6170.1. Description. This Specification governs the Quality Monitoring Program (QMP) for polymeric material for patching spalls in concrete pavement and describes pre-qualification, quality monitoring requirements, disqualification and re-qualification, sampling and testing, and material requirements.

6170.2. 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.

6170.3. Material Producer List. The Materials and Pavements Section of the Construction Division (CST/M&P) maintains a Material Producer List (MPL) of all materials conforming to the requirements of this program. Materials appearing on the MPL, entitled “Polymeric Materials for Patching Spalls in Concrete Pavement,” require no further testing unless deemed necessary by the Project Engineer or CST/M&P. To obtain a place on the MPL the producer must be accepted into the QMP.

Materials not appearing on the MPL require project specific testing and approval before use. Refer to Article 6170.6 of this Specification.

6170.4. Bidders’ and Suppliers’ Requirements. CST/M&P will pre-qualify the material as a complete binder and aggregate system; thus, the MPL will include the binder and aggregate specified by the producer. Before any material is considered, it must be of manufacture and product code or designation shown on the MPL maintained by the Department. The Contractor, supplier, or producer cannot substitute any of the components without prior notice to and approval of CST/M&P.

6170.5. Pre-Qualification Procedure.

A. Pre-Qualification Request. Submit a request for evaluation under DMS-6170 to the Texas Department of Transportation, Construction Division, Materials and Pavements Section (CP-51), 125 E. 11th Street, Austin, Texas 78701-2483.

Include the following information with the request:

- company name;
- physical and mailing addresses;
- contact person, telephone number, and email address;
- material type; and
• laboratory test report with test data showing compliance of the material with Article 6170.7.

B. Pre-Qualification Sample. After reviewing the pre-qualification request, CST/M&P will contact the producer and request a minimum of one sample (amount of binder components equal to 1 gal. of mixed material and corresponding aggregate) for consideration of each type of patching material.

C. Sampling and Testing. Sampling will be in accordance with Tex-734-I. Testing will be in accordance with the methods listed in Article 6170.7 of this Specification.

D. Evaluation. CST/M&P will notify prospective bidders and suppliers after completion of material evaluation.

1. Qualification. Pre-qualification will only be considered for materials with an established history of performance in the field. Prospective suppliers may be required to install their material at a test location. The Department must approve test sections before installation. The manufacturer, supplier, or their representative will provide materials and installation for a test site. CST/M&P will monitor the test location for a minimum period of 12 months, unless the material fails prematurely.

CST/M&P will attempt to establish adequate correlation between producer and CST/M&P test results. If approved for Department use, the material will be accepted to the QMP and added to the MPL.

Once in the QMP, report any change in formulation or manufacturing process to CST/M&P. Any changes in the material require submission for re-evaluation.

2. Failure. Producers not qualified under this Specification may not furnish materials for Department projects and must show evidence of correction of all deficiencies before reconsideration for qualification.

CST/M&P will reject the material if a correlation is not established between producer and CST/M&P test results, if the material does not meet the requirements, or the material fails to perform in the field.

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

6170.6. Quality Monitoring Requirements. Materials in the QMP must pre-qualify every 6 months. The pre-qualification periods are January 1 to June 30 and July 1 to December 31 of every year. During each pre-qualification period, the producer must provide one pre-qualification sample and monthly quality control (QC) testing reports.

A. QM Sample. Submit a sample of each pre-qualified material for every pre-qualification period at least 1 month before the beginning of the pre-qualification period to allow sufficient time for testing. Any material not submitted on time may be delayed in posting on the MPL.
B. **QC Test Reports.** The Department requires that all producers in the QMP perform quality control testing on their material. Testing is required for every material that is pre-qualified under the QMP.

The Department requires that producers submit QC testing reports to CST/M&J every month. The report must reflect the test data from each batch of pre-qualified material produced during that month regardless of the destination of the material. The monthly report should contain the following information:

- type of patching material,
- date of manufacture,
- batch number, and
- QM test results.

Producers must submit reports by the first business day of every month. If no pre-qualified material is produced for a particular month, submit a report stating that no material was produced.

C. **Periodic Evaluation.** The Department reserves the right to conduct random sampling of pre-qualified materials for testing and to perform random audits of test reports. Department representatives may sample material from the manufacturing plant, the project site, and the warehouse. CST/M&J reserves the right to test samples to verify compliance with this Specification.

Producers must also maintain a complete record of all test reports for the previous and current calendar year. CST/M&J reserves the right to inspect and approve the QC testing laboratory to ensure that all criteria for equipment and test procedures are met.

D. **Disqualification.** The Department may remove the producer or supplier from the QMP if any of the following infractions occurs.

- Material tested by CST/M&J fails to meet the requirements stated in this Specification.
- Producer fails to properly submit complete monthly QC testing reports or pre-qualification samples to CST/M&J.
- Producer fails to report changes in the formulation or composition of the material to CST/M&J.

If a material is disqualified, the producer will not be allowed to supply material to the Department for a period of 6 months, or as determined by the Director of CST/M&J. After this period has expired, the producer must re-qualify to regain QMP status. Disqualification will only apply to the patching material type corresponding to the infraction.

E. **Re-Qualification.** If a producer desires to re-qualify after this disqualification period, the producer must first submit a request to CST/M&J and include a test report with data certifying that the elastomeric concrete meets the material requirements in this Specification. Once accepted, all procedures and requirements as stated in Article 6170.5 apply.
6170.7. Project-Specific Testing. Materials not appearing on the MPL require project-specific testing and approval before their use. Submit samples to CST/M&P with a certified test report from an independent laboratory with test data verifying that the material meets the requirements stated within this Specification. This material must not be used until testing is complete and material is approved.

6170.8. Material Requirements. Concrete patching material is a thermosetting polymer-based material mixed with aggregate to form a mortar used for patching spalls in concrete pavement.

- Type I is a flexible material with high resilience properties.
- Type II is a semi-rigid material with a high compressive strength.

A. General Requirements. Both types of concrete pavement patching material have the following properties:

- The patching material is able to carry traffic within 3 hours of placement or as directed by the Engineer.
- Concrete patching material is resistant to weather and abrasion.
- The aggregate type used in the patching material will be those specified by the producer.
- The patching material has a skid-resistant finish (e.g., tining, broadcast sand).
- The patching material has a non-reflective finish with similar color tone to concrete.
- Concrete patching material must be placed at substrate temperatures of 10°C (50°F) and rising.

B. Chemical Resistance. Manufacturers must submit a certified report indicating compliance with the requirements in Table 1 for chemical resistance.

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deicers</td>
<td>None</td>
</tr>
<tr>
<td>Motor oil</td>
<td>None</td>
</tr>
<tr>
<td>Sodium Chloride Solution (5%)</td>
<td>None</td>
</tr>
<tr>
<td>Hydraulic Brake Fluid</td>
<td>None</td>
</tr>
</tbody>
</table>

Standard: ASTM D 471, 25°C (77°F) after 22 hr.

Submit report before the material is accepted into the QMP. It is not required as a part of the monthly quality control reports unless requested by CST/M&P.
C. Physical Requirements.

1. Type I.

<table>
<thead>
<tr>
<th>Test</th>
<th>Method</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gel Time, min.</td>
<td>Tex-614-J</td>
<td>5 Min–60 Max</td>
</tr>
<tr>
<td>Wet Bond Strength to Concrete, psi</td>
<td>Tex-618-J</td>
<td>100 Min</td>
</tr>
<tr>
<td>Compressive Strength, 24 hr. psi</td>
<td>ASTM C 579, Method B</td>
<td>200 Min</td>
</tr>
<tr>
<td>Compressive Stress @ 0.1 in., 7 days, psi</td>
<td>Tex-618-J</td>
<td>200 Min</td>
</tr>
<tr>
<td>Resilience, %</td>
<td>Tex-618-J</td>
<td>90 Min</td>
</tr>
<tr>
<td>Thermal Compatibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One cycle is 8 hrs. @ 60°C, followed by 16 hrs. @ -21°C</td>
<td>ASTM C 884/ C 884M, with modifications</td>
<td>No de-lamination or cracking</td>
</tr>
<tr>
<td>Determine results after 9 cycles</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Type II.

<table>
<thead>
<tr>
<th>Test</th>
<th>Method</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gel Time, min.</td>
<td>Tex-614-J</td>
<td>1 Min–60 Max</td>
</tr>
<tr>
<td>Wet Bond Strength to Concrete, psi</td>
<td>Tex-618-J</td>
<td>250 Min</td>
</tr>
<tr>
<td>Compressive Strength, 24 hr. psi</td>
<td>ASTM C 579, Method B</td>
<td>2,000 Min</td>
</tr>
<tr>
<td>Compressive Stress @ 0.1 in., 7 days, psi</td>
<td>Tex-618-J</td>
<td>2,000 Min</td>
</tr>
<tr>
<td>Resilience, %</td>
<td>Tex-618-J</td>
<td>65 Min</td>
</tr>
<tr>
<td>Thermal Compatibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One cycle is 8 hrs. @ 60°C, followed by 16 hrs. @ -21°C</td>
<td>ASTM C 884/ C 884M, with modifications</td>
<td>No de-lamination or cracking</td>
</tr>
<tr>
<td>Determine results after 9 cycles</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6170.9. Packaging and Labeling. Package reactive components in airtight containers and protect from light and moisture. Package aggregates to protect them from moisture. Include instructions for mixing and application of the material, and include all safety information and warnings regarding contact with the components.
Labels must include the following information:

- type of material,
- resin or hardener components,
- brand name,
- producer name,
- ratio of components to be mixed by volume,
- unique batch number,
- date of manufacture, and
- expiration date.

6170.10. Archived Versions. Archived versions are available.