

1 APL/QPL Background

MnDOT has established this APL/QPL category to help assure the quality of materials and construction in projects, in accordance with 23 CFR §637, and for MnDOT's own use for maintenance work.

MnDOT Need: MnDOT must perform an engineering and environmental evaluation in order to comply with the FHWA/MnDOT stewardship agreement, meet other regulatory requirements, and comply with MnDOT's own Approved/Qualified Products policy. In addition, MnDOT must develop specifications and standards for procuring new materials, products, or engineered systems.

MnDOT Review of Alternatives: MnDOT has analyzed other options, including allowing contractors and MnDOT staff to select any product available in the marketplace. MnDOT has determined that using an APL/QPL is the most beneficial alternative to ensure that the product will meet technical and environmental requirements and has further determined the need to limit its use to certain products that have enough usage to justify managing an APL/QPL.

2 Relevant MnDOT Standards/Requirements

For a product to be eligible for inclusion on MnDOT's APL/QPL for Cement and Blended Cement, the product must meet the following standards and requirements:

- MnDOT Specification 3101, Portland Cement
- MnDOT Specification 3103, Blended Hydraulic Cement
- AASHTO M 85/ASTM C 150 Standard Specification for Portland Cement
- AASHTO M 240/ASTM C 595 Standard Specifications for Blended Hydraulic Cement
- ASTM C 109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
- ASTM C 114 Standard Test Method of Chemical Analysis of Hydraulic Cement
- ASTM C 151 Standard Test Method for Autoclave Expansion of Hydraulic Cement
- ASTM C 185 Standard Test Method for Air Content of Hydraulic Cement Mortar
- ASTM C 188 Standard Test Method for Density of Hydraulic Cement
- ASTM C 191 Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle
- ASTM C 204 Standard Test Method for Fineness of Hydraulic Cement by Air-Permeability Apparatus
- ASTM C 917 Standard Test Method for Evaluation of Variability of Cement from a Single Source Based on Strength
- ASTM C 1038 Standard Test Method for Expansion of Hydraulic Cement Mortar Bars Stored in Water

MnDOT will not evaluate products that do not meet the standards/requirements of the APL/QPL category. By submitting an application, the manufacturer certifies that they have reviewed the standards/requirements and their product meets the standards/requirements. MnDOT may reject an APL/QPL submittal without further review if MnDOT determines that the product does not meet standards/requirements.

3 MnDOT Contact Information

For questions about the APL/QPL application and approval process for Cement and Blended Cement, please contact:

Robert Golish
Assistant Concrete Engineer
Office of Materials and Road Research
robert.golish@state.mn.us
651-216-0516

4 Authorized Submitters

Only the product's manufacturer is authorized to submit the product to MnDOT. MnDOT will generally not accept submissions from independent authorized distributors, but MnDOT may, in its sole discretion, allow an authorized distributor, with the cooperation and authorization of the manufacturer, to be the submitter.

5 Evaluation Process

MnDOT will not evaluate products that do not meet the standards/requirements of the APL/QPL category. By submitting an application, a product manufacturer certifies that they have reviewed the standards/requirements and their product meets the standards/requirements. MnDOT may reject an APL/QPL submittal without further review if MnDOT determines that the product does not meet standards/requirements

To apply for MnDOT's Cement and Blended Cement approved products list (APL/QPL), the manufacturer must complete the Evaluation Process. The Evaluation Process is X step process, each step must be successfully completed before the next step can begin:

1. Application Submission
2. Product Sample

5.1 Application Submission

To apply for MnDOT's Cement and Blended Cement approved products list (APL/QPL), the manufacturer must submit an application packet for MnDOT's review. The application packet must include the following:

- Quality Control Plan which includes but is not limited to the following:
 - Type and associated product name of cement or blended cement produced
 - Sampling and testing procedures
 - Standard specifications used in testing

- Quantity of material for Certified Mill Analysis Test Report
- Statement of failing test procedures
- Proposed (MnDOT – certified source) companion testing rate
- Proof of CCRL laboratory participation
- Laboratory name and location
- Certified Mill Analysis Test Reports for the previous 12 months
- Technical Assistance Contacts. A single point of contact for the submitted product including name, email address, phone number, and mailing address. This single point of contact must be knowledgeable about the specifications, manufacturing, and performance of the product.

5.2 Product Sample

Submit at least a **7 1/2-pound** sample for the evaluation process. Include with the sample the Certified Mill Analysis Test Report for the submitted sample. The sample can be submitted to:

MnDOT Office of Materials and Road Research
 Attn: Cement Lab – New Product Evaluation
 1400 Gervais Avenue
 Maplewood, MN 55109

6 MnDOT Will Make a Case-By-Case Determination

Following the Evaluation Process, MnDOT will determine whether the product met, or failed to meet, the required criteria. MnDOT will promptly notify the product manufacturer of MnDOT’s determination.

6.1 Effect of Favorable Determination

If MnDOT determines the product met the evaluation criteria, MnDOT will place the product on the APL/QPL, and the product will be authorized for use on MnDOT construction or maintenance projects. Merely being placed on the APL/QPL does not guarantee that MnDOT, or a MnDOT contractor, will purchase and use the product. Being placed on the APL/QPL also does not mean that the product meets other legal requirements for any particular use. Being placed on an APL/QPL does not constitute an “endorsement” of the product, and the submitter must not state or imply that MnDOT “endorses” the product.

6.2 Effect of Non-Favorable Determination

If MnDOT determines the submitted product did not meet the technical criteria, MnDOT will notify the product manufacturer accordingly. MnDOT will provide test results and other information specifying how the product failed to meet the criteria. The product manufacturer may discuss the test results with the MnDOT contact identified above. If the product manufacturer disagrees with MnDOT’s determination, the product manufacturer may submit additional documentation supporting its position. The MnDOT contact will review the submission and make a final determination.

The product manufacturer may not submit the product for re-evaluation until the product manufacturer has made material changes to the product or manufacturing methods that are likely to resolve the identified shortcomings. The product manufacturer must discuss the changes with the MnDOT Contact person prior to re-submitting. MnDOT will, in its sole discretion, determine whether the changes are material.

7 Ongoing Notice Requirements

A manufacturer of a product placed on this APL/QPL must immediately notify the MnDOT contact listed above if any of the following apply:

- The product manufacturer has made a material change to the product that may affect its performance or environmental impact. These changes include, but are not limited to, changes in materials, chemicals, or manufacturing processes.
- The product has become the subject of legal action under a “False Claims Act” of the United States or any state.
- It is determined that material information was not disclosed to MnDOT during the evaluation process.

MnDOT may, at its option, remove the product from the APL/QPL, or determine that the product must be re-evaluated. If MnDOT requires a re-evaluation, it will follow the same process as the initial evaluation.

8 Companion Sampling and Testing Program

The certified source and MnDOT will agree on a rate and procedure for sampling and shipping a companion sample to MnDOT for companion testing. The comparison sample is obtained at a minimum rate of once per month for every month of production or one sample per shipment, whichever is less.

At the manufacturing plant, port of entry, or distribution terminal, the sample for companion testing is taken by host State personnel (if available) or plant personnel at the time of manufacture or time of discharge. Take samples in accordance with AASHTO T 127 or ASTM C 183 and split into two samples. Test one portion by an approved laboratory as outlined in Section 11 and ship the other portion (companion sample), at least **7 1/2-pounds** in size, to:

MnDOT Office of Materials and Road Research
Attn: Cement Lab – Companion Sample
1400 Gervais Avenue
Maplewood, MN 55109

Include the following information with the companion sample:

- Date sampled
- Companion sample number and mill sample number
- Lot number of the sample
- Name of Certified Source (Manufacturing Plant or Distribution Terminal)
- Companion Mill Test Report results found at the quality control laboratory, including **3-day, ASTM C 109 test result, and limestone content. Include the Mill Test Report with the companion sample delivered.**

MnDOT will report the result of the companion sampling to the Manufacturer of the Certified Source. If nonconformance is found, MnDOT will attempt to resolve the discrepancy as quickly as possible. Continued approval of the Laboratory will depend on the comparison of its test results with those of MnDOT's Laboratory. If major differences are found, a third party may arbitrate the difference.

9 ASTM C 917 Sampling and Documentation

The manufacturer of a product must use an ongoing compressive strength sampling program for uniformity and take and test samples at the rate and by the procedures outlined in ASTM C 917.

10 Specifications and Testing

Specifications and testing must meet the following standards and requirements:

- MnDOT Specification 3101, Portland Cement
- MnDOT Specification 3103, Blended Hydraulic Cement
- AASHTO M 85/ASTM C 150 Standard Specification for Portland Cement
- AASHTO M 240/ASTM C 595 Standard Specifications for Blended Hydraulic Cement
- ASTM C 109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
- ASTM C 114 Standard Test Method of Chemical Analysis of Hydraulic Cement
- ASTM C 151 Standard Test Method for Autoclave Expansion of Hydraulic Cement
- ASTM C 185 Standard Test Method for Air Content of Hydraulic Cement Mortar
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- ASTM C 204 Standard Test Method for Fineness of Hydraulic Cement by Air-Permeability Apparatus
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- ASTM C 1038 Standard Test Method for Expansion of Hydraulic Cement Mortar Bars Stored in Water

MnDOT may require additional testing if these tests do not continuously meet the requirements. They may also require additional testing of the product prior to shipment due to special considerations on that project. When required, special testing provisions are stated in the Contract documentation for the project.

11 Laboratory Acceptance

A laboratory is considered approved if:

- It is properly equipped and staffed to perform the tests required for an accepted quality control program and is accredited by a national laboratory certification program approved by MnDOT, or
- Comparison samples with the Cement and Concrete Reference Laboratory (CCRL) are within acceptable tolerances.

Continued approval of the Laboratory depends on the comparison of its test results with those of MnDOT's Office of Materials Laboratory. If major differences are found, it is imperative that they are resolved as quickly as possible. Continued unresolved differences in test results are considered a basis for discontinuing laboratory approval.

12 Verification Sampling and Testing

MnDOT will take verification/spot check samples periodically at the ready-mix plant or at the paving batch plant. Test results that do not comply with the Specifications are subject to MnDOT Specification 1503 and continued out of tolerance results is considered sufficient cause to rescind approval to furnish the product and removal from the list of certified sources.

13 Non-Compliance

The MnDOT Concrete Engineer may remove a Manufacturer from the list of certified sources based on the following:

- If the project verification samples or companion samples fail, and a review of the certified source's records indicate that there is a cause for concern as to the quality of the material.
- If a Manufacturer does not supply MnDOT or county projects during a three consecutive year period.
- Failure to comply with the certification program approved by MnDOT.

MnDOT 1601 prohibits mixing of materials from different sources or of different classes in one storage bin or silo. At ready-mix plants, batch plants, and precast production plants, empty the storage bin, as far as practical, prior to refilling from a different source.

14 Re-certification

The MnDOT Concrete Engineer will re-certify the material source upon written documentation that the area of concern as outlined in Section 13 is corrected. This may require a re-submittal of all or a portion of Section 5 requirements.

15 Documentation, Record Keeping and Tracking

Incorporation into MnDOT projects prior to MnDOT receiving certified Mill Test Data and any material that fails the above-mentioned testing, is subject to MnDOT Specification 1503.

The certified source must furnish with each shipment from the manufacturing plant (or the point of certification) to the distribution terminal and finally to the ready-mix plant, batch plant or pre-cast production plant, an invoice or bill-of-lading, and all available mill test data for the cement shipped. Each copy must indicate the Manufacturer of the material, manufacturing plant location, type of material, quantity, approximate date the product arrived from manufacturing to the distribution terminal, and the state project number, if available.

The invoice or bill-of-lading must also bear the following certification statement.

Insert Company Name certifies that the cement manufactured **Insert Plant and Location** conforms to ASTM and MnDOT Specifications for Type **Insert Type** cement.

Insert Company Name certifies that the cement manufactured **Insert Plant and Location** conforms to ASTM and MnDOT Specifications for Type **Insert Type** blended cement.

For truck shipments, these copies of the bills-of-lading or invoice must accompany each load, and the Project Engineer must retain them at the project or ready-mix plant. For rail shipments, the Manufacturer must mail these copies to the Project Engineer or ready-mix plant.

When more than one project is supplied by a ready-mix plant, the plant must furnish the Project Engineer, for each project, either a copy of each bill-of-lading or invoice, or a listing of the bills-of-lading or invoices representing the material incorporated in the project. This listing must bear the signature of the plant representative.

Copies of all invoices, bills-of-lading and Mill Test Reports must remain on file at the manufacturing plant, distribution terminal or ready-mix plant, batch plant or pre-cast production plant for a period of 3 years. MnDOT may require copies of these reports at any time. Storage of the certified Mill Test Data and ASTM C 917 data on a compact disk is encouraged.

16 Certification by Other States for Cement and Blended Cement

MnDOT will accept cement and blended cement certified in other States providing their process complies with the following:

1. The host state agency that performs testing for acceptance of hydraulic cement plants within its boundaries must have a laboratory meeting the requirements of ASTM C1222, "Standard Practice for Evaluation of Laboratories Testing Hydraulic Cement."
 - a. The host state agency laboratory must be accredited through the AASHTO Accreditation program. The laboratory in authority will perform applicable testing on cement produced in accordance with:
 - i. Standard Specification for Portland Cement (ASTM C150/AASHTO M85)
 - ii. Standard Specification for Blended Hydraulic Cements (ASTM C595/AASHTO M240)
 - iii. Standard Performance Specification for Hydraulic Cements (ASTM C1157)
 - b. Agency laboratories used for verification testing must meet the same criteria as prescribed above.
2. The host state agency will require the cement plant within its boundaries to issue a certified mill analysis report at least semiannually which must include the following:
 - a. Mill Location
 - b. Type of Cement
 - c. Production Period
 - d. Manufacturer
 - e. Product Name
 - f. A statement that (a) cement conforms to ASTM C150/AASHTO M85, (b) blended cements conforms to ASTM C595/AASHTO M240, or (c) performance specification cements conform to ASTM C1157
3. The host state agency must require the cement manufacturer to comply with ASTM C 1222, "Standard Practice for Sampling and the Amount of Testing of Hydraulic Cement."
 - a. The host state agency must require the cement manufacturer to submit a written quality control plan. This plan must include the following:
 - i. Type and associated product name of cement produced
 - ii. Location, procedure, and frequency of sampling
 - iii. Report standard specification used in testing

- b. The host state agency will verify compliance with the quality control plan for the production of cements or blended cements used by state agency
 - c. The manufacturer's plan must include commitments to comply with sampling and testing of the host state.
4. The host state agency will require the cement producer to submit two split samples of cement and blended cement semiannually for verification testing. The second sample must be retained for independent analysis as needed.
5. The host state agency must require the cement producer submit reports for ASTM C 917, "Standard Test Method for Evaluation of Cement Strength Uniformity from a Single Source," for cement and blended cement at least semiannually. In lieu of ASTM C 917 sampling and testing, production data may be analyzed and reported for the non-predominant cements manufactured at a cement plant.
6. The host state agency will require the cement producer to maintain production and quality control/quality assurance records for at least seven years and make those records available if requested.
7. The host state agency will review submittals from the cement producer along with agency test results. If deficiencies are discovered, the state agency will monitor corrective actions taken by the producer until the deficiencies are corrected. The reciprocal agreement state agency is notified of the deficiencies and of each occurrence.
8. Any test results or submittals collected by the host state agency are made available to the reciprocal agreement state agency upon request.
9. All cement plant information and data are confidential within the limits of a public agency and is for state agencies information and inspection only.
10. Quality assurance test results of field samples, performed by a reciprocal state, must be reported to the host state agency when a non-compliance occurs. The reciprocal state agency will deal directly with the cement producer. The host state agency must notify all reciprocal agreement state agencies when a non-compliance occurs.
11. This agreement can be reviewed once every 5 years or when a change occurs in the source, type, or brand name or upon request by either the host state or/and reciprocal state agencies.
12. Cement tests or requirements beyond the standards stated above may be provided to reciprocal state agencies by agreement between the host state and reciprocal state agencies.

17 Minnesota Government Data Practices Act Notice

All data and information to submitted to MnDOT is "Government Data" under the Minnesota Government Data Practices Act, Minnesota Statutes Chapter 13 (the "Act"). The Act generally classifies information as "public data" or "non-public data". Data is presumed "public" unless an exception applies, such as "trade secret data" (see Minnesota Statutes §13.37 subdivision 1). The submitter bears the burden of establishing the trade secret exception and properly marking trade secret data; simply marking data "confidential" or "proprietary" will not suffice to make it trade secret data under the Act. All MnDOT product evaluations and APL/QPLs are public data.