

CALIFORNIA DEPARTMENT OF TRANSPORTATION AUTHORIZATION CRITERIA FOR CEMENTITIOUS MATERIALS FOR USE IN CONCRETE



GENERAL: The Cementitious Material Prequalification Program establishes procedures to ensure that cementitious material meets the requirements of Section 90-1.02B (Cementitious Materials) in the Caltrans Standard Specifications, that all cementitious materials must be on the Authorized Materials List prior to being used on Caltrans projects.

NOTE: Rapid-strength non-portland hydraulic cements do not fall under the scope of this list and should continue to be sampled and verified per Section 90-3.02A.

REFERENCE DOCUMENTS

Caltrans Standard Specification Section 90: "Concrete"

DEFINITIONS

Definitions provided in this section are for clarifying terms used within this document.

- *Laboratory* – a facility that provides testing.
 - Supplier's Laboratory – the supplier's cementitious materials testing facility. This laboratory will verify the supplier's quality control and specification compliance testing. The supplier may contract out this work. Only laboratories that are participants in the CCRL on-site inspection and proficiency sample program and are accredited for the tests performed from the AASHTO Accreditation Program are recognized as approved laboratories for this program. Accreditation must be valid for the cementitious material(s) being supplied to the Department. The Department will periodically verify that the laboratory is maintaining AASHTO Accreditation by viewing the online directory on www.aashtoresource.org.
 - Transportation Laboratory – the Department's Materials Engineering and Testing Services (METs) laboratories. Any Department laboratory or Department authorized laboratory shall maintain AASHTO Accreditation for testing of cementitious materials for chemical and physical properties.
- *Quality Control (QC) Testing* – testing as described in the supplier's quality control plan. QC testing and frequency shall be determined by the supplier. The supplier is responsible for conducting QC testing.
- *Source* – the point of origin of a material. This includes, for example, cement plants and power plants (production facility). In a case where a supplier owns more than one source, each individual facility will be considered a separate source.
- *Supplier* – an entity manufacturing or distributing cementitious materials for use on a Caltrans project.

- *Terminal or distribution center* – a facility where bulk quantities of cementitious material are stockpiled for distribution. This may include warehouse facilities, barges or ship storage facilities. If any modification, blending or commingling of cementitious materials from different sources is made at a terminal (or distribution center), that terminal or distribution center will be the source. If no materials modifications are made at a terminal site, the source remains the production facility and all quality control is performed at the production facility. Terminals or distribution centers where cementitious material is stockpiled from sources outside the US (non-domestic) shall maintain records of quality control testing from the supplier’s laboratory. Although quality control may be performed at a production facility outside the US, all stockpiled material received in the state of California must be tested (before use by the Department) by a laboratory in a manner that conforms to the requirements of this program. The laboratory performing this testing must participate in the CCRL on-site inspection and proficiency sample program and must be accredited from the AASHTO Accreditation Program for testing the cementitious material(s) supplied to the Department.

CEMENTITIOUS MATERIAL REQUIREMENTS

- Cementitious Material must conform to the requirements of Section 90 of Caltrans Standard Specifications.
- In addition to the requirements of Section 90 of Caltrans Standard Specifications, raw or calcined natural pozzolans must also meet one of the following requirements for effectiveness in controlling alkali-silica reactivity (ASR):
 - EITHER
 - Average expansion at 16 days is less than 0.15% when tested per ASTM C1567,
 - OR,
 - Average expansion at one year is less than 0.040% when tested per ASTM C1293.

The amount of raw or calcined natural pozzolan to be used in the ASR test mixtures will be 25% by mass of the cementitious materials and the aggregate will be borosilicate glass.

NOTE: Testing for effectiveness in controlling alkali-silica reactivity will be performed by Caltrans. Suppliers are not required to perform this testing.

APPLICATION TO SUPPLY CEMENTITIOUS MATERIAL (NEW PRODUCTS)

The supplier must follow the procedure at <http://www.dot.ca.gov/aml/> for products that meet established AML authorization criteria for “Cementitious Materials for use in Concrete.” Submit application (including TL-9502) to New.Products@dot.ca.gov with a copy to Zihui Li, email – zihui.li@dot.ca.gov that also includes the following:

- **An application for each cementitious material to appear on the list**
 - Send documentation providing information about each material, its production facility, supplier contacts and laboratory accreditation. A preformatted document meeting these requirements can be found at http://www.dot.ca.gov/aml/docs/Notice_Form.xls.
- **An SDS for each material supplied**
 - The SDS will be evaluated by the Department's Office of Health and Safety. Changes will be required if the SDS does not meet the Department's criteria.
- **Six months of prior mill certifications showing Section 90 and applicable ASTM specification compliance for each material in request. Refer to Cementitious Material Requirements above. (If six months of prior mill certifications are not available by the submission date, the product can be conditionally approved on the AML if it fulfills all other requirements. Once six full months of fully compliant mill certifications are received by the AML administration group, the conditional status can be removed. Conditional approval can be terminated if mill certifications are not received on time or any of the data does not meet Caltrans Standard Specifications.)**
- **Cementitious material samples**

Sample each cementitious material product from production line or storage facility for initial testing in the same manner that you sample for quality control. Split cementitious material product into two samples [supplier's sample and Caltrans' sample]. Supplier's split of the sample should be tested by the supplier's laboratory. Caltrans' split of the sample should be sent to the following address:

Transportation Laboratory
Attention: Zihui Li, Cementitious Materials for use in Concrete AML
5900 Folsom Boulevard, Sacramento, CA, 95819-4612

 - Minimum sample sizes as received at the Transportation Laboratory shall be as follows:
 - Portland Cements, Blended Cements, an Slag (GGBFS) – 20 lbs.
 - Supplementary Cementitious Materials (except Silica Fume and Metakaolin) – 6 lbs.
 - Silica Fume and Metakaolin – 2 lbs.
 - Submit sample(s) in airtight containers marked with material type, supplier name and sample date on the container along with a copy of the Notice Form.
 - Test results of the supplier's portion of the sample should be sent to Caltrans (at the address listed above) within 15 days after completion of all testing of the sample.
 - Results of Caltrans' split sample testing will be available on DIME at <https://dime.dot.ca.gov/> within 15 days after completion of all testing of the sample.

If submission and verification testing requirements are met, the material will be added to the Department's Authorized Materials List.

MAINTAINING AUTHORIZED STATUS OF CEMENTITIOUS MATERIALS (ONGOING RENEWALS)

To maintain the authorized status of a cementitious material, the supplier must submit the following:

Quarterly Requirements

Within 45 days of the end of the quarter, submit by email to zihui.li@dot.ca.gov for each material supplied:

- ☐ Monthly mill certification data in .pdf format.
- ☐ Compliance testing result summary (Test Data Submittal Form) in .xls format available at http://www.dot.ca.gov/aml/docs/Standardized_submittal_sheet.xls
- ☐ Certificate of Compliance that all material supplied to the Department during the quarter conformed to Department specifications.
- ☐ Letter outlining any changes in production quality control or quality control testing that may have occurred since the last submittal period for each facility of the supplier. Include any information about changes to the facility and/or the supplier's quality control program.

Annual Requirements

Submit the following physical test samples and information:

- ☐ A split sample of the supplier's cementitious material(s) sampled once each subsequent year after obtaining qualification status - submitted within the calendar quarter designated by the schedule posted on the Department's AML website. The schedule will be updated and posted prior to the start of each calendar year. Caltrans' split of the sample(s) should be sent to the Department's Transportation Laboratory for testing. Supplier's split of the sample(s) should be tested by the supplier's quality control laboratory and results should be forwarded to the Department within 15 days after completion of all testing of the sample. Caltrans' split of the sample should be sent to the following address:

Transportation Laboratory
Attention: Zihui Li, Cementitious Materials for use in Concrete AML
5900 Folsom Boulevard, Sacramento, CA, 95819-4612

Results of Caltrans' split sample testing will be available on DIME at <https://dime.dot.ca.gov/> within 15 days after completion of all testing of the sample.

- ☐ A current listing of contact information. Please provide both a primary and backup contact.

Failure to meet any of the reporting requirements listed above may result in removal from the Authorized Materials List.

Independent Sampling and Testing

The Department maintains the right to visit a facility at any time and sample or witness sampling of each material supplied for testing by the Department. The Department will coordinate with facilities for on-site visits. Samples, if tested, must conform to relevant specifications. If a sample fails to conform to the relevant specifications, a letter will be sent informing the supplier of the failure. The supplier must submit an explanation of the corrective action taken to address the non-conforming result.