



**INDIANA DEPARTMENT OF TRANSPORTATION
DIVISION OF MATERIALS AND TESTS**

**PERFORMANCE-GRADED ASPHALT
BINDER SUPPLIER PROGRAM
ITM No. 581- 21**

1.0 SCOPE.

- 1.1 This procedure covers the requirements for participation in the Performance-Graded Asphalt Binder Supplier (PGABS) program for supplying PG binders to Department projects.
- 1.2 This ITM may involve hazardous materials, operations or equipment and may not address all of the safety problems associated with the use of the test method. The user of the ITM is responsible for establishing appropriate safety and health practices and determining the applicability of regulatory limitations prior to use.

2.0 REFERENCES.

2.1 AASHTO Standards.

- M 320 Performance-Graded Asphalt Binder
- R 26 Certifying Suppliers of Performance-Graded Asphalt Binders
- R 66 Sampling Asphalt Materials

2.2 ASTM Standards.

- D1417 Standard Test Methods for Rubber Latexes-Synthetic

2.3 ITM Standards.

- ITM 583 Certified Hot Mix Asphalt Producer Program

3.0 TERMINOLOGY. Definitions for terms and abbreviations shall be in accordance with the Departments Standard Specifications, Section 101, and as follows:

- 3.1 Distributor. A source that is not a PGABS on the Department's qualified products list (QPL) who is supplying PG 64-22 binder in accordance with 11.0
- 3.2 Manufacture. The process in which the PG binder properties are obtained.

- 3.3** PG Binder. An asphalt-based cement that is produced from petroleum residue, either with or without the addition of non-particulate organic modifiers, meeting the requirements of AASHTO M 320 for use in HMA mixture.
- 3.4** Producer. A Producer shall be a Certified HMA Plant in accordance with ITM 583. The Producer may modify a PG binder from a Supplier by in-line blending styrene butadiene rubber (SBR) polymer latex at the Certified HMA plant.
- 3.5** Supplier. The terminal or refinery involved in the supply of PG Binder.
- 3.6** Quality Control Plan (QCP). A document written by the Supplier and Producer that is site-specific and includes the production, policies, and procedures for the manufacture of the PG binder. The PGABS program allows the manufacture and shipment of PG binders within the guidelines of a QCP, as outlined in AASHTO R 26, without complete pre-testing of the PG binder.
- 4.0** **SIGNIFICANCE AND USE.** This ITM is used to supplement the requirements of AASHTO R 26 to guide PG binder Suppliers and Producers in the preparation of a QCP for the manufacture, storage, shipping, and handling of PG binders under the ASC Program.
- 5.0** **LABORATORY.** The Supplier or Producer shall conduct PG binder testing in a laboratory that has been accepted by the Department. Participation in the AASHTO re:source laboratory assessment and proficiency sample programs with satisfactory ratings will be the basis for acceptance.
- 6.0** **MATERIALS TESTING.**
- 6.1** Specification compliance complete AASHTO M 320 testing shall be done at the frequency stated in the QCP per PG binder and at least once following feed stock changes. After initial testing, the minimum frequency for specification compliance testing shall be once per month. A type A certification shall be prepared for all specification compliance complete AASHTO M 320 testing representing all binders.
- If the tests of the Supplier or Producer indicate that the PG binder is not within specification requirements, the Supplier or Producer shall cease shipment, immediately notify the Department, and take action to bring the material back into specification requirements. When the material is within specification requirements and is ready for shipment, the Supplier or Producer shall notify the Department.
- 6.2** The Supplier shall submit a monthly summary report to the Department of all QC tests for each PG binder supplied under the PGABS program.

- 6.3** The Producer shall prepare a monthly summary report of all QC tests for each PG binder modified by in-line blending SBR polymer latex at the Certified HMA plant. The summary reports shall be kept on file at the Certified HMA plant laboratory and include:
- a) Type A certifications from the Supplier for all binders
 - b) Type A certifications from the SBR polymer latex supplier for the SBR polymer latex material
 - c) Test reports from the Producer for the modified PG binders
 - d) Production printouts of polymer use
 - e) Flow meter calibration reports
- 6.4** The Supplier and Producer shall maintain detailed records of QC inspections, test results, type A certifications and shipments for at least three years.
- 7.0** **QUALITY CONTROL PLAN.** The Supplier and Producer shall submit to the Department a QCP covering each facility that manufactures or stores PG binder. The QCP shall include each PG binder to be supplied under the **PGABS** program. Typical testing and inspection procedures shall be included for each PG binder. The requirements stated in AASHTO R 26 will be required. The QCP shall include as a minimum the following:
- 7.1** The facility type
 - 7.2** The facility location
 - 7.3** The name and telephone number of the person responsible for quality control at the facility
 - 7.4** The quality control tests to be performed on each PG binder
 - 7.5** The name and location of the laboratory performing quality control tests on the PG binder that is shipped
 - 7.6** A statement that if the quality control tests to be performed on each PG binder indicate that a shipment of PG binder or quantity of PG binder modified by in-line blending SBR polymer latex at the Certified HMA plant is not in compliance with the specifications, the Supplier or Producer shall:
 - a) Immediately notify the Department of the shipment in question
 - b) Identify the material
 - c) Cease shipment until material complies with the specifications
 - d) Notify the Department prior to resuming shipment
 - e) Implement procedures to dispose of the material

- 7.7** The method and frequency for initial testing, quality control testing, and specification compliance testing for PG binders and PG binders modified by in-line blending SBR polymer latex material at the Certified HMA plant.
- 7.8** A statement that the Supplier and Producer shall prepare monthly summary reports for all quality control and specification compliance tests performed during that period and shall submit the reports to the Department.
- 7.9** An outline of the procedure to be followed for checking transport vehicles before loading to prevent contamination of shipments. The outline shall include a statement that the transport vehicle inspection report, signed by the responsible inspector, shall be maintained in the Supplier's records and shall be made available to the agency on request.
- 7.10** The Producer may modify a PG 58-28 to a PG 64-28 or a PG 64-22 to a PG 70-22 by in-line blending with SBR polymer latex at the Certified HMA plant. If in-line blending is used, the following shall be included:
- a)** A statement that the latex metering system will be interlocked with the HMA plant asphalt binder flow system
 - b)** A description of the in-line blending process and equipment to include:
 1. A motionless in-line blender located in the asphalt binder line between the asphalt pump and drum mixer
 2. A double diaphragm air driven latex pump or a progressive cavity pump
 3. A magnetic flow meter to measure the latex flow
 4. A display to monitor the latex flow
 5. A printer to record the latex use every five minutes
 6. Controls to maintain the latex flow
 - c)** Documentation that the flow meter has an accuracy of $\pm 2.0\%$ over the production flow range and can maintain the latex solids content within $\pm 0.2\%$ of the target value
 - d)** The corrective action to be taken if the latex solids content is more than 0.2% below the lower target limit for more than 15 minutes of production
 - e)** A sampling procedure and a statement that an in-line asphalt sampling device in accordance with AASHTO R 66 shall be installed beyond the blending point
 - f)** The procedure to remove water from the modified PG binder sample prior to laboratory testing
- 7.11** A statement of whether or not an air blowing process is used in the manufacture of the PG binder. If air blowing is used, the relative amount of air blowing shall be stated as light, medium, or heavy. Light, medium, or heavy shall be defined as follows:

Air Blowing Process

Light	1 - 2 °C increase in original DSR
Medium	3 - 4 °C increase in original DSR
Heavy	> 4 °C increase in original DSR

Heavy air blowing will not be allowed in the PG binder manufacturing process.

8.0 QUALIFICATION.

- 8.1 The Supplier shall submit a written request to the State Materials Engineer, Division of Materials and Tests to supply specific PG binders under the PGABS program
- 8.2 The Producer shall submit a written request to the Asphalt Engineer, Division of Materials and Tests to in-line blend SBR polymer latex at the Certified HMA plant.
- 8.3 A Supplier will be considered fully qualified for the Department PGABS program when three of the PG binders allowed by the specifications have been qualified. Limited qualification will be designated for a Supplier that has less than three PG binders allowed by the specifications qualified. A Producer is limited to modifying a PG 58-28 to a PG 64-28 or a PG 64-22 to a PG 70-22 by in-line blending with SBR polymer latex at the Certified HMA plant and is not subject to qualification testing.
- 8.4 A Supplier PG binder will be qualified after three consecutive production batches are tested by the Department and are in full compliance with a complete series of AASHTO M 320 tests for all samples. All qualification samples will be witnessed by the Department, provided that the facility is not located more than 60 miles outside the Indiana State line. The Supplier and the Department Representative will sign the sampling form attesting that the sample was taken properly and is representative of the PG binder material.
- PG binder testing conducted by other State DOT laboratories will be considered for use in PGABS qualification provided that a similar sampling and testing program was used by the other State DOT.
- 8.5 Full or limited PGABS qualification shall be Supplier specific and will not be transferable.

9.0 MATERIAL SHIPMENT.

- 9.1 A PGABS who is fully qualified will be allowed to supply any PG binder for which the Department has an approved QCP.
- 9.2 A PGABS with limited qualification will be allowed to supply only the PG binders that have been qualified in accordance with 8.4.

- 9.3 The Supplier shall furnish with the shipping report for each load a statement certifying that the PG binder has been manufactured according to the **PGABS** program.
- 9.4 The Supplier shall furnish to the Producer with the shipping report for each load a copy of the type A certifications prepared in accordance with 6.1 for all binders.
- 9.5 The Supplier shall furnish instructions with each PG binder on the proper storage and handling of the material.

10.0 DEPARTMENT RESPONSIBILITIES.

- 10.1 **Qualified Products List.** The Department will maintain a **Qualified Products List (QPL)** of **Performance Graded Asphalt Binder** Suppliers that meet the requirements of the **PGABS** program. Producers meeting the requirements of the **PGABS** program for in-line blending of SBR polymer latex will be indicated as **having an in-line blending system installed** on the **QPL** of Certified Hot Mix Asphalt Producers.
- 10.2 **Auditing.** The Department shall be allowed to visit the Supplier or Producer location for the purpose of conducting an audit to ensure compliance with the QCP.
- 10.3 **Qualified Products List Removal.** **Ability** to supply under the **PGABS** program ~~shall~~**will** remain in effect until otherwise notified by the Department in writing. The removal of a Supplier from the **QPL** of **Performance Graded Asphalt Binder** Suppliers will be the responsibility of the Director, Division of Materials and Tests. The Supplier shall have the right to appeal the removal from the **QPL** to the Chief, Engineer of Construction.

Continued approval by the Department for a Supplier to supply under the **PGABS** program shall be contingent upon a record of satisfactory performance. Unsatisfactory performance shall be defined as three consecutive production batches delivered out of specification to Department contracts.

A Supplier that has been removed from the **PGABS** program for unsatisfactory performance will not be considered for **PGABS** approval for a period of three months after the written notification.

11.0 SEALING OR FILLING CRACKS AND JOINTS. When PG binder is being furnished for use in accordance with section 408.02, it shall be exempt from the requirements of the **PGABS** program except as follows:

- 11.1 **A** Distributor may supply the material, but it shall originate from a **PGABS on the QPL**; or

- 11.2** A supplier that is not a **PGABS** that manufactures its own PG Binder shall conduct specification compliance AASHTO M 320 testing at a minimum frequency of once per month. A copy of the Type A Certifications in accordance with 6.1 shall be furnished to the **D**istributor with each shipment.

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INDIANA DEPARTMENT OF TRANSPORTATION
PERFORMANCE GRADED ASPHALT BINDER SUPPLIER (PGABS) PROGRAM

TYPE A CERTIFICATION
FOR
PERFORMANCE GRADED (PG) ASPHALT BINDERS

Asphalt Binder Supplier: _____ and _____
Name Source Number

Sample Identification: _____ Material: _____
PG Asphalt Binder

Represented Quantity (tons): _____ Sample Date: _____

<u>*Test Method</u>	<u>*Specification</u>	<u>Test Results</u>
Original DSR, $G^*/\sin \delta$ (delta)	1.00 kPa, minimum	_____
RTFO DSR, $G^*/\sin \delta$ (delta)	2.20 kPa, minimum	_____
PAV DSR, $G^*\sin \delta$ (delta)	5,000 kPa, maximum	_____
Creep Stiffness	300 MPa, maximum	_____
m-Value	0.300, minimum	_____

*AASHTO M 320 and Standard Specification section 902.01(a)

The represented quantity (tons) noted for this PG asphalt binder conform to AASHTO M 320 and Standard Specification section 902.01(a).

Signature: _____ Date: _____
PGABS Program Representative

INDIANA DEPARTMENT OF TRANSPORTATION
PERFORMANCE GRADED ASPHALT BINDER SUPPLIER (PGABS) PROGRAM

TYPE A CERTIFICATION
FOR
STYRENE BUTADIENE RUBBER (SBR) POLYMER LATEX

SBR Polymer Latex: _____ and _____
Supplier Name Address

Sample Identification: _____

Represented Quantity (tons): _____ Sample Date: _____

Test Method	*SBR Polymer Latex		
	Property	Limits	Results
ASTM D1417	Total Polymer Solids, % by weight	60 – 72	
**	Butadiene, % by weight, minimum	68	
ASTM D1417	Residual Styrene, % by weight, maximum	0.1	
ASTM D1417	Ash, % of total polymer solids by weight, maximum	3.5	
ASTM D1417	pH	9 – 11	
ASTM D1417	Viscosity, Brookfield model RVF, Spindle No. 2 @ 20 rpm @ 25°C, maximum	2,000	

*Standard Specification section 902.01(a)

**as determined from the charge recipe when producing the polymer

The represented quantity (tons) noted for this SBR polymer latex conform to Standard Specification section 902.01(a).

Signature: _____ Date: _____
SBR Polymer Latex Representative