away easily, it is preferable to drill in up to a level of separation between layers, e.e. the level between an asphalt layer and a gravel layer. If, for example, a sample of

an asphalt surfacing overlying an asphalt base is required, it would be better to drill through the base as well and then to separate the two asphalt layers in the laboratory using a diamond saw.

Once the core has been removed, it must be packed carefully into a tin or wooden box so that it cannot break or deform.

4.2 **Sawing out of samples**

Use a hand-held power saw, or when it is necessary to saw in deeper that 100mm and the larger blade size makes a hand saw impractical, a saw equipped with wheels and a high-speed cutting blade or diamond blade. If a diamond saw is used, it should be cooled by a constant stream of water.

Saw out a block of material of the required size.

If a hand-held power saw is used, take care that the cut surfaces are straight and vertical without irregularities or steps.

Once the sides have been sawn through, the block must be carefully loosened by inserting a lever in the sawn groove.

The block must then be laid flat carefully in a wooden sample box. The blocks must be quite flat in the box to prevent deformation.

5 **REPORTING**

The samples must be properly labeled. A form container the following information must accompany them:
Number of the road, structure or layer, and contract.
Position of the core.
Description of the core.
Date of sampling.
Name of the sampler.
Tests to be done on the samples.