

**2010 CANADIAN ASPHALT EXCHANGE PROGRAM**  
**(Emulsified Asphalt Portion)**  
**Schedule of Testing and Handling of Test Materials**

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The package of materials for the testing of an HF-150S emulsified asphalt contains three replicate samples.

Each of the following tests should be performed on each of the three replicate samples:

**Tests on Emulsion**

1. Saybolt-Furol Viscosity at 50 °C, (seconds)  
(Use the same orifice for each test)
2. Residue by Distillation, (% by mass)  
(Use the same still apparatus for each test)
3. Oil Portion of Distillate, (% by volume)
4. Demulsibility, 50 ml, 5.55 g/l CaCl<sub>2</sub>, (% by mass)

**Tests on Residue**

1. Penetration at 25 °C, 100 g, 5 seconds, (dmm)

In addition to test procedures given in ASTM D244, please use the following procedure to prepare the distillation residue for penetration testing;

- a. Follow ASTM D5 except for the following. As soon as possible after the completion of the distillation test, pour residual asphalt into the penetration container until it is approximately half full. Pour an additional 25 mL of residue into a preheated container with a pouring spout and set this on a hot plate at 260° C for viscosity and float tests. Pour remaining residue into the penetration container to a depth of approximately 60 mm. Do not pour residual asphalt through a sieve.
- b. Immediately remove the pen can from the hot plate after pouring of the sample. Place the pen can on a 3/4" thick plywood base covered with a paper towel. Note that the piece of plywood should be large enough to ensure full contact with the inverted glass beaker.
- c. Cover the pen can with a 600 ml low-form glass beaker. Condition the sample 1 1/2 hours at room temperature and 1 1/2 hours in the temperature bath (25 °C exactly) before running the penetration test.
- d. Distilled water should be used in the temperature bath for conditioning sample.

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- e. Report to nearest whole unit the average of three penetrations whose values do not differ by more than the following:

If first reading is between:	Maximum difference between highest and lowest reading:
101 - 150	20
151 - 200	25
201 - 250	30
251 - 300	35

- If, after five penetrations of an individual residue sample three acceptable values are not obtained, then a second residue shall be prepared from the same emulsion sample.
  - The intent is to standardise the procedure for residue conditioning in air. The described procedure will reduce the effects of variable heat loss due to air conditioning, drafts and varying types of counter tops.
2. Apparent Viscosity at 60° C, (Pa·s)  
(Use the same viscosity tube for each test)

Follow ASTM D4957 Standard Test Method for APPARENT VISCOSITY OF ASPHALT EMULSION RESIDUES AND NON-NEWTONIAN BITUMENS BY VACUUM CAPILLARY VISCOMETER.

- Select a viscometer that will give a flow time between 50 s and 200 s for the C zone of a Modified Koppers viscometer.
- All viscosity testing shall be conducted at 60 °C under a 30 cm Hg vacuum. Viscosity determinations with Modified Koppers shall be reported at the shear rate of 0.5 s<sup>-1</sup>.
- If the residues rise into be B zone of Modified Koppers tubes prior to applying the vacuum, use only the C, D, E and F zone flow times for viscosity and shear rate determinations.
- Cooling of residues to ambient temperature and re-heating for testing at a later time shall not be permitted.
- Koch Materials Ltd. suggests a tube size of mK 100 for testing this emulsion residue.

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Each sample should be thoroughly mixed before pouring for the individual tests. Care should be taken not to entrain air in the samples during mixing.

Report the results of a single determination only, not the average of two or more except in cases where an average is called for in the method. Each individual test should be made on the three replicates by the same operator. However, it is not necessary that all tests listed be done by the same operator.

**PLEASE PLAN TO CONDUCT YOUR TESTING OF THE EMULSION SAMPLES WITHIN FOUR WEEKS OF THE DISPATCH OF THE SAMPLE.**

If the samples have separated during shipping, please order replacement samples by phoning:

Ian Vickaryous  
Ambertec Ltd.  
Industrial Park Road  
P.O. Box 669  
Macklin, Saskatchewan  
S0L 2C0  
Phone: (306) 753-2717  
Fax: (306)-753-2880  
ianvick@ambertec.ca

Questions regarding the Exchange Program and completed data collection forms are to be directed/sent to the following:

Magdy Beshara, P.Eng.  
Testing Standards Engineer  
Saskatchewan Ministry of Highways & Infrastructure  
Engineering Standards Branch  
1610 Park Street  
Regina, Saskatchewan  
S4N 2G1  
Phone: (306) 787-4922  
Fax: (306) 787-4582  
magdy.beshara@gov.sk.ca

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**Data Collection and Submission Forms**

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**A. PARTICIPANT DOCUMENTATION**

Agency/Company \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Contact Person \_\_\_\_\_

Telephone No. \_\_\_\_\_

Fax No. \_\_\_\_\_

E-mail Address \_\_\_\_\_

**B. SAMPLE DOCUMENTATION**

Date Samples Received \_\_\_\_\_

Date Testing Commenced \_\_\_\_\_

Dated Testing Completed \_\_\_\_\_

**C. PARTICIPANT COMMENTS**

Please provide any comments which may be of value to this or future exchanges:

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\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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**D. TEST RESULTS**

<b>EMULSIFIED ASPHALT GRADE HF-150S</b>			
<b>Replicate Number</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>TESTS ON EMULSION</b>			
<b>Saybolt-Furol Viscosity @ 50 °C, (s)</b> <small>(Report to the nearest 0.1 s)</small>	<input type="text"/>	<input type="text"/>	Test No. 301
<b>Date Saybolt-Furol Viscosity Tested (yy-mm-dd)</b>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Residue by Distillation, (% by mass)</b> <small>(Report to the nearest 0.1 %)</small>	<input type="text"/>	<input type="text"/>	302
<b>Total Distillation Time, (minutes)</b> <small>(Report to the nearest minute)</small>	<input type="text"/>	<input type="text"/>	303
<b>Oil Portion of the Distillate, (ml)</b> <small>(Report to the nearest 0.5 ml)</small>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Oil Portion of the Distillate, (% by Volume of Emulsion)</b> <small>(Report to the nearest 0.1 %)</small>	<input type="text"/>	<input type="text"/>	304
<b>Demulsibility, 50 ml, 5.55 g/l CaCl<sub>2</sub>, (% by mass)</b> <small>(Report to the nearest 0.1 %)</small>	<input type="text"/>	<input type="text"/>	305
<b>TESTS ON ASPHALT RESIDUE</b>			
<b>Penetration at 25°C, 100 g, 5 s, (dmm)</b> <small>(Report to the nearest whole unit)</small>	<input type="text"/>	<input type="text"/>	Test No. 306
<b>Residue Conditioning Time in Air, (minutes)</b> <small>(Report to the nearest minute)</small>	<input type="text"/>	<input type="text"/>	307
<b>Residue Conditioning Time in Water Bath, (minutes)</b> <small>(Report to the nearest minute)</small>	<input type="text"/>	<input type="text"/>	308
<b>Apparent Viscosity at 60°C, (Pa-s)</b>	<input type="text"/>	<input type="text"/>	309
<b>Agency / Company Name:</b>	<input style="width: 100%;" type="text"/>		

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EMULSIFIED ASPHALT GRADE HF-150S

Replicate No.	<input type="text"/>
Vacuum, mm Hg	<input type="text"/>
Date Tested (yy-mm-dd)	<input type="text"/>
Modified Kopper Viscometer Size No.	<input type="text"/>

Zone	B	C	D	E	F
Viscosity Constant					
Flow Time, s					
Tube Shear Constant, K					
Shear Rate, s					
Viscosity, Pa·s at 0.5 s <sup>-1</sup>					

Replicate No.	<input type="text"/>
Vacuum, mm Hg	<input type="text"/>
Date Tested (yy-mm-dd)	<input type="text"/>
Modified Kopper Viscometer Size No.	<input type="text"/>

Zone	B	C	D	E	F
Viscosity Constant					
Flow Time, s					
Tube Shear Constant, K					
Shear Rate, s					
Viscosity, Pa·s at 0.5 s <sup>-1</sup>					

Replicate No.	<input type="text"/>
Vacuum, mm Hg	<input type="text"/>
Date Tested (yy-mm-dd)	<input type="text"/>
Modified Kopper Viscometer Size No.	<input type="text"/>

Zone	B	C	D	E	F
Viscosity Constant					
Flow Time, s					
Tube Shear Constant, K					
Shear Rate, s					
Viscosity, Pa·s at 0.5 s <sup>-1</sup>					

Agency / Company Name:	<input type="text"/>
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