

NOTES ON ADHESION AGENT SPECIFICATION

These notes are for the guidance of supervising officers and must not be included in the Contract Documents.

NB Numbered clauses relate to specification clause numbers.

1. SCOPE

Approved adhesion agents are required to be incorporated in all asphaltic sealing binders, except emulsified asphalt, used in first and second coat seals or reseals.

2. APPROVAL

The Contractor is responsible at his own cost for the provision to the Engineer of binder aggregate adhesion test results, from a Testing Agency approved by the Engineer, showing that with a specific dosage rate of an adhesion agent nominated by the Contractor, a result not less than 80 percent has been obtained using chips from the aggregate source he intends to use.

Instead the Contractor may provide test results obtained by him previously, or results obtained under the authority of Transit New Zealand, and these will be acceptable to the Engineer unless quality control testing has shown results below 80 and more than 5 below a previously approved result.

Although it is understood that at least one adhesion agent, at a specific dosage rate, has been tested and approved for almost all currently exploited chip sources, in rare instances some difficulty may be encountered in the testing for approval of adhesion agents for new or previously untested chip aggregate sources. Where difficulties are encountered, the advice of the Bitumen Scientist, Central Laboratories should be requested.

4. TESTING AGENCY

Currently all Works Consultancy Services Ltd district laboratories and Central Laboratories have facilities for the binder aggregate adhesion test.

5.2.4 Dosage Rate Relationship

The relationship between the adhesion agent dosage rate, expressed as parts per hundred parts of asphaltic cement by volume (at 15EC) and parts per hundred by mass (measured for the binder aggregate adhesion test) is:

$$\begin{aligned} \text{Parts per hundred} \\ \text{by volume} &= \text{Parts per hundred by mass} \\ &\times \frac{\text{Bitumen Specific Gravity (15EC)}}{\text{Adhesion Agent Specific Gravity (15EC)}} \end{aligned}$$

where the specific gravity of 180/200 (15EC) is 1.027.

Adhesion Agent Quality Control

One 0.5 litre sample of the approved adhesion agent is to be taken by the Supervisor at the blending site for each contract. This sample, labelled to contain the contract number, the name of the adhesion agent, the dosage rate, the name of the chip source, and the date of the sampling, is to be forwarded to the laboratory responsible for testing chips from that source for compliance with TNZ M/6. Such samples are to be retained for 12 months.

The approved Testing Agency is to perform a binder aggregate adhesion test for quality control when samples of chips and adhesion agent as referred in the section "*Chip Source Uniformity*" are received. Where the result of any quality control test is less than 80 and more than 5 less than the approved result, the Contractor must be advised that further tests will be necessary before chips from that source can be used in any further works.

Quality control testing is also to be carried out in any case where water-induced chip loss (stripping) has occurred following the construction of a sealcoat. In this case a sample of the binder should also be forwarded to Central Laboratories for thermogravimetric testing to check the active content of the adhesion agent.

Chip Source Uniformity

Some sources of chips, whether from quarried rock or from pit or river gravels, are liable to be variable so that in a few instances significantly different adhesion test results can be obtained with chips from different sectors of the source.

A 1 kg reference sample of chips, from each source tested with adhesion agent to approval, is to be retained by the laboratory responsible for the testing of chips for compliance with TNZ M/6, to monitor chip source uniformity.

When each subsequent sample of chips from that source is received for TNZ M/6 testing, it is to be visually compared with the appropriate reference sample.

When a visual difference in the nature of the stone from which the chips are formed is observed, a 2 kg sample of the chips is to be forwarded immediately to the Testing Agency responsible for binder aggregate adhesion testing, together with the reference sample and a 0.5 litre sample of the approved adhesion agent, with covering advice.

Binder aggregate adhesion testing for quality control is to be carried out by that laboratory without delay.