

Sampling Concrete for Chemical and A.S.R. Examination

- 1 Dust Samples
 - 1.01 A random sampling system is the preferred method of obtaining dust samples. This should include good unaffected areas together with concrete members which merit close examination, the object being to compare chloride levels, say, on both affected and unaffected parts of the structure. For bridge decks, however, a 4 x 3m grid pattern is required, taking 1 sample per 12m².
 - 1.02 Dust samples are taken with a rotary, hammer drill using a 20mm or 25mm diameter masonry drill bit. Before selecting exact positions for drilling a check of steel reinforcement is required using the covermeter.
 - 1.03 An initial hole 5mm deep is drilled at the selected position and the powder allowed to blow away to leave an empty hole. The sampling device is then placed over this and drilling is re-started up to a depth of 25mm ensuring that all the dust is collected in the polythene bag attached to the sampling device. The bag is labelled accordingly and a fresh empty bag attached and drilling repeated up to 50mm. The process is repeated up to 100mm into the concrete to produce successive samples at increasing depths.
 - 1.04 Each dust sample collected during the increments of depth should be at least 25g in weight. If they are too light, adjacent holes can be drilled in the same manner and the dust for the corresponding depths combined.
 - 1.05 On completion of the work, the drill holes should be filled with Instacrete or similar fast setting mortar.
 - 1.06 Finally a sketch map of positions of the samples should be made and referenced.
- 2 Core Samples
 - 2.01 The positions of cores should be determined by avoiding reinforcement where possible by use of the covermeter.
 - 2.02 The preferred dimension is 100mm diameter and the depth drilled should be such that it complete with the length to breadth ratio required for determination of compressive strength in BS 1881, making allowance for trimming.
 - 2.03 Care should be taken to ensure that the drilling equipment is securely bolted and fastened to the structure so that cores have an even and distortion free configuration.
 - 2.04 Where cores are drilled in cracked areas, a similar core nearby in an unaffected area should also be taken for comparative purposes.
 - 2.05 On completion of core extraction the hole must be rendered with Instacrete or similar fast setting mortar and the core itself wiped free of excessive water and detritus. It should then be wrapped in cling film, sealed in a polythene bag and suitably labelled. Cores should be marked every 50mm from the drilling surface to identify which end is which after trimming in the laboratory.
 - 2.06 When all cores are extracted a plan of the core locations should be made together with a core record sheet for each individual core showing direction and orientation and any other relevant features observed whilst on site.