

Materials

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435.02

Don Hines

Materials

Investigation of the Effect of Reheating Asphalts on the Test Results

The following is the final report on the investigation of reheating asphalt samples and how it effects the penetration and absolute viscosity test results.

Purpose

All noncomplying penetration and absolute viscosity results must be verified before being reported. This verification of test results is done by reheating and retesting the identical sample that is suspect. The District Laboratories are required to submit penetration and absolute viscosity correlation samples to the Central Laboratory. These samples are the identical ones tested by the District Laboratories. When the Central Laboratory tests these correlation samples they are also considered to be reheated and retested. Reheating a sample will harden the asphalt to some degree and possibly cause a change in the test results. This investigation was conducted to determine how much change in penetration and absolute viscosity could be expected by reheating and retesting asphalt samples.

Procedure

Asphalt from seven sources and seven grades was obtained for this study. The asphalts were prepared and tested in accordance with our standard methods. Penetration and absolute viscosity tests were determined on each asphalt source and grade. These results were recorded and identified as original asphalt. The identical samples were reheated and retested by also following our standard methods for preparing and testing penetration and absolute viscosity. These results were also recorded and identified as reheated samples.

Test Results

<u>Producer</u>	<u>Grade</u>	<u>Penetration Original Asph.</u>	<u>Penetration Reheated Sample</u>	<u>Difference</u>
Koch (Pine Bend)	AC-20	74	74	0
Koch (Omaha)	AC-20	67	67	0
Saber	AC-20	77	77	0
Koch (Pine Bend)	AC-10	100	99	1
Koch (Pine Bend)	AC-10	110	108	2
Amoco	AC-10	109	108	1
Koch (Pine Bend)	AC-5	206	206	0
Koch (Pine Bend)	AC-2.5	318	311	7

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(Penetration - continued)

Pester	60-70	58	58	0
Mobile Bay	60-70	65	65	0
Pester	85-100	89	88	1
Mobile Bay	85-100	91	90	1
Tosco	85-100	91	90	1
Pester	120-150	133	133	0

Producer	Grade	Absolute Vis. Original Asph.	Absolute Vis. Reheated Sample	Difference
Koch (Pine Bend)	AC-20	1894	1908	14
Koch (Omaha)	AC-20	2253	2272	19
Saber	AC-20	2209	2217	8
Koch (Pine Bend)	AC-10	1171	1179	8
Koch (Omaha)	AC-10	1084	1082	-2
Amoco	AC-10	967	982	5
Koch (Pine Bend)	AC-5	450	453	3
Koch (Pine Bend)	AC-2.5	274	278	4
Pester	60-70	2053	2069	16
Mobile Bay	60-70	3411	3478	67
Pester	85-100	1145	1158	13
Mobile Bay	85-100	1811	1828	17
Tosco	85-100	1295	1299	4
Pester	120-150	704	712	8

Discussion of Results

The test data indicates that asphalts in the penetration range of 58-77 could be reheated and retested without any effect on the penetration results. Asphalts in the penetration range of 89-110 did have a change in penetration when the samples were reheated and retested. The penetration results of the other grades were not what would be expected; however, there was not enough tests of each grade to arrive at a conclusion.

The absolute viscosity test data indicates that reheating the test sample changes the absolute viscosity test result, with the exception of Koch (Pine Bend) AC-10 sample.

Conclusions and Recommendations

No change in penetration would be expected when reheating and retesting asphalt samples having original penetration range of 58-77. Asphalt samples in the penetration range 89-110 will have a reduction in penetration of about

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1.2% when reheated and retested.

Generally all asphalt samples will have an increase in absolute viscosity of about 1% of the original test when the identical sample is reheated and retested.

The results of this investigation verifies the factors used in I.M. 212 for reheating and retesting the identical test sample of asphalt.

I.M. 212 was written at a time when 85-100 pen. and AC-10 vis. asphalt grades were generally used. I.M. 212 should be rewritten to show that the factor applied to a penetration result after reheating is for asphalts that have an original penetration of 85-115.

DH:amb

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