

**STATE OF OHIO
DEPARTMENT OF TRANSPORTATION**

**SUPPLEMENT 1115
HIGH LOI FLYASH MATERIAL TESTING, ACCEPTANCE, TREATMENT AND USE**

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1115.01 Scope

This supplement defines the testing, approval and in process quality control requirements for acceptance of chemical materials that pre-treat high Loss on Ignition (LOI) flyash materials. It also includes the application requirements for the chemical materials.

1115.02 Laboratory Test Requirements for Validation of Manufacturer's Chemical Treatment Product

Perform testing to validate the chemical fly ash treatment eliminates the adverse effects that high LOI fly ash has on air entrainment of portland cement concrete using flyash as an addition. Testing will be witnessed or performed by an independent testing laboratory.

Tests will include

1. Air entrainment testing of plastic concrete and compressive strength testing of the concrete at 3, 7, and 28 days using the same percentage of treated and untreated High LOI flyash in the same concrete design.
2. Test the same mix and flyash proportions in item 1 with different water/cementitious (w/c) ratios of .40 .45 and .50
3. Test same mix and flyash proportions in item 1 and item 2 with different aggregate types (at least Ohio gravel, limestone, and an ACBF slag source).
4. Same mix percentage in item 1, item 2, and item 3 with different High LOI flyash, both treated and untreated.
5. Perform hardened air tests ASTM C457 on the finished concrete to determine final entrained air including percent, specific surface and spacing factor.
6. Perform freeze thaw testing ASTM C666 @ 350 cycles for both flyash treated and untreated concrete of the same w/c and same aggregate type. Test for each aggregate type.

7. Perform shrinkage testing for both flyash treated and untreated concrete of the same w/c and same aggregate type. Test for each aggregate type
8. If the dosage requirements vary tests perform an additional battery of tests listed in 1 thru 7 to validate the dosage variations.

Provide written quality control (QC) procedures to determine in the field if the high LOI flyash has been treated with the proposed chemical, including how to test for it and required dosage.

Submit your proposed testing matrix including number of samples and sequence to the Department for approval. Proposals with no QC procedures will not be accepted.

1115.03 Laboratory Test Data

After Department acceptance of the test matrix have the laboratory perform the tests. Notify the Department when testing will begin to provide the Department an opportunity to witness any testing.

Provide the results of the tests to the Department for review and acceptance.

Provide QC procedures for assuring High LOI flyash materials are suitably treated, delivered and controlled.

If the Department accepts the tests results and the quality control procedures at least one field demonstration of the product conforming to 1115.04 will be required.

1115.04 Field Demonstration Requirements.

The chemical treatment manufacturer (CTM) will locate at least one concrete ready mixer who is providing concrete to a Department project and is using a flyash pozzolanic mix or is willing to use a high LOI pozzolanic flyash mix.

The CTM will notify and work with the Office of Materials Management; the district office where the project is being constructed; the Project Engineer, the General Contractor, any sub contractors and the ready mixer to obtain approval for use of the chemical material and high LOI flyash on the project as a demonstration.

Any additional costs for use, delivery, application, equipment, storage, manpower, additional materials or inspection will be at the cost of the manufacturer.

After the project is approved, set up the demonstration's time and location and notify OMM, the District and the Project Engineer at least one week before concrete is mixed with the High LOI treated flyash. The Department will provide testing personnel to obtain quality assurance samples of the materials and the concrete. The samples will be tested by the Department to verify the field demonstration(s) success. Part of this verification will include discussion with

the Engineer, the ready mixer and Contractor to determine what issues, if any, they had with the finished product.

1115.05 Final Approval of Chemical and Application Use Limitations

If the Department has accepted the Laboratory test results (1115.03) and the field demonstration results (1115.04) the product will be considered validated and accepted.

Submit a written quality control procedure (QCP) and include:

1. Method of application of chemical material to the High LOI flyash
2. Validation procedures to assure the High LOI flyash has been properly treated with the correct dosage
3. in field procedures to validate the delivered flyash has been treated with the correct dosage.
4. Proposed method of delivery of these QC requirements to each final user of the chemical material treated High LOI flyash.

The Department will evaluate the QCP and its information for final acceptance. If accepted, the Department will establish the limits of the High LOI fly ash that the chemical material will be allowed to treat.

The Department will also determine the ODOT concrete specifications that the chemical material will be allowed to be used in.

1115.06 Individual Source Approvals

Upon approval of the chemical add additional high LOI sources only after performing testing conforming to 1115.02, items 1 and 2, at the highest LOI to be accepted.

Submit test results and any revisions of 1115.05 to the Department for review acceptance and approval. Upon acceptance the Supplement 1026 source may recertify conforming to 1115.07

1115.07 Field application procedures

Only High LOI flyash provided and certified from a source already certified according to Supplement 1026 will be accepted. Current Certified sources will need to recertify conforming to the additional Supplement 1026 requirements for providing High LOI materials.

The Department will sample material and verify conformance to 701 specifications and the addition of the chemical material treatment conforming to this supplement. Non conforming materials will mean loss of certification under Supplement 1026 and this supplement. The Department will reserve the right to remove the chemical material accepted according to this supplement.

The manufacturer may appeal removal of their product as follows:

Dispute resolution process. In the event a material is removed the manufacturer must submit a written appeal to the Administrator, Office of Materials Management setting forth reasons to reinstate the material. The Administrator will issue a written decision within 30 days of receipt of the written appeal.

In the event that the Manufacturer does not accept the decision of the Administrator, they may appeal the decision to the Appeal Board. The Appeal Board will consist of the Deputy Director Division of Construction Management; Administrator, Office of Construction Administration and the State Construction Engineer. The appeal to the Appeal Board must be made in writing and must contain additional information or identify an area where the Administrator may have erred in a decision.

The Appeal Board will make its determination based on the documents provided by the Department and the Manufacturer. The Appeal Board will issue a written decision within 30 days of its receipt of the appeal.

1115.08 Yearly Re-certification

The Manufacturer will re-certify the material yearly. The submittal will be made by the last day of January each year. The submittal will include:

- A. a statement the product has not changed formulation and will not be changed within the year
- B. any new test data the Manufacturer has performed for other highway agencies
- C. new manufacturing locations for the product
- D. any national specifications the product has been approved under in the pervious year

The submittal will be notarized.

OMM will review any new submitted data and the product's performance history for ODOT to determine if the product is re-certified. The Manufacturer will be notified if the product is not re-certified.