

Taking representative samples of bituminous binders

INTRODUCTION

Sampling enables testing to be performed to determine if a bituminous binder conforms to a specification, and is applicable to both hot bitumens and emulsions.

The sampling method adopted must ensure that consistent and reliably representative samples are obtained so that any test results:

- Represent, as near as practicable, an average of a consignment or batch, or
- Detect any variation within a consignment or batch

Non representative or contaminated samples can have serious implications, with non-conforming test results leading to financial deductions penalties or rejection of the binder.

The purpose of this work tip is to discuss the aspects of binder sampling that relate to achieving a representative sample.

CONTAMINATION

The inclusion of additives (cutter, flux or adhesion agents) or different types of bituminous materials can significantly affect test results. As an example the addition of only two parts of cutter will halve the viscosity of bitumen.

It is imperative that all precautions are taken to prevent contamination of the binder. Taking of samples that are known to have additives included where the unadulterated binder properties are required should be avoided. An example of this is binder in sprayers which is often tainted due to cutter or adhesion agents in previous sprayer loads.

SAMPLE CONTAINERS

Containers for samples should be new, clean and dry with a minimum capacity of one litre. Suitable metal containers shall be used for hot bituminous binders. Plastic containers may be used for bitumen emulsions.

Wide mouth friction-top cans with a minimum capacity of one litre are preferred, and should be filled to $\frac{1}{2}$ – $\frac{2}{3}$ capacity.

Containers should not be washed, rinsed, or wiped with an oily cloth.

Containers should never be submerged in solvent. Removal of spilled material on the outside of the container should be wiped with a clean dry cloth.



Figure 1: Clean sample tins to avoid contamination

PREPARING TO SAMPLE

Sampling may be carried out at the point of manufacture, or at the point of delivery, as required.

The binder must be thoroughly mixed in the tank before sampling. In the case of a sprayer or road tanker, the binder should be circulated for a minimum of 15 minutes.

Samples must be taken from a dedicated sampling point. On some tanks the sample may be drawn from a sampling cock on the side of the tank. Sampling through the open hatch of a tank should never be allowed.

SAMPLING PROCEDURE

Before attempting to take a sample it is essential that personnel read, understand and follow all of the safety requirements outlined in the company's Safe Work Method Statement.

Sampling should only be performed where the binder will flow under gravity.

When sampling during a transfer operation the sample should be taken from near the middle of discharge or after the flow has been established for several minutes.

Sufficient material should be withdrawn and disposed of to avoid contamination of the sample.



Figure 3: Sample being taken

LABELLING

Samples should be labelled to be able to trace the binder back to a particular manufacturing batch and identify where on the road a load of binder was used.

The following information should be included on a label:

- Designation or classification of the binder.
- Identification mark or sample no.
- Name of supplier/manufacturer.
- Date and time of sampling.
- Batch number or shipment number from which the sample was taken.
- Name of the sampler.
- Contract or Job Number (if applicable).

The label should be fitted to the side of the container and not the lid. The use of a marker pen directly on the sample container should be avoided as this can be rubbed off during handling.

Sample containers should be securely packed so they are not breached during transport.

STORAGE

In some cases it may be necessary to store samples for extended periods i.e. until the end of a defects liability or warranty period. Samples should be kept upright, in an enclosed undercover area in such a way that they can be readily retrieved without risk of injury to personnel or damage to the sample.