



## Specifications For Manufactured Materials

Section: ASPHALT CEMENTS

Subject: ASPHALT CEMENTS

### 1. PRODUCT DESCRIPTION

#### 1.1 Description

The specification for asphalt cements (AC) applies to asphalts specially prepared as to quality and consistency for direct use in the manufacture of hot-mix asphalt concrete pavements. Asphalt Cements are specified by the following grades: 150-200(A), 200-300(A), 300-400(A), 400-500(A), 200-300(B) and 300-400(B).

#### 1.2 Composition/Characteristics

Asphalt Cements shall consist of fluxed or unfluxed asphalt specially prepared as to quality and consistency and having a penetration at 25° C as specified herein for each grade, under a load of 100 grams applied for 5 seconds. All Asphalt Cements shall be homogeneous and uniform in character throughout. They shall be free from water and other impurities and shall not foam when heated to 175° C.

#### 1.3 Application/Use

The Asphalt Cements described herein shall be suitable for use as outlined in Table 1: Principal Uses of Asphalt Materials of the National Standard of Canada CAN/CGSB 16.6-M89, PRINCIPAL USES AND TERMINOLOGY FOR ASPHALT MATERIALS FOR ROAD PURPOSES.

#### 1.4 Method of Production

All Asphalt Cements shall be prepared by refining of crude petroleum by suitable methods. If the supplier elects to incorporate non traditional material components in their asphalt cements such as additives, waste products or by-products of other industrial and manufacturing processes, the Province must be advised in writing before any material is supplied.

Section:

ASPHALT CEMENTS

Subject:

ASPHALT CEMENTS

## 1.5 Definitions

Asphalt Cement: Dark brown to black solid or semi-solid cementitious material which gradually liquifies when heated. One type of bitumen that is obtained as residue in refining crude oil.

Bitumen: Any mixture of hydrocarbons of natural or pyrogenous origin or both which is completely soluble in carbon disulphide.

## 2. PRODUCT SPECIFICATION

### 2.1 General Requirements

#### 2.1.1 Uniformity

All grades of Asphalt Cement described herein shall be free of contamination and shall be homogeneous and uniform in character throughout.

#### 2.1.2 Delivery

The specified material shall be delivered in accordance with the Department's Specifications for Manufactured Materials SMM 104 General Provisions for Asphalt Supply Contracts.

#### 2.1.3 Prequalification Samples

First time suppliers of products described in the specification shall comply with the prequalification requirements described in SMM 104.

# Specifications For Manufactured Materials

SMM 101

Section:

ASPHALT CEMENT

Subject:

ASPHALT CEMENT

## 2.2 Material Characteristics and Properties

TABLE 1  
Requirements of Asphalt Cements

GRADE	150-200(A)	200-300(A)	300-400(A)	400-500(A)	200-300(B)	300-400(B)	TEST METHOD
PROPERTY							(Note 2)
Viscosity @ 60°C,(Pa.s)	(1)	(1)	(1)	(1)	(1)	(1)	ASTM D2171
Penetration @ 25°C, 100 g, 5 s (.1 mm)	(1)	(1)	(1)	(1)	(1)	(1)	ASTM D5
Ductility @ 15°C, 5 cm/min. minimum (cm)	-	100	100	-	100	-	ASTM D113
Ductility @ 25°C minimum (cm)	100	-	-	-	-	-	ASTM D113
Flashpoint (COC), (°C)	205	175	175	175	175	175	ASTM D92
Solubility in Trichloroethylene minimum (%)	99.5	99.5	99.5	99.5	99.5	99.5	ASTM D2042
Thin Film Oven Test Weight Loss, maximum (%)	1.0	1.5	2.0	2.5	1.5	2.0	ASTM D1754
Penetration @ 25°C, 100 g 5s % of original minimum (%)	50	45	-	-	45	-	ASTM D5
Viscosity @ 60°C of residue Max. % of original (%)	-	-	300	400	-	300	ASTM D2171

### Note (1)

Viscosity @ 60°C and penetration @ 25°C shall fall within the area described in Figure 1.

### Note (2)

Reference to ASTM Test Procedures shall be from the most recently approved version of the test procedure available at the time of supply contract award.

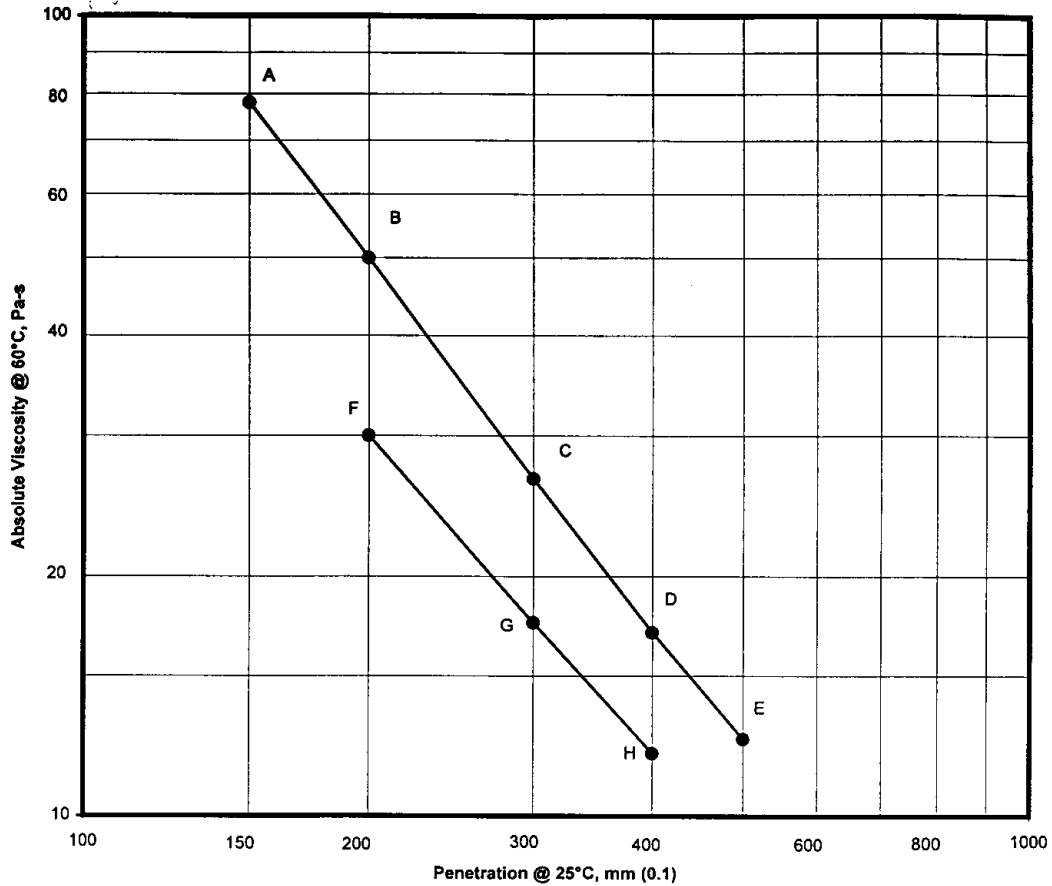
# Specifications For Manufactured Materials

SMM 101

Section:  
ASPHALT CEMENTS

Subject:  
ASPHALT CEMENTS

**FIGURE 1 Penetration-Absolute Viscosity Relationships for Asphalt Cements**



GRADE OF ASPHALT	150-200A			200-300A			300-400A			400-500A			200-300B			300-400B		
	POINT	ABS. VISC.	PEN.	POINT	ABS. VISC.	PEN.	POINT	ABS. VISC.	PEN.	POINT	ABS. VISC.	PEN.	POINT	ABS. VISC.	PEN.	POINT	ABS. VISC.	PEN.
VISCOSITY & PENETRATION SHALL BE WITHIN GRAPHIC REGIONS DESCRIBED BY THE LETTERED CO-ORDINATES	A	78	150	B	50	200	C	26.5	300	D	17	400	B	50	200	C	26.5	300
	B	50	200	C	26.5	300	D	17	400	E	12.5	500	F	30	200	G	17.5	300
													G	17.5	300	H	12	400
													C	26.5	300	D	17	400

NOTE: THERE ARE NO MAXIMUM VISCOSITY LIMITS FOR "A" GRADE ASPHALT CEMENTS

Section:

ASPHALT CEMENT

Subject:

ASPHALT CEMENT

### 3. QUALITY ASSURANCE

#### 3.1 Samples

Samples for quality assurance testing will be collected in accordance with Standard Testing Procedure (STP) 102 Sampling Asphalt Materials.

#### 3.2 Testing

##### 3.2.1 **Sample Preparation**

The samples shall be heated and stirred prior to pouring individual test samples to ensure a homogeneous and uniform character throughout.

##### 3.2.2 **Pay Reduction Tests**

The Province has the option to do any one or more of the tests listed in Table 1 on any sample obtained by it. Pay reductions will be based on the results of the tests performed.

If a test result is found to fall outside of the specification limits, a second test will be done on another portion of the same sample and the results averaged to assess the pay adjustment.

Should the duplicate test results differ by more than the tolerances for repeatability stated in 3.2.3 of this specification, then the average of the two test values shall not be used and instead the test result numerically nearest the specification limit shall govern.

##### 3.2.3 **Interpretation of Results**

The criteria for judging the acceptability of test results for each property specified herein shall be the tolerances for repeatability specified in the most recent American Society for Testing and Materials (ASTM) Standard Test Method for that property.

# Specifications For Manufactured Materials

SMM 101

Section:

ASPHALT CEMENTS

Subject:

ASPHALT CEMENTS

**3.2.4** Loads on which no tests are performed or where tests have not been made within four weeks of the sampling date, will be accepted without pay adjustment.

## **3.3 Acceptance and Rejection**

Pay reductions on asphalt cements which do not meet specification will be calculated as outlined in the attached form - FORM FOR DETERMINING THE PAY REDUCTION FOR ASPHALT CEMENT THAT DOES NOT MEET SPECIFICATION.

## **4. MEASUREMENT**

Measurement of asphalt cement will be in accordance with SMM 104.

## **5. DELIVERY**

Delivery of asphalt cement will be in accordance with SMM 104.

## **6. PAYMENT**

Payment for asphalt cement will be in accordance with SMM 104 and the following:

FORM FOR DETERMINING THE PAY REDUCTION FOR ASPHALT CEMENT THAT DOES NOT MEET SPECIFICATION

MANUFACTURER \_\_\_\_\_ LAB ADMITTANCE NO. \_\_\_\_\_

PRODUCT TYPE \_\_\_\_\_ CONTROL SECTION \_\_\_\_\_

DELIVERY SLIP NO. \_\_\_\_\_ DEPARTMENT CONTRACT NO. \_\_\_\_\_

DATE SAMPLED \_\_\_\_\_ MAINTENANCE TANK LOCATION \_\_\_\_\_

DATE TESTED \_\_\_\_\_ PROJECT MANAGER \_\_\_\_\_

# Specifications For Manufactured Materials

SMM 101

Section:

ASPHALT CEMENT

Subject:

ASPHALT CEMENT

ADJUSTMENT TEST	SPECIFICATION LIMITS		TEST RESULTS	NO. UNITS	MULTIPLICATION FACTOR	NO. OF POINTS
	MIN	MAX		OUTSIDE SPEC LIMITS		
Viscosity @ 60° C, (Pa.s)	_____	_____	_____	_____ (Note 1)	_____	_____
Penetration @ 25° C, 100 g, 5 s , (0.1mm)	_____	_____	_____	_____ (Note 2)	_____	_____
Ductility @ 25° C, minmum (cm)	_____	_____	_____	_____ 25	_____	_____
Flashpoint (C.O.C.), (°C)	_____	_____	_____	_____ (Note 3)	_____	_____
Solubility in Trichloroethylene min. (%)	_____	_____	_____	_____ 250	_____	_____
Thin Film Oven Test, Weight Loss, max. (%)	_____	_____	_____	_____ 250	_____	_____
Penetration @ 25° C, 100g, 5s % of original, minimum (%)	_____	_____	_____	_____ 80	_____	_____
Viscosity @ 60° C of Residue Max. % of original	_____	_____	_____	_____ 10	_____	_____
TOTAL ADJUSTMENT POINTS					_____	_____

**Note 1**

- 150/200A Multiplier Factor is 40
- 200/300A Multiplier Factor is 50
- 300/400A Multiplier Factor is 75
- 400/500A Multiplier Factor is 175
- 200/300B Multiplier Factor is 75
- 300/400B Multiplier Factor is 175

**Note 2**

- 150/200A Multiplier Factor is 40
- 200/300A Multiplier Factor is 25
- 300/400A Multiplier Factor is 20
- 400/500A Multiplier Factor is 20
- 200/300B Multiplier Factor is 25
- 300/400B Multiplier Factor is 20

**Note 3**

No payment will be made for any product that has a flashpoint below the minimum specification.

# Specifications For Manufactured Materials

SMM 101

Section:

ASPHALT CEMENTS

Subject:

ASPHALT CEMENTS

$$\text{PAY ADJUSTMENT POINTS} = \left( \frac{\text{TOTAL ADJUSTMENT POINTS}}{100} \right)^{1.25}$$

If Pay Adjustment Points  $\leq$  5, Pay Factor is 1

$$\text{If Pay Adjustment Points} > 5, \text{ Pay Factor is } 1 - \left( \frac{\text{PAY ADJUSTMENT POINTS}}{100} \right)$$

Payment = (Price/Kilogram) (Total Weight) (Pay Factor); Except that, if the calculated pay adjustment points exceed 5, the pay reduction will be \$200.00 or the calculated pay reduction, whichever is greater.