



# Specifications For Manufactured Materials

Section: EMULSIFIED ASPHALT

Subject: INVERTED EMULSIFIED PRIMER

## 1. PRODUCT DESCRIPTION

### 1.1. Description

The specification for inverted emulsion primer (IEP-1) applies to liquid asphaltic material in the form of a homogeneous non-ionic inverted emulsion. Inverted emulsion primer is specified by the designation IEP-1.

### 1.2. Composition/Characteristics

IEP-1 emulsified asphalt shall consist of finely divided particles of water dispersed in a liquid asphalt.

### 1.3. Application/Use

The IEP-1 emulsified asphalt described herein shall be suitable for the use as a Prime Coat, an application of bituminous material to an absorptive surface designed to penetrate, bond and stabilize this existing surface, to provide water proofing and to promote adhesion between it and the new construction.

### 1.4. Method of Production

Inverted Emulsion Primer is a dispersion of finely divided particles of water suspended in an asphalt cement effected through the use of mechanical energy, thermal energy and the use of emulsifiers to maintaining the dispersion.

If the supplier elects to incorporate non traditional material components such as crude oil, waste products or by products of other industrial and manufacturing processes in IEP-1 emulsified asphalt, the Province must be advised in writing before any material is supplied.

### 1.5. Definitions

**Asphalt Cement:** A 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.

Section:

EMULSIFIED ASPHALT

Subject:

INVERTED EMULSIFIED PRIMER

**Emulsion Primer:** A mixture of water, asphalt cement and an emulsifying agent, which maintains the water particles in suspension. The water particles are the discontinuous phase and the asphalt cement is the continuous phase.

**Residual Bitumen:** The residual material which remains after the distillation of an emulsified asphalt as described by the test methods referenced in this specification.

**Prime Coat:** An application of emulsified or cutback asphalt material to an absorptive surface, designed to penetrate, bond and stabilize the existing surface and to promote adhesion between it and the construction course that follows.

## 2. PRODUCT SPECIFICATION

### 2.1. General Requirements

#### 2.1.1. **Uniformity**

The IEP-1 emulsified asphalt 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 SHT SMM 104 - General Provisions for Asphalt Supply Contracts.

#### 2.1.3. **Prequalification Samples**

First time suppliers of products described in the specification are referred to Item 3 of the Terms and Conditions of Tender.

Section:  
EMULSIFIED ASPHALT

Subject:  
INVERTED EMULSIFIED PRIMER

## 2.2. Material Characteristics and Properties

TABLE 1  
Requirements of Inverted Emulsion Primer (IEP-1)

ASPHALT GRADE REQUIREMENTS Property	IEP-1		Test
	Min.	Max.	Methods
Flashpoint, (Open Tag), (°C)	45	-	ASTM D1310
Residue by Distillation, (% by Mass)	40	-	CAN2-16.5-M84 Par. 6.2.1 Note 1
Oil Portion of Distillate, (% by Volume)	12	29	CAN2-16.5-M84 Par. 6.2.1.3
Viscosity (SF) @ 50° C, (s)	80	200	STM D244
Storage Stability Test, 24 hrs, (% by mass)	-	1.5	ASTM D244
Miscibility in Water	Is not Miscible with Water		ASTM D244 Note 2
<u>Tests on Residue from Distillation</u>			
Penetration @ 25° C, 100 g, 5 s	100	300	CAN2-16.5-M84 Par. 6.2.4
Solubility in Trichloroethylene, (%)	97.5	-	ASTM D244
Ductility @ 25° C, (cm)	100	-	ASTM D113 Note 3

NOTE 1: Upper limit on % residue is governed by the consistency limits.

NOTE 2: Follow ASTM D244 except add the emulsified primer to the water. After two hours the water should be clear.

Section:

EMULSIFIED ASPHALT

Subject:

INVERTED EMULSIFIED PRIMER

NOTE 3: If the ductility at 25° C is less than 100 cm, the material will be acceptable if its ductility at 15° C is more than 100 cm.

### 3. QUALITY ASSURANCE

#### 3.1. Samples

Samples will be in accordance with STP 102 - Sampling Asphalt Materials.

#### 3.2. Testing

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

Sample preparation for IEP-1 emulsified asphalt shall be in accordance with ASTM, D244 - Standard Test Methods for Emulsified Asphalt, with the following qualifications:

- (a) Once the sample has reached the specified temperature of  $50 \pm 3^{\circ}$  C, it shall be removed from the heat source within 24 hours, mixed and individual test samples poured; and
- (b) Mixing shall be by hand, stirring until the sample is homogeneous in character, taking care to ensure that air is not being entrained into the emulsion during mixing.

##### 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 samples obtained by it. Pay reductions will be based on 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 3.2.4 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.

Section:  
EMULSIFIED ASPHALT

Subject:  
INVERTED EMULSIFIED PRIMER

### 3.2.3. Time Limits

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.

### 3.2.4. 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 ASTM Standard Test Method for that property. For the following properties, testing within a lab or between two labs shall meet the following requirements.

Property	Unit of Measure	Repeatability	
		Within a Lab (same operator)	Range of Measurement
Oil Portion of Distillate	% by volume	0.5	0.0 - 30.0
		0.8	30.0 - 50.0
Penetration on Residue (25° C, 100 g, 5 s)	0.1 mm	15	80 - 200
		35	200 - 500

### 3.3. Acceptance and Rejection

Pay reductions on IEP-1 emulsified asphalt which do not meet specification will be calculated as outlined in the attached form - FORM FOR DETERMINING THE PAY REDUCTION ADJUSTMENT FOR IEP-1 EMULSIFIED ASPHALT THAT DOES NOT MEET SPECIFICATION.

## 4. MEASUREMENT

Measurement of IEP-1 emulsified asphalt will be in accordance with SMM 104 - General Provisions for Asphalt Supply Contracts.

## 5. DELIVERY

Delivery of IEP-1 emulsified asphalt will be in accordance with the Terms and Conditions of Tender and SMM 104 - General Provisions for Asphalt Supply Contracts.

Section:  
EMULSIFIED ASPHALT

Subject:  
INVERTED EMULSIFIED PRIMER

## 6. PAYMENT

Payment for IEP-1 emulsified asphalt will be in accordance with the Terms and Conditions of Tender and SMM 104 - General Provisions for Asphalt Supply Contracts.

### FORM FOR DETERMINING THE PAY REDUCTION FOR IEP-1 EMULSIFIED ASPHALT THAT DOES NOT MEET SPECIFICATION

MANUFACTURER: \_\_\_\_\_

LAB ADMITTANCE NO.: \_\_\_\_\_

PRODUCT TYPE: \_\_\_\_\_

CONTROL SECTION: \_\_\_\_\_

DELIVERY SLIP NO: \_\_\_\_\_

SHT CONTRACT NO: \_\_\_\_\_

DATE SAMPLED: \_\_\_\_\_

MAINTENANCE TANK LOCATION: \_\_\_\_\_

DATE TESTED: \_\_\_\_\_

RES. ENG/AMS: \_\_\_\_\_

# Specifications For Manufactured Materials

SMM 103-4

Section:

EMULSIFIED ASPHALT

Subject:

INVERTED EMULSIFIED PRIMER

## SPECIFICATION

ADJUSTMENT TEST	LIMITS		NO. OF UNITS		NO. OF	
	MIN	MAX	TEST RESULTS	OUTSIDE SPEC LIMITS	FACTOR	MULTIPLIER POINTS
Flashpoint (Open Tag), (°C)	_____	_____	_____	_____	(Note 1)	_____
Residue by Distillation (% by mass)	_____	_____	_____	_____	110	_____
Oil Portion of Distillation (% by volume)	_____	_____	_____	_____	200	_____
Viscosity (SF) @ 50° C, (s)	_____	_____	_____	_____	35	_____
Storage Stability Test, 24 h (% by mass)	_____	_____	_____	_____	75	_____
Miscibility with Water	_____	_____	_____	_____	(Note 2)	_____
Penetration @ 25° C, 100 g, 5 s (0.1 mm)	_____	_____	_____	_____	9	_____
Solubility in Trichlorethylene (% by weight)	_____	_____	_____	_____	65	_____
Ductility @ 25° C, (cm)	_____	_____	_____	_____	25	_____
TOTAL ADJUSTMENT POINTS						_____

Note 1: Any product that has a flashpoint below minimum specs will have a No Payment pay adjustment.

Note 2: Any product that is miscible with water will have a No Payment pay adjustment.

# Specifications For Manufactured Materials

SMM 103-4

Section:

EMULSIFIED ASPHALT

Subject:

INVERTED EMULSIFIED PRIMER

$$\text{PAY ADJUSTMENT} = \frac{\text{Total Adjustment Points}}{\text{POINTS}}^{2.3} = \frac{\quad}{100}^{2.3} = \frac{\quad}{100}$$

If Pay Adjustment Points  $\leq$  2, Pay Factor is 1

If Pay Adjustment Points  $>$  2, Pay Factor is  $1 - \frac{\text{Pay Adjustment Points}}{100}$

Payment = (Price/Kilogram) (Total Weight)(Pay Factor); Except that, if the calculated pay adjustment points exceed 2, the pay reduction will be \$200.00 or the calculated pay reduction, whichever is greater.



# Specifications For Manufactured Materials

SMM 103-4

Section:

EMULSIFIED ASPHALT

Subject:

INVERTED EMULSIFIED PRIMER

## APPROVAL SHEET

New  Revision  Date of Previous Document 93-02-18

Effective Date: 99-03-15

### Description of Revision (Reason for Revision):

Deletion of Note 3 meant for year 1992

### Review/Implementation Process:

Reviewed by the Testing Standards Engineer

### Other Manuals/Policies Affected:

Nil

### Follow Up/Training Required:

Nil

### Comments/Concerns/Implications (Budget/Environment/Stakeholders):

Nil

Prepared and Recommended Abdul Qayyum 99-03-15  
Testing Standards Engineer Date

Recommended by: \_\_\_\_\_  
Director Testing Services Date

Recommended by: \_\_\_\_\_  
Executive Director Eng. Services Date

Approved by: \_\_\_\_\_  
Asst. Deputy Minister, Operations Date

Electronic File Updated \_\_\_\_\_  
Update Mailed \_\_\_\_\_