



# PROJECT WORK PLAN FOR THE LABORATORY EVALUATION OF LIQUID CHEMICAL ADMIXTURES FOR CONCRETE

## 1.0 Scope

*1.1* This project work plan covers the procedures used by the National Transportation Product Evaluation Program (NTPEP) to evaluate liquid chemical admixtures for addition to Portland cement concrete.

*1.2* The NTPEP is a voluntary program whereby manufacturers may choose to have their products evaluated for a fee that is used to cover the costs of the evaluation and producing the associated reports. It is the goal of the NTPEP to eliminate duplicate testing of products by member states by providing a process where manufacturer/suppliers submit their products to the NTPEP for evaluation. The NTPEP reports the results of these evaluations to its member states, but does not accept or reject products. However, transportation officials may choose to use the results of the evaluations in developing and maintaining an approved products list.

*1.3* The NTPEP is a technical service program of the American Association of State Highway and Transportation Officials (AASHTO). This document and other documents produced by the NTPEP may not be reproduced without the expressed prior written permission of AASHTO.

*1.4* The technical committee shall consist of representatives of NTPEP member states who wish to actively serve in the evaluation process of chemical admixtures. These representatives shall be voting members. In addition, it is desired that there be two non-voting industry representatives to serve as resources to the technical committee. The industry representatives shall not represent the same company. It shall be the responsibility of industry in general, to elect/nominate its two members to serve on the technical committee. In addition, at any open meeting, views and comments of any industry representative may be voiced.

## 2.0 Evaluation

*2.1* The evaluation protocol for air entraining agents shall be AASHTO T 157, Air-Entraining Admixtures for Concrete.

*2.2* The evaluation protocol for chemical admixtures shall be AASHTO M 194, Chemical Admixtures for Concrete.

*2.3* Corrosion inhibitors will be accepted by the technical committee for uniformity

and equivalence testing. They will be tested and data reported only for the physical properties of the neat material as outlined in Section 4.1.1. The technical committee will not require, review or publish any data pertaining to the performance of the material in hardened concrete.

**2.4** The evaluation laboratory(s) shall be selected by the technical committee and may be either a NTPEP member state's laboratory or a private independent laboratory. They shall be accredited by AASHTO or CCRL for the applicable tests.

### **3.0 Manufacturer's Documentation**

**3.1** Upon submittal to the NTPEP, the manufacturer shall supply certified documentation showing the brand name and designation; the composition or description of the admixture; the manufacturing ranges for specific gravity at 25°C, percent total solids, percent chloride, and pH; the infrared spectrum and the manner in which the material will be identified on containers. Also, the manufacturer shall supply certified test results from an independent laboratory showing that the submitted material (excluding corrosion inhibitors) conforms to the appropriate standard referenced in Section 2 of this work plan. Before proceeding with any portion of the evaluation, all documentation submitted by the manufacturer will be reviewed by the technical committee. Should any of the certified test data fail to comply with the specifications, that particular material will not be accepted by the technical committee for evaluation.

**3.2** The manufacturer shall certify that as long as a material is furnished under the submitted brand name and designation, the material will be of the same composition and formulation as originally evaluated by the NTPEP.

**3.3** The manufacturer will be allowed to change the name of a product without re-evaluation, provided documentation is furnished certifying the composition and formulation is the same as the product evaluated by the NTPEP. Such name changes will be documented in the next NTPEP report and no confirmation testing will be performed unless the manufacturer submits the material through the normal process and pays the subsequent fees.

**3.4** If the manufacturer changes the formulation, composition, or concentration or alters the physical properties of a product previously evaluated by NTPEP, but maintains the same proprietary name, the technical committee will require the product to be submitted as though it were new and had not previously been evaluated. In such an event, the manufacturer must notify NTPEP, regardless of whether they elect to re-submit the product, and the technical committee will inform NTPEP members of the product's name and that the new formulation has not been evaluated by NTPEP.

### **4.0 Testing and Reporting**

**4.1** The final report issued by the technical committee shall contain the test data

generated by the contracted NTPEP laboratory(s) and the manufacturer sponsored certified test results from an independent laboratory.

4.1.1 The results from the NTPEP contracted laboratory(s) of the analysis for uniformity of the neat liquid air entraining agent shall be determined by AASHTO T 157, Air-Entraining Admixtures for Concrete. The results from the NTPEP contracted laboratory(s) of the analysis for uniformity of the neat liquid chemical admixtures agent shall be determined by AASHTO M 194, Chemical Admixtures for Concrete. These results shall be reported in a format similar but not necessarily identical to the following:

**NTPEP ID #, Manufacturer, Product Name, Product Type**

	<b>pH</b>	<b>Specific Gravity @ 25°C</b>	<b>Infrared Spectrum</b>	<b>Percent Solids</b>	<b>Percent Chloride</b>
MFG Recommended Ranges	xx.xx to yy.yy	x.xxx to y.yyy	Note 1	xx.xx to yy.yy	xx.xx to yy.yy
NTPEP Test Results	zz.zz	z.zzz	typical or not typical	zz.zz	Note 2

Note 1: To be supplied by the manufacturer.

Note 2: This data is to be supplied and certified by the manufacturer. Material variation and chemical interference may make the reliable determination of chloride difficult or impossible.

**4.2** For freshly mixed or hardened concrete the certified test results submitted by the manufacturer from an independent laboratory will be published by the technical committee.

4.2.1 For air entraining agents, certified test results from an independent laboratory for freshly mixed air-entrained concrete and hardened air-entrained concrete will be reported in accordance with AASHTO T 157 Air-Entraining Admixtures for Concrete.

4.2.2 For all other agents, certified test results from an independent laboratory will be reported in accordance with AASHTO M 194 Chemical Admixtures for Concrete .

Note 3: If certain tests fall under AASHTO/CCRL accreditation, the laboratory shall be accredited for such tests. The manufacturer shall also supply a statement that all raw materials used in the evaluation of their admixture complied with the appropriate AASHTO specification. The report shall also contain the legal name of the laboratory and the name and telephone number of the individual responsible for the management of the laboratory.

**4.3** The IR spectrum will be determined using ASTM E 1252. In order to maintain confidentiality of proprietary information, it will not be presented in the report. The IR spectrum, along with the one submitted by the manufacturer, will be retained in AASHTO headquarters by the NTPEP Coordinator. This information will be made available to member states upon request and shall only be for internal use of the requesting state.

## **5.0 Levels of Evaluation (Note 4)**

**5.1** The manufacturer may elect to submit products for full uniformity and equivalence testing and for review of full specification compliance under the appropriate specification as referenced in Section 2 to fulfill member states' requirements to be placed on their Qualified Products List (QPL).

**5.2** The manufacturer may elect to submit products for uniformity and equivalence testing as outlined in Section 4.1.1 of this work plan, to fulfill member state's requirements to be maintained on their QPL. The frequency of submittal for this level of evaluation shall be at the discretion of the manufacturer.

**5.3** The manufacturer may elect to re-submit products for full uniformity and equivalence testing and supply re-test data (Level One or Level Two) from a certified independent laboratory for specification compliance review under the appropriate specification as referenced in Section 2 to fulfill member state's requirements to be maintained on their QPL. Any re-submittal shall be at a minimum of every five years.

Note 4: At times, it may be necessary to limit the number of submittals from each manufacturer for an evaluation period to maintain a manageable work load. Any decision by the technical committee to limit submittals for a cycle will be based on the testing capacity of the laboratory(s) contracted.

## **6.0 Laboratory Testing, Air-Entraining Admixtures**

**6.1** The manufacturer shall have the option of observing the testing of their material during all phases of the evaluation. If a manufacturer's representative elects to observe portions of the evaluation, they must be present at the predetermined times when testing is scheduled. Scheduled testing will not be delayed at the request of a manufacturer for the purpose of their observation.

**6.2** From the material submitted for the evaluation, the pH, specific gravity and residue by oven drying shall be determined as outlined in Section 11 of AASHTO T157 Air-Entraining Admixtures for Concrete. The infrared spectrum shall be obtained by standard laboratory practice. If any uniformity testing result does not fall within the manufacturer's recommended range, the technical committee will discontinue the evaluation for that product. The technical committee will not accept replacement material once testing has begun in the submittal period. In the case of a testing secession, no test data or product name will be reported and fees paid by the manufacturer will be

pro-rated, with any portion of the fees remaining refunded.

## **7.0 Laboratory Testing, Chemical Admixtures for Concrete**

**7.1** The manufacturer shall have the option of observing the testing of their material for all phases of the evaluation. If a manufacturer's representative elects to observe portions of the evaluation, they must be present at the predetermined times when testing is scheduled. Scheduled testing will not be delayed at the request of a manufacturer for the purpose of their observation.

**7.2** From the material submitted for the evaluation, specific gravity and residue by oven drying shall be determined as outlined in AASHTO M 194-97 Chemical Admixtures for Concrete. The infrared spectrum and the pH shall be obtained by standard laboratory practice. If uniformity testing results exceed the accepted tolerances, the technical committee will discontinue the evaluation for that product. The technical committee will not accept replacement material once a testing has begun in a submittal period. In the case of a testing secession, no test data or product name will be reported and fees paid by the manufacturer will be pro-rated, with any portion of the fees remaining refunded.

## **8.0 Review of Data Before Publication or Distribution.**

**8.1** Manufacturers shall have the right to review test data of their product(s) for 30 calendar days after their receipt of the test data prior to submittal to the NTPEP Manager for publication. In the event of a disputed result, it may be appealed under the guidelines of the NTPEP policy.

**8.2** All data generated by the technical committee shall be subject to NTPEP policy in regard to early release and dissemination to NTPEP member states.

**8.3** Data generated by the technical committee may be published by a manufacturer under the guidelines of NTPEP policy.

## **9.0 Laboratory Selection**

**9.1** The final decision of laboratory selection(s) shall rest with the voting members of the Concrete Admixture Technical committee. However, industry input is expected and welcome. All concerns of industry will be duly considered before laboratory selection(s) are made.

**9.2** The laboratory shall have a proven history of competency in tests under which they are to be contracted.

## **10.0 Fees**

**10.1** Fees shall be determined by the technical committee and shall cover the cost of NTPEP testing and reporting.

**10.2** Fees shall reflect the level of testing as outlined in Section 5.0 of this work plan.