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1.0 SCOPE

This Standard Practice describes the requirements for the sampling and testing of asphalt binder materials.


2.0 REFERENCE STANDARDS

ASTM Standards

- D5 Test Method for Penetration of Bituminous Materials
- D8 Standard Terminology Relating to Materials for Roads and Pavements
- D36 Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)
- D113 Test Method for Ductility of Bituminous Materials
- D139 Test Method for Float Test for Bituminous Materials
- D140 Practice for Sampling Bituminous Materials
- D244 Test Methods and Practices for Emulsified Asphalts
- D977 Specification for Emulsified Asphalt
- D2170 Test Method for Kinematic Viscosity of Asphalts (Bitumens)
- D2171 Test Method for Viscosity of Asphalts by Vacuum Capillary Viscometer
- D4402 Test Method for Viscosity Determination of Asphalt at Elevated Temperatures Using a Rotational Viscometer
- D6084 Test Method for Elastic Recovery of Bituminous Materials by Ductilometer
- D6997 Test Method for Distillation of Emulsified Asphalt
- D7496 Test Method for Saybolt Viscosity
- D2872 Test Method for the Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin-Film Oven Test)
- D6521 Practice for Accelerated Aging of Asphalt Binder Using a Pressurized Aging Vessel (PAV)
- D7175 Test Method for Determining the Rheological Properties of Asphalt Binder Using a Dynamic Shear Rheometer
- D6648 Test Method for Determining the Flexural Creep Stiffness of Asphalt Binder Using the Bending Beam Rheometer (BBR)

AASHTO Standards

- M140 Standard Specification for Emulsified Asphalt
- M320 Standard Specification for Performance-Graded Asphalt Binder
- T40 Standard Method of Test for Sampling Bituminous Materials
- T350 Standard Method of Test for Multiple Stress Creep Recovery (MSCR) test of Asphalt Binder Using a Dynamic Shear Rheometer (DSR)

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MEB Standards

- S001 Standard Practice for New Product Approval Process
- P026 Standard Practice for Pay Adjustment for Penetration Graded Asphalt Cement
- P027 Standard Practice for Pay Adjustment for Performance Graded Asphalt Cement

3.0 SAMPLING REQUIREMENTS

3.1 General

Sampling shall be done as soon as practicable at the time of unloading asphalt cement material when the tank truck has arrived at the plant site, storage site or job destination.

The Contractor shall take representative samples of asphalt cement materials in accordance with *ASTM D140: Standard Practice for Sampling Bituminous Materials*. Samples shall be stored in new, dry, clean, airtight, and sealed containers.

3.2 Sample Containers

A wide mouth, 1-litre capacity metal can with double seal friction-top and gold phenolic lining shall be used for the sampling of asphalt cement.


A wide mouth, 4-litre capacity metal can with double seal friction-top and gold phenolic lining shall be used to collect emulsified asphalt samples.

3.3 Sampling Procedures

Representative samples of asphalt cement must be taken from the sampling device of the Supplier's delivery truck or from the in-line sampling device, as per *ASTM D140 Practice for Sampling Bituminous Materials*, during unloading of asphalt binder.

One samples shall be taken from each truckload of asphalt binder delivered to the project site.

Additional samples may be collected if requested by the Contract Administrator.

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3.4 Sample Identification

All samples shall be properly labeled complete with the following information:

- Contract number
- Sample number
- Purchase Order number
- Region
- Project Location
- Asphalt Cement type
- Asphalt Cement supplier
- Hauler
- Ticket number
- Date sampled
- Time delivered
- Sampled by
- Sampled from (sampling device, in-line sampling device)

If the asphalt cement contains additive(s), the additive(s) must be properly identified on the label. If there are no additives present, the label must state so. The label should be printed in ballpoint ink or permanent marker and the completed label should be legible.

Sample labels shall be attached to the container itself (not to the lid).

3.5 Chain of Custody

The sample shall be recorded on the Chain of Custody form.

4.0 TESTING METHODS AND FREQUENCIES

The Contract Administrator may perform one or more of the tests listed in Table 1 and/or Table 2 on any sample obtained


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Table 1: Asphalt Cement Test Methods and Frequency

Test Standard	Test Method	Test Frequency
Penetration Grade Asphalt Cement		
ASTM D4402	Rotational Viscosity @ 135°C & 150°C	1 random sample /product /project /supplier
ASTM D70	Specific Gravity @ 25°C	1 random sample /product /project /supplier
ASTM D5	Penetration, RTF residue @ 25°C (dmm)	1 random sample /product /project /supplier
ASTM D5	Penetration, PAV residue @ 25°C (dmm)	1 random sample /product /project /supplier
ASTM D5	Penetration @ 25°C (dmm)	Min. ¹ / ₅ of samples
ASTM D2170	Kinematic Viscosity (mm ² /s)	Min. ¹ / ₅ of samples
ASTM D2171	Absolute Viscosity (Pa·s)	Min. ¹ / ₅ of samples
ASTM D2171	Absolute Viscosity, RTF residue (Pa·s)	Min. ¹ / ₅ of samples
-	Absolute Viscosity Ratio (RTF/Original)	Min. ¹ / ₅ of samples
ASTM D36	Softening Point (Ring & Ball) (°C)	on request
Performance Graded Asphalt Cement		
ASTM D4402	Rotational Viscosity @ 150°C	1 random sample /product /project /supplier
ASTM D4402	Rotational Viscosity @ 135°C	Min. ¹ / ₅ of samples
ASTM D2872	RTFOT Mass Change (%)	Min. ¹ / ₅ of samples
ASTM D6521	PAV Conditioning	Min. ¹ / ₅ of samples
ASTM D7175	DSR Complex Shear Modulus (kPa)	Min. ¹ / ₅ of samples
ASTM D6648	BBR m-value & Creep stiffness (MPa)	Min. ¹ / ₅ of samples
AASHTO T350	Elastic Recovery using DSR	Min. ¹ / ₅ of samples, (Polymer modified asphalt only)



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Table 2: Emulsified Asphalt Test Methods and Frequency

Test Standard	Test Method	Test Frequency
Emulsified Asphalt		
<i>Tests on Emulsion:</i>		
ASTM D6997	Residue by Distillation (%)	Min. 1/3 of samples
ASTM D6997	Oil Distillate (% by volume)	Min. 1/3 of samples
ASTM D7496	Saybolt Furol Viscosity (SFs)	on request
ASTM D6933	Sieve Test (%)	on request
ASTM D6936	Demulsibility (%)	on request
ASTM D6930	Storage Stability/Settlement (%)	on request
ASTM D244	Coating Test (%)	on request, SS & HF Mixing Grade only
<i>Tests on Distillation Residue:</i>		
ASTM D5	Penetration @ 25°C (dmm)	Min. 1/3 of samples
ASTM D5	Penetration @ 4°C (dmm)	Min. 1/3 of HF-500M-HR samples
ASTM D4957	Apparent Viscosity @ 60°C (Pa-s)	on request
ASTM D139	Float Test @ 60°C (s)	on request, HF & HF Mixing Grade only
ASTM D113	Ductility @ 60°C (mm)	on request, SS, RS & CQS-1HP only
ASTM D36	Softening Point (Ring & Ball) (°C)	on request, CQS-1HP only
ASTM D6084	Elastic Recovery @ 10°C (%)	on request, HF Polymer modified only

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5.0 TEST RESULTS

All test results will be used as a basis for rejection or acceptance, in accordance to the latest material specification for asphalt cements on the Approved Products list.

Asphalt cement with test results failing to meet the relevant penetration grade shall be subject to Pay Adjustment as per *MEB P027 Standard Practice for Pay Adjustment for Penetration Grade Asphalt Cement*.

Asphalt cement with test results failing to meet the relevant performance grade shall be subject to pay adjustment as per *MEB P026 Standard Practice for Pay Adjustment for Performance Graded Asphalt Cement*.

Emulsified asphalt with test results failing to meet the specification may be subject to Pay Adjustment depending on the extent of the problem.

5.1 Re-testing Out of Specification Samples

Penetration Grade and Emulsified Asphalt Cement samples that *do not conform* to the specification shall be re-tested on another portion of the same sample, to verify the results.

If the re-test shows that the asphalt cement sample meets the specification, the material in question will be considered to be acceptable.

If the re-test shows that the asphalt cement sample is out of specification, the asphalt cement in question will be reported as failed.

The test result closest to the specification range will be used for any Pay Adjustment calculation. The original and re-test results shall be included in the report.

5.2 Notification of Out-of-Specification Test Results

The Contract Administrator shall notify the Contractor within three (3) days of receipt of the out of specification test results. The Contractor will also be informed that the testing frequency for that asphalt material will increase as a result of non-conformance to the specification.