

State of Louisiana  
Department of Transportation and Development (DOTD)  
Materials and Testing Section Approved Materials Procedure  
for

**GROUND GRANULATED BLAST-FURNACE SLAG**

**MATERIAL SPECIFICATION REFERENCE:**

DOTD Standard Specifications, Subsection 1001.05, AASHTO M 302, Supplemental Specifications and Special Provisions.

**APPROVED MATERIAL EVALUATION SUBMITTAL:**

The manufacturer shall submit a completed Approved Materials Evaluation Submittal to the DOTD Materials and Testing Section Coordinator listed below.

**PRELIMINARY REQUIREMENTS:**

The complete submittal must include:

- Complete Approved Materials Evaluation Form
  - Complete name and address of the supplier
  - Complete name and address of the Ground Granulated Blast-Furnace Slag (GGBFS) source and owner
  - Complete name and address of the producer of GGBFS for use in concrete and mortars
  - Type of GGBFS produced
- An outline of the supplier's quality assurance sampling and testing program
- Description of GGBFS storage facilities including capacities
- An outline of production procedures including pulverization techniques, description of additives mixed with GGBFS during production, and GGBFS collection methods
- Letter requesting evaluation of the material
  - Intended use of GGBFS
- Product Data Sheets
- Manufacturer's specifications
- Safety Data Sheet (SDS)
- Samples
- Independent Laboratory Test Results
  - Name and address of the accredited Concrete and Cement Reference Laboratory (CCRL) performing the quality control tests and a copy of their latest inspection report.

NOTE: Evaluation will not begin until all required items listed above are received by the Materials Laboratory

**PRELIMINARY REQUIREMENTS CONTINUED:**

Certifications and/or Test Reports

Submit a Certificate of Analysis (CA) for five (5) daily production samples to the Materials and Testing Section. The CA shall show test results applicable to the intended use of the GGBFS and the test results shall meet all specifications for AASHTO M 302. All test results included on the CA shall be performed by a laboratory which is CCRL accredited.

Samples (to be furnished at no cost to the Department)

Submit five (5) daily composite production samples to the DOTD Materials and Testing Coordinator for evaluation. Each sample shall be randomly taken each day for five (5) days of production from one (1) identifiable storage unit. Each composite sample shall be continually split until a 10 lb. sample is obtained. Half of each of the five (5) daily 10 lb. composite samples shall be sent to the Materials and Testing Section in a 1-gallon water tight container with a re-sealable lid. The other half of each of the five (5) daily 10 lb. composite samples shall be retained and tested by the supplier. The supplier shall forward the applicable physical and chemical test results obtained on the retained samples to the DOTD Materials and Testing Coordinator upon completion of testing.

**TEST REQUIREMENTS:**

Laboratory Testing

Each approval sample shall be tested by a laboratory currently accredited by CCRL for compliance with the applicable Departmental Specification for its intended use. All testing will be conducted in accordance with AASHTO M 302. After the approval samples have been tested, the average fineness and specific gravity will be determined and initial variability limits will be established for each source as follows:

- Fineness:  $\pm 5\%$  from average
- Specific Gravity:  $\pm 5\%$  from average

Field Evaluation

The Department may require an inspection of the plant to review methods of sampling, testing and handling of GGBFS.

Evaluation Time (6 Months)

**GENERAL:**

The GGBFS manufacturer and/or supplier shall abide to the following requirements:

Effective Quality Control Program

The source shall have an effective quality control program to ensure that the GGBFS possesses uniform characteristics within the Department's specifications. The variability limits as defined above will be based on the 10 most current test results and will be re-calculated after each monthly sample has been tested.

Maintain List of Authorized Representatives

All approved suppliers shall submit and maintain a list of representatives authorized to sign documents pertaining to the handling, certification, testing and shipment of GGBFS in accordance with this procedure. The manufacturer is required to submit this list to the DOTD Materials and Testing Coordinator.

Allow Periodic Inspections by Department Personnel

The Department reserves the right to send a representative to make on-site inspections of the plant's facilities with emphasis on the method of sampling and testing. When a plant is inspected by CCRL, a copy of the latest CCRL report shall be submitted to the DOTD Materials Section accompanied with documentation of resolutions for any discrepancies. CCRL reports shall be treated with strict confidentiality.

Provide Monthly Mill Samples and Mill Reports

A mill sample shall be representative of the production of GGBFS for each month. A 20 lb. mill sample shall be split with half retained and tested by an independent CCRL accredited laboratory and the other half submitted to the DOTD Materials and Testing Coordinator. All results obtained on monthly mill samples shall be submitted to the DOTD Materials and Testing Coordinator with proper identification stating the month represented and mill sample number. Mill test data shall be kept on file for three (3) years and available upon request.

Upon completion of the evaluation, the submitter will be notified in writing concerning the results of the evaluation and whether the material will or will not be added to the Approved Material List (AML). The DOTD Materials and Testing Section Coordinator shall be notified in writing of any change from the original material submittal. The Department reserves the right to re-evaluate any material at any time.

A 1-gallon mill sample conforming to the requirements above shall be accompanied with a CA of the material and submitted monthly to the DOTD Materials and Testing Section to remain on the AML.

It is also the manufacturer's responsibility to supply the contact information of the representative responsible for the material to the Materials Section Coordinator to remain on the AML. This is done by completing the Approved Materials Evaluation Form every two (2) years or when there is a change in the manufacturing representative responsible for the material.

**PROJECT ACCEPTANCE REQUIREMENTS:**

A completed "Certificate of Compliance for Ground Granulated Blast-Furnace Slag" form, supplied by the Department, shall accompany each shipment of GGBFS intended for use on state projects. A copy of each form shall also be sent to the Materials Engineer Administrator for review. This form shall be signed by an authorized representative.

The inclusion of any material on the AML is not blanket approval for its use. All materials, regardless of prior approval, shall be sampled in accordance to the Materials Sampling Manual.

**DISQUALIFICATION AND REMOVAL:**

Any material may be removed from the AML at any time. Causes for removal from the AML may include, but are not limited to the following:

- Non-conformance with specifications
- Performance requirements
- Failure to notify the Department of any change in material formulation
- Failure of the plant to provide monthly mill samples in accordance with this procedure
- Failure of the supplier to provide proper certifications as required by this procedure
- Failing test results obtained by the Materials Section of consecutive monthly mill samples or project verification samples
- Continued violation of variability limits
- Failure to supply current contact information for the material representative in accordance with this procedure

**REQUALIFICATION:**

Any material which has been disqualified and/or removed from the AML will be considered for re-evaluation only after submission of a formal request along with acceptable evidence that the problems causing the disqualification and/or removal have been resolved.

**DOTD MATERIALS AND TESTING SECTION COORDINATOR:**

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Approved 05/24/17



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