

**MINNESOTA DEPARTMENT OF TRANSPORTATION  
CERTIFICATION METHOD OF ACCEPTANCE  
FOR ASPHALT EMULSION**

June 5, 2009

Acceptance of asphalt emulsion by the **Certification Method** provides for acceptance of these materials for use on Minnesota Department of Transportation projects upon the producer's or supplier's certification that the product as furnished to the contractor (or purchasing agency) complies with the pertinent specification and/or contract requirements.

Department projects include: state, county and municipal federal aid and authorized county and municipal state aid projects. In order to provide asphaltic material to Department projects under the **Certification Method**, a supplier<sup>1</sup>, as defined below, shall comply with the following procedures and requirements.

**I. GENERAL REQUIREMENTS**

The supplier shall have laboratory facilities and qualified personnel available to perform all specification tests and maintain an acceptable quality control program. The supplier shall maintain records of all its control testing done in the production of asphaltic materials. These test records shall be available at all times for examination by the Departments' designated representative<sup>2</sup> and for a period of five (5) years after use on a project. Certification is specific to a supplier/terminal and will not be transferable to other sites.

The supplier shall have a written procedure for the inspection of each transport tank prior to loading to insure suitability for loading and freedom from contaminants.

Continuing acceptance of materials under this process is contingent upon satisfactory compliance with procedures and conformance of materials to requirements as determined by test results for source samples and field samples taken by project personnel.

All data received from the supplier is expected to meet the base specification values shown in the Table, unless it is agreed upon that a bias exists, based on the results of the AASHTO Materials Reference Laboratory (AMRL) Proficiency Sample Program (PSP) samples.

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<sup>1</sup> Supplier-A Supplier shall be defined as one who produces or supplies the final product or makes a modification that alters the properties of the emulsified asphalt specified in the Department specifications, prior to final shipment to Department projects. A Supplier shall be a terminal or secondary storage facility. If any modification other than the addition of water for dilution purposes is made the contractor shall be the supplier and must conform to the requirements of this document.

<sup>2</sup>Hereinafter in this document, the usual designated Department Representatives (contact persons) are listed on pages 13 and 14 of this document.

For specialty applications, other emulsified asphalts specified for use on Department projects will be tested and approved by the Department. The supplier maintains responsibility for full compliance testing at a frequency to be determined by the department.

## **II. QUALIFYING FOR CERTIFICATION**

Suppliers requesting certified status for supplying material from their individual facilities shall make application in writing to the Department's representative, who will arrange for and authorize the use of the **Certification Method of Acceptance**. This request should present complete information regarding the supplier's quality control program (control tests, testing frequencies, laboratory facilities, programs for maintaining test and shipment records, proper storage and handling instructions etc.). The Department will notify the supplier contact with the results of their review of the application for certification.

A supplier's certification will remain in effect until denied by the certification program authority or until subsequent reapproval following another inspection. A yearly application in writing need not be made unless a supplier has incorporated changes in their Quality Control plan, or if the certification program authority has altered their certification requirements

Department records will be used to provide a quality history of suppliers. If no quality history exists, one may be established by a cooperative, comprehensive sampling and testing program to ensure that quality control practices are effective.

It is intended that facility inspections will be made each spring by the Department. The inspections will include reviewing sampling and testing procedures, quality control, and facility changes. Also, at this time, the identification and inspection of tanks will be done. Suppliers shall designate and identify tanks that will be used for supplying each grade of asphalt emulsion for Department projects. The Department inspector will verify that the storage and sampling procedures will be adhered to.

The Departments' Districts/Regions will be notified when suppliers become certified.

The Department inspector shall be permitted to visit asphalt emulsion facilities any time during normal business working hours and in the company of appropriate supplier personnel.

## **III. LOSS OF CERTIFICATION**

Certification will be withdrawn from suppliers when one or more of the following conditions exist.

- A. Inability to consistently supply material meeting specifications as measured by non-compliance for three (3) consecutive batch samples according to Department test results for a specific grade.
- B. Failure to participate in AMRL Asphalt Emulsion Proficiency Sample (PSP) and/or Combined State Round Robin Program during any one year. Exceptions will be made for equipment failure. Labs will be required to respond with resolution of equipment failure(s), as detailed in Subsection V.C.6.
- C. Failure to respond to notification of outlying labs in writing within the given timeframe, as detailed in Subsection V.C.5.
- D. Lack of maintenance of required records.
- E. Improper documentation of shipments as defined in Section VII.
- F. Failure to maintain an acceptable quality control program.

Decertification of suppliers will be by the Department. Notification will be in writing.

If a supplier loses certification, materials may be accepted, according to specific procedures agreed to by the Department and supplier. Procedures may require pre-testing and approval of materials before use and/or increasing the frequency of sampling and testing at the job site (refer to Section VIII.B. of this procedure). The Department's costs for pre-testing and increasing sampling and testing of materials will be paid by the supplier/contractor or their agent unless other arrangements are agreed upon by the Department.

#### **IV. QUALIFYING FOR RECERTIFICATION**

If a supplier has lost certification and seeks to be recertified the following is required:

- Fulfill the requirements of Section II, "Qualifying for Certification", of this procedure.
- Submit documentation to the Department's Representative explaining why decertification occurred and the actions the supplier has taken to correct the problems identified by the Department.

A maximum of three-months (of normal production) will be allowed for a supplier to regain certified status under this procedure. If, after that time, the Department determines that the supplier has not attained satisfactory status for certification, material from that source will not be accepted for use on Department projects. The Departments' district/regions will be notified of this action. Decisions regarding the future qualification for certification of a supplier, affected by the above process, shall be at the Department's discretion.

## V. SAMPLING AND TESTING BY SUPPLIER

### A. Minimum Annual Requirements

1. Prior to the start of the shipping season, adequate testing shall be performed on asphalt emulsion to identify characteristics of tank materials on-hand. Before or at the start of shipping, testing on asphalt emulsion to be certified shall have a complete analysis as specified in Table 1 at a minimum of one sample for each grade of asphaltic material. Partial analysis for quality control purposes shall be performed as specified in subsection V.B.2.
2. It is intended that facility annual inspections would be made at this time.
3. Participation in AMRL Asphalt Emulsion PSP and Combined State Round Robin Program will be a requirement, as detailed in Subsection V.C.

This testing will constitute the minimum annual requirements by the Certification Method of Acceptance Program for continuation of a supplier certification.

### B. Sampling and Testing Requirements

1. Sampling. One sample from the tank representing each batch/lot of each grade of material shipped to state work. For material shipped from tanks, the sample may be taken from the tank, from the line during loading, or from the loaded transport.
2. Tests required. Saybolt Viscosity and Residue by Evaporation shall be run daily. For asphalt emulsion remaining in storage greater than 5 days, a sieve test shall be run. For HFRS a demulsibility test shall be run.
3. Send a record of daily quality control results and complete certification analysis test results to the Department central laboratory on an approximate bi-weekly basis, unless the Department specifies otherwise.

### C. AASHTO Materials Reference Laboratory (AMRL) Proficiency Sample or Mn/DOT Round Robin Program

1. General. AMRL and/or Mn/DOT will send out annual round robin samples to supplier's primary laboratory. Satellite labs at terminals may be inspected by a primary laboratory that meets this requirement. Satellite

labs are required to participate in a supplier internal round robin testing program defined in the supplier Quality Control Plan.

2. Purpose. To provide repeatability and reproducibility test data between the Department and suppliers.
3. Report. Send the current copy of AMRL PSP Sample results to designated Mn/DOT Representative within 1 month of receipt.
4. Summary. Mn/DOT will compile a summary report and distribute to all participants. Each supplier's data will remain confidential.
5. AMRL and/or Mn/DOT Round Robin Deficiency Response. An outlier is defined as that data which the AMRL Rating is 2 or lower. Participant shall send Mn/DOT the required deficiency response sent to AMRL.
6. Equipment Failures. Labs will be required to respond to Mn/DOT in writing with resolution to equipment failures.

## **VI. TEST REPORTS (required by Section V)**

The supplier's chief chemist (or other representative) shall certify test reports for samples and submit them to the Department's Representative. This test information will be evaluated and filed for possible future reference. The reports shall be sent to:

Minnesota Department of Transportation  
Office of Materials and Road Research  
1400 Gervais Avenue  
Maplewood, MN 55109  
Attn: Paul Lohmann, Asphalt Certification Specialist  
Email: [Paul.Lohmann@state.mn.us](mailto:Paul.Lohmann@state.mn.us)

## **VII. CERTIFICATION OF SHIPMENTS AND DOCUMENTATION**

For each truck shipment a shipping ticket shall be prepared showing the supplier, supplier location, shipper, signature of shipper or authorized representative, truck number, project number or contract number, customer, grade of emulsified asphalt, unique name, supplier's tank number from which the truck was loaded, loading temperature, weight (mass) of truck before and after loading, Net quantity in Mg (Tons), weight per gallon @ 60 °C, and date and time of loading. A

statement certifying that the material complies with Mn/DOT requirements and Department Specifications shall be on or accompany the shipping ticket. The company invoice or manifest form may be used for this purpose.

In addition to the usual contractor's copy of the shipping ticket, a copy of the shipping ticket containing the certification language for each truck shipment also shall be made available to the project engineer at the job site.

The Department's Representative will furnish a list of certified suppliers to the districts/regions.

## **VIII. SAMPLES OBTAINED BY THE STATE**

### **A. Terminal Samples**

The Department shall have the option to obtain random samples at the source of supply. Samples shall be taken by supplier personnel at the request and under observation of an authorized Department representative. The supplier shall have equipment and facilities available to obtain samples safely.

### **B. Verification Field Samples**

Samples shall be protected against freezing and shall be tested within 14 days after the sample has been taken

#### **MINNESOTA:**

The supplier or contractor personnel will, by random selection from shipments of material at the job site, obtain samples under the observation of a Department representative. Unless otherwise directed by the Engineer, the sampling rate will be a minimum of one (1) per contract for each supplier and grade of asphalt emulsion. Sampling shall be accomplished by obtaining a 2 L (½ gallon) sample of material stored in a plastic container with wide screw top from a transport or distributor. Sampling shall be in accordance with AASHTO Designation T40.

## **IX. ACCEPTANCE OF EMULSIFIED ASPHALT BINDER NOT ON THE APPROVED LIST**

It is the intention of the Department to encourage suppliers to become certified according to this procedure. However, if situations occur where a supplier is not on the Department approved list, materials may be accepted for a designated interim period according to specific procedures agreed to by the Department and supplier. Procedures may require pretesting and approval of materials before use and/or increasing the frequency of sampling and testing at the job site (refer

to Section VIII.B. of this procedure). The Department costs for pretesting and increased sampling and testing of materials will be paid by the supplier/contractor or their agent unless other arrangements are agreed upon by the Department.

## **X. SAMPLES TESTED BY THE STATE WITH NON-COMPLYING RESULTS**

Should a sample tested by the Department show noncompliance, actions will be taken to investigate the sample failure. The purpose of the investigation(s) will be to quickly obtain information to either substantiate the failure data or to provide conclusive evidence that the reported failure is unreliable. There are two types of samples to be considered: 1) terminal random samples taken by the supplier under observation of an authorized Department representative at the shipping refinery or terminal, and 2) verification field samples taken under the direction of the Department project personnel at the job site. The processes to resolve sample failures for each of the two types of samples are as follows:

### **A. Terminal Samples**

If a sample obtained by an authorized Department representative at a supplier plant shows test results out of specification limits, the process of resolving the sample failure will include the following actions as appropriate:

- 1) The Department will notify the supplier.
- 2) The Department and supplier together will determine the quantity and location(s) of the material in question.
- 3) The Department will retest the sample as determined necessary to confirm or disaffirm the original test result(s).
- 4) If material is in transit to or at Department projects, the district/region(s) will be notified.
- 5) The Department may increase the frequency of sampling at the project site(s) involved.
- 6) The Department will investigate and review all pertinent test data.
- 7) The Department's Representative will collect and compile all information, including any from the supplier and district/region(s), and prepare a report with explanations to resolve the sample problem. A copy of the report will be distributed to the district/region, contractor, and supplier.
- 8) The supplier shall take corrective action, as warranted, and submit an

explanation to the Department.

- 9) The Department will determine when the sample is adequately investigated and resolved and the supplier is consistently furnishing specification material.

## **B. Verification Field Samples**

If a sample obtained by the Department at a project site shows test results out of specification limits, the process of resolving the sample failure will include the following actions as appropriate:

- 1) The Department will notify the district/region and determine that the information sent with the sample is correct and the sample does indeed fail. The district/region will notify the contractor. The district/region will arrange for project personnel to investigate all aspects of procuring, handling and submitting the sample for testing. The quantity and location of material in question will be determined. The district/region will report findings to the Department's Representative.
- 2) The Department will conduct retesting of the sample as determined necessary to confirm or disaffirm the original test result(s).
- 3) The Department will notify the supplier who will arrange to investigate all aspects of loading, handling and delivery of the material in question. The supplier shall report findings to the Department's Representative.
- 4) The Department may increase the frequency of sampling at the project site.
- 5) The Department's Representative will collect and compile all information from the district/region and supplier investigations and prepare a report. The Department will determine when the sample has been adequately investigated. The report will contain data with an analysis of information and recommendations for the district/region to resolve the sample problem. A copy of the report will be distributed to the district/region, contractor, and supplier.
- 6) The Department will issue the standard report of tests for the sample showing the failing test result(s).
- 7) The district/region will make the final decision for resolving the sample problem. Generally, the district/region will accomplish this with input from the Department Representative, and supplier. The Department's report of investigations (from step 5 above) will be used in the decision making process. The district/region will notify the contractor. Should the decision involve reduced payment for material(s) in question, standard



Department practices will be followed and administered by the district/region. The contractor will be notified in writing of reduced payments.

- 8) The supplier shall implement corrective measures suggested by the investigation work and notify the Department of actions taken.
- 9) The Department will implement changes in this procedure determined to be warranted by the investigation work.

**DEPARTMENT REPRESENTATIVE:**

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**TABLE 1 Quality Control Tests for Emulsified Asphalts**

Emulsified Asphalt Test	AASHTO Test	CSS-1	SS-1	CRS-1				HFRS-2	HFMS-2	HFRS-2P	HFMS-2P
	Method	CSS-1h	SS-1h	RS-1	RS-2	CRS-2	CRS-2P				
Sayboldt Viscosity @ 25 °C	T-59	x	x	x					x		
Sayboldt Viscosity @ 50 °C	T-59				x	x	x	x		x	x
Residue by Distillation, %	T-59	x	x	x	x	x	x	x	x	x	x
Oil Distillates, ml	T-59					x				x	x
Demulsibility, %	T-59			x	x	x	x	x			
Residue Penetration, dmm	T-49	x	x	x	x	x	x	x	x	x	x
Particle Charge	T-59	x	x			x	x				
Float Test @ 60°C, sec	T-50							x	x	x	x
Sieve, %	T-59	x	x	x	x	x	x	x	x	x	x
Storage Stability, 24 hr, %	T-59	x	x	x	x	x	x	x	x	x	x
Ductility @ 77 F *	T-51	x	x	x	x	x	x	x	x		
Elastic Recovery, % *	T-301						x			x	x

\* ASTM has no precision and bias statement.

## TABLE 2 AASHTO Specifications

Emulsified Asphalt Test	AASHTO Test Method	CSS-1H	CSS-1	CRS-1	CRS-2	CRS-2P	SS-1	SS-1H	HFRS-2	HFMS-2
Viscosity @ 77 F	T-59	20-100	20-100				20-100	20-100		100, min
Viscosity @ 122 F	T-59			20-100	100-400	100-400			75-400	
Residue by Distillation, min	T-59	57	57	60	65	65 <sup>1</sup>	57	57	63	65
Oil Distillates, ml max	T-59			3	3					
Demulsibility, % min	T-59			40	40	40			60	
Residue Penetration	T-49	40-90	100-250	100-250	100-250	100-175	100-200	40-90	100-200	100-200
Particle Charge	T-59	Positive	Positive	Positive	Positive	Positive				
Float Test @ 140 F	T-50								1200	1200
Sieve, % max	T-59	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Storage Stability, 24 hr, % max	T-59	1	1	1	1	1	1	1	1	1
Ductility @ 77 F min	T-51	40	40	40	40	125	40	40	40	40
Elastic Recovery, % min	T-301					50				

1. Residue for CRS-2P shall be done by the distillation test. The distillation test shall meet T-59 except that emulsion manufacturer's recommendations for distillation temperature and hold time shall be used.
2. Emulsion to be supplied for seal coat, armor coat, chip seal or cape seal work shall have a residue penetration of 100-150.
3. Emulsion to be supplied for seal coat, armor coat, chip seal or cape seal work shall have a minimum residue elastic recovery of 55%.