



## **MATERIAL SPECIFICATION FOR EMULSIFIED ASPHALT PATCHING MATERIAL AND PROPRIETARY COLD PATCHING MATERIAL**

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<b>1153.01</b>	<b>SCOPE</b>
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This specification covers the requirements for the manufacturing of emulsified asphalt patching material.

#### **1153.01.01 Specification Significance and Use**

This specification is written as a municipal-oriented specification. Municipal-oriented specifications are developed to reflect the administration, testing, and payment policies, procedures, and practices of many municipalities in Ontario.

Use of this specification or any other specification shall be as specified in the Contract Documents.

#### **1153.01.02 Appendices Significance and Use**

Appendices are not for use in provincial contracts as they are developed for municipal use, and then, only when invoked by the Owner.

Appendices are developed for the Owner's use only.

Inclusion of an appendix as part of the Contract Documents is solely at the discretion of the Owner. Appendices are not a mandatory part of this specification and only become part of the Contract Documents as the Owner invokes them.

Invoking a particular appendix does not obligate an Owner to use all available appendices. Only invoked appendices form part of the Contract Documents.

The decision to use any appendix is determined by an Owner after considering their contract requirements and their administrative, payment, and testing procedures, policies, and practices. Depending on these considerations, an Owner may not wish to invoke some or any of the available appendices.

## **1153.02 REFERENCES**

When the Contract Documents indicate that municipal-oriented specifications are to be used and there is a municipal-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.MUNI, unless use of a provincial-oriented specification is specified in the Contract Documents. When there is not a corresponding municipal-oriented specification, the references below shall be considered to be the OPSS listed, unless use of a provincial-oriented specification is specified in the Contract Documents.

This specification refers to the following standards, specifications, or publications:

### **Ontario Provincial Standard Specifications, Material**

OPSS 1003      Aggregates - Hot Mix Asphalt

### **Ministry of Transportation Publications**

MTO Laboratory Testing Manual:

LS-282	Quantitative Extraction of Asphalt Cement and Analysis of Extracted Aggregate from Bituminous Paving Mixtures
LS-289	Workability of Cold Bituminous Patching Material by Blade Resistance Method
LS-290	Cohesion of Cold Bituminous Patching Material by Rolling Sieve Method
LS-323	Stripping Resistance of Asphaltic Mixtures by Using Boiling Water

### **Environment and Climate Change Canada**

Code of Practice for the Reduction of Volatile Organic Compound (VOC) Emissions from Cutback and Emulsified Asphalt, February 2017

## **1153.04 DESIGN AND SUBMISSION REQUIREMENTS**

### **1153.04.01 Design Requirements**

The emulsified asphalt patching material or Proprietary Cold Patching Material (PCPM) shall meet all the requirements of this specification and shall maintain its effective properties in stockpile for a minimum period of eight months from the date of supply.

### **1153.04.02 Submission Requirements**

The following shall be submitted to the Owner 7 Days before the start of the production.

a) Mixture composition.

- b) Type and grade of asphalt emulsion, supplier and facility type and location from which the asphalt emulsion is being supplied.
- c) A statement that the Volatile Organic Compound (VOC) content of the emulsified asphalt used in the mix is not more than the limit specified in the Code of Practice for the Reduction of Volatile Compound (VOC) Emissions from Cutback and Emulsified Asphalt.
- d) Test results for the asphalt emulsion that demonstrate compliance to the requirements of the Asphalt Emulsion subsection of this specification.
- e) The aggregate supplier and location from which the aggregates are being supplied.
- f) Type of aggregate and test results for the aggregate that demonstrate compliance to the requirements of the Aggregates and Composition of Emulsified Asphalt Patching Materials subsections of this specification.
- g) Percent of residual asphalt content, percent by mass of patching mixture, when tested according to LS-282, in the mixture demonstrating compliance to the requirements of the Composition of the Mixture subsection of this specification.
- h) Property test results of the mixture including stripping resistance, workability and cohesion.

#### **1153.04.02.1                      Proprietary Cold Patching Material**

The following shall be submitted to the Contract Administrator at least 7 Days prior to the delivery of the PCPM.

- a) A copy of the manufacturer's product specification.
- b) A statement that the binder used has a Volatile Organic Compound (VOC) content not more than the limit specified in the Code of Practice for the Reduction of Volatile Organic Compound (VOC) Emissions from Cutback Asphalt and Emulsified Asphalt.
- c) The aggregate supplier and location from which the aggregates are being supplied.
- d) The type of aggregate and test results for the aggregate that demonstrate compliance to the requirements of the Materials section of this specification.
- e) Test results for percent of residual by mass of patching mixture, when tested according to LS-282, that demonstrate compliance to the requirements of manufacturer's product specification.
- f) Property test results of the mixture including stripping resistance, workability and cohesion.

### **1153.05                              MATERIALS**

#### **1153.05.01                      Asphalt Emulsion**

The asphalt emulsion type for emulsified asphalt patching material shall be selected to ensure compatibility with the aggregates to be used.

#### **1153.05.02                      Aggregates**

Aggregates for emulsified asphalt patching material shall consist of a blend of coarse and fine aggregate such that not less than 85% of the portion passing a 4.75 mm sieve is natural sand.

The aggregates for emulsified asphalt patching material shall consist of clean, hard, durable particles according to the physical requirements for Superpave 12.5 as specified in OPSS 1003.

Gradation of aggregates used in the patching mixture shall be according to Table 1.

**1153.05.03                      Composition of Emulsified Asphalt Patching Material**

The patching mixture shall contain between 3.7 to 5.5% residual asphalt content by mass. The percent residual asphalt shall be expressed as a percentage of the total mix.

The patching mixture shall meet the mixture property testing requirements according to Table 2.

**1153.05.04                      Proprietary Cold Patching Material**

The PCPM shall be according to the manufacturer's product specification and the mix property testing requirement specified in Table 2, including the ingredients that were submitted to obtain Owner approval of the PCPM. The PCPM shall be either a summer or winter mix category as specified in the Contract Documents. The PCPM shall be supplied directly from the manufacturer's terminal without further blending or modification.

The aggregates used in the PCPM shall consist of clean, hard, durable particles meeting the physical requirements for Superpave 12.5 according to OPSS 1003.

All PCPM supplied shall be uniformly coated.

**1153.07                              PRODUCTION**

**1153.07.01                      Composition of the Mixture**

The mineral aggregates and asphalt emulsion shall be combined and mixed to provide a uniformly coated and homogeneous product according to Table 1.

Temperature of the emulsion and mixing temperature shall be as specified by the emulsion supplier.

**1153.07.02                      Proprietary Cold Patching Material**

The composition of the mixture, temperature of the emulsion and mixing temperature shall be according to the manufacturer's product specification.

**TABLE 1**  
**Gradation of the Mixture**

<b>MTO Sieve Designation</b>	<b>Percentage Passing By Mass</b>
16.0 mm	100
13.2 mm	98 - 100
9.5 mm	85 - 100
4.75 mm	50 - 85
2.36 mm	35 - 65
1.18 mm	25 - 50
0.600 mm	15 - 40
0.300 mm	7 - 25
0.150 mm	2 - 13
0.075 mm	0 - 7

**TABLE 2**  
**Mixture Property Testing Requirements**

<b>Mixture Property</b>	<b>Testing Method</b>	<b>Acceptance Parameter</b>	<b>Acceptable Limit</b>	<b>Rejectable Limit</b>
Stripping Resistance	LS-323	Percent Coating	≥ 75%	< 75%
Workability	LS-289	Workability Index	≤ 2,000 N	> 2,000 N
Cohesion	LS-290	Cohesion Index	≥ 60%	< 60%

**Appendix 1153-A, November 2024**  
**FOR USE WHILE DESIGNING MUNICIPAL CONTRACTS**

**Note:** This is a non-mandatory Commentary Appendix intended to provide information to a designer, during the design stage of a contract, on the use of the OPS specification in a municipal contract. This appendix does not form part of the standard specification. Actions and considerations discussed in this appendix are for information purposes only and do not supersede an Owner's design decisions and methodology.

**Designer Action/Considerations**

Designer should include OPSS 307, Stockpiling of Patching Materials and Patching of Asphalt Pavement, in the Contract Documents for transporting and stockpiling requirements and payment for emulsified asphalt patching material.

The designer should ensure that the General Conditions of Contract and the 100 Series General Specifications are included in the Contract Documents.

- Summer or Winter mix category for PCPM.(1153.05.04).

**Related Ontario Provincial Standard Drawings**

No information provided here