DMS-4640

Chemical Admixtures for Concrete

Effective Date: March 2022

1. DESCRIPTION

This Specification establishes requirements and specific test methods for chemical admixtures for concrete. Chemical admixtures for concrete are liquid or powdered materials added during concrete mixing to improve fresh or hardened properties of the concrete.

This Specification includes admixtures for air-entrainment, water reduction, retardation, acceleration, water reduction and retardation, water reduction and acceleration, high-range water reduction, high-range water reduction and retardation, calcium nitrite corrosion inhibiting admixtures, and Type II latex.

2. UNITS OF MEASUREMENTS

The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

3. MATERIAL PRODUCER LIST

The Materials and Tests Division (MTD) maintains the Material Producer List (MPL) of all materials conforming to the requirements of this Specification. Materials appearing on the MPL, entitled "Chemical Admixtures for Concrete," require no further sampling and testing before use, unless deemed necessary by the Project Engineer or MTD.

4. BIDDERS' AND SUPPLIERS' REQUIREMENTS

The Department will only purchase or allow on projects those products listed by producer and product code or designation shown on the MPL.

Use of pre-qualified product does not relieve the Contractor of the responsibility to provide product that meets this Specification. The Department may inspect or test material at any time and reject any material that does not meet the specifications.

5. PRE-QUALIFICATION PROCEDURE

5.1. **Pre-Qualification Request.** Submit a written request on company letterhead for evaluation under DMS-4640 to DMS_Prequal@txdot.gov.

Include the following information in the request:

- company name and product name;
- physical and mailing addresses;
- title, phone number, and email address of contact individuals;
- chloride content of the product with a statement that no chloride has been added during its manufacture;
- completed ASTM C494, or ASTM C260, or ASTM C 1582, or ASTM C1438 test report from an independent laboratory that is inspected by Cement and Concrete Reference Laboratory (CCRL). The

reports older than 6 mo. must be accompanied by a notarized certification stating that there has been no chemical alteration of the product since originally submitted for testing;

Note—Test Data from National Transportation Product Evaluation Program (NTPEP) showing that the product meets this specification is acceptable.

- specification targets and production tolerances for the following properties:
  - pH,
  - percent solids,
  - specific gravity,
  - color and appearance, and
  - infrared spectrophotometery scan.
- polymer description (for latex only); and
- test report showing the calcium nitrite content of corrosion inhibiting admixtures is at least 30%.

5.2. **Pre-Qualification Sample.** Submit a 1-pt. sample to the Texas Department of Transportation, MTD (CP51), 9500 North Lake Creek Parkway, Austin, TX 78717.

Include with the sample current safety data sheets (SDS) that comply with OSHA Hazard Communication Standard 29 CFR 1910.1200.

Submit all materials for pre-qualification at no cost to the Department.

5.3. **Sampling and Testing.** Sampling will be in accordance with ASTM C494. Testing will be in accordance with Article 4640.6 of this Specification.

5.4. **Evaluation.** MTD will notify prospective bidders and suppliers after completion of material evaluation.

5.4.1. **Qualification.** If approved for Department use, MTD will add the material to the MPL.

Note—MTD will award provisional approval for admixtures types A, D, F, and G that comply with any of the alternative compressive strengths in ASTM C494, Table 1, given that all other physical requirements outlined in ASTM C494 are met. If subsequent test results at later ages fail to meet the standard requirement of ASTM C494, Table 1, MTD will withdraw approval of the admixture and notify all admixture users immediately.

To maintain approval status, submit semi-annual notarized certifications (in June and December) stating that there has been no chemical alteration of the product since originally submitted for approval.

Report changes in the composition or in the manufacturing process of any material to MTD. Significant changes reported by the producer, as determined by the Director of MTD, Rigid Pavements and Concrete Materials Section, may require a re-evaluation of performance. The Department reserves the right to conduct tests it deems necessary to identify a pre-qualified material and determine if there is a change in the composition, manufacturing process, or quality that may affect its durability or performance. In case of variance, the Department's tests will govern.

5.4.2. **Failure.** Producers not qualified under this Specification may not furnish materials for use on Department projects.

Producers failing to qualify may submit a request for re-evaluation after 12 mo. have elapsed from the date of the original request. MTD may modify this time limit at its discretion. In the request for re-evaluation, document the cause of the issue and corrective action taken.

The Department normally bears the costs of sampling and testing; however, the producer will bear the costs associated with materials failing to conform to the requirements of this Specification. The Director of MTD will assess this cost at the time of testing and amounts due will be billed to the producer.

5.5. **Periodic Evaluation.** The Department reserves the right to conduct random sampling and testing of pre-qualified materials to verify performance and Specification compliance and to perform random audits of documentation. Department representatives may sample material from the manufacturing plant, transportation containers, the project site, and the warehouse.

Failure of materials to comply with the requirements of this Specification as a result of periodic evaluation may be cause for removal of those materials from the MPL. In case of variance, the Department's tests will govern.

5.6. **Disqualification.** Causes for disqualification and removal from the MPL may include, but are not limited to:

- falsification of documentation,
- producer fails to report any change in material composition or manufacturing process to MTD,
- material fails to meet the requirements of this Specification as a result of periodic evaluation, or
- producer has unpaid charges for failing samples.

MTD will remove disqualified producers from the MPL and will not allow submission of material for re-qualification for 12 mo. Any producer requesting re-qualification less than 12 mo. from the date of disqualification must bear all expenses associated with the re-qualification.

5.7. **Re-Qualification.** Once the disqualification period established by MTD has elapsed, producers disqualified and removed from the MPL may begin the re-qualification process by submitting a request in accordance with Section 5.1., "Pre-Qualification Request," including additional documentation identifying the cause of the problem and corrective action taken. The re-qualification process will then follow all subsequent Sections of Article 5, "Pre-Qualification Procedure."

The Department normally bears the costs of sampling and testing; however, the disqualified producer will bear the costs associated with re-qualification. The Director of MTD will assess this cost at the time of re-evaluation and amounts due will be billed to the producer.

6. MATERIAL REQUIREMENTS

6.1. **Air-entraining admixtures.** Air-entraining admixtures must meet the requirements of ASTM C260.

6.2. **Type II Latex.** Latex additives must meet the requirements of ASTM C1438.

6.3. **Corrosion Inhibiting admixtures.** Corrosion inhibiting admixtures must meet the requirements of ASTM C 1582 and contain at least 30% calcium nitrite.

Note—The department will verify the Calcium Nitrite content of corrosion inhibiting admixtures according to Tex-630-J.

6.4. **Admixtures Types A through G.** Chemical admixtures types A through G must meet the requirements of ASTM C494.

7. ARCHIVED VERSIONS

Archived versions are available.