

DMS - 6340
VEHICLE LOOP WIRE SEALANT

EFFECTIVE DATE: JANUARY 2011

6340.1. Description. This Specification governs the Quality Monitoring Program (QMP) for vehicle loop wire sealants. This Specification describes requirements and procedures for the QMP and describes the material requirements for the four types of vehicle loop wire sealant.

- A. Type I.** This sealant is a one-part moisture cured material with the ability to encapsulate and seal the vehicle loop wire.
- B. Type II.** This sealant is a two-part formulation intended for use when desiring a quick-curing, high-strength material.
- C. Type III.** This sealant is a hot-melt material where a heating apparatus is required to liquefy and dispense the material. Apply the sealant using manual or mechanical means as recommended by the manufacturer.
- D. Type IV.** This sealant is an asphalt emulsion-based material with the ability to quickly cure and seal the vehicle loop wire. Apply sealant in dry weather conditions as recommended by the manufacturer.

6340.2. 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.

6340.3. Material Producer List. The Materials & Pavements Section of the Construction Division (CST/M&P) maintains the Material Producer List (MPL) of all materials conforming to the procedures and requirements of this program. Materials on the MPL, entitled "[Vehicle Loop Wire Sealant](#)," require no further testing, unless deemed necessary by the Project Engineer or CST/M&P. Only pre-qualified materials in the QMP appear on this list.

6340.4. Pre-Qualification Procedure.

- A. Pre-Qualification Request.** Submit a written request for QMP evaluation to the Texas Department of Transportation, Construction Division, Materials & Pavements Section (CP51), 125 East 11th Street, Austin, Texas 78701-2483.

Include the following information with the request:

- Company name
- Physical and mailing addresses
- Type of material
- Contact person and telephone number

- Laboratory test report with test data showing compliance of the material with this Specification
- B. Pre-Qualification Sample.** After receiving a request for QMP pre-qualification, CST/M&P will contact the producer and request a minimum of one sample (volume equivalent to 1/2 gal. [2 L]) for each type of loop sealant to be considered.
- C. Sampling and Testing.** The Department will test in accordance with the requirements listed in Article 6340.5.
- 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.

If CST/M&P finds an adequate correlation between producer and CST/M&P test results, CST/M&P will pre-qualify the producer and place the producer on the MPL.

Once on the MPL, the producer must report any change in formulation or manufacturing process to CST/M&P. Any changes in the material require resubmission for pre-qualification.
 - 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, if the material does not meet the requirements, or the material fails to perform in the field.

Costs of sampling and testing are normally borne by the Department; however, the costs to sample and test materials failing to conform to the requirements of this Specification are borne by the Contractor or supplier. The Director of CST/M&P will assess this cost at the time of testing.

Amounts due the Department will be deducted from monthly or final estimates on contracts, from partial or final payments on direct purchases by the State, or directly billed to the producer.

6340.5. Quality Monitoring Requirements. Materials in the QMP are pre-qualified every year. The pre-qualification period is January 1–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. Pre-Qualification Sample.** The producer must submit a sample of each pre-qualified material every pre-qualification period to CST/M&P for testing. Producers should submit samples at least one month before the beginning of the pre-qualification period to allow

sufficient time for testing. Failure to submit material on time may delay posting on the MPL.

- B. QC Testing Reports.** The Department requires that all producers in the QMP perform QC 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&P every month. The report should reflect the test data from each batch of pre-qualified vehicle loop wire sealant produced during that month regardless of the destination of the material. The monthly report should contain the following information:

- Type of vehicle loop wire sealant
- Date of manufacture
- Batch number
- QM test results

Producers should submit reports by the first business day of every month. If there was no pre-qualified loop sealant produced for a particular month, then the producer must submit a report stating there was no production of loop sealant.

- 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&P reserves the right to test samples to verify compliance with this Specification and inspect and approve the QC testing laboratory to ensure that all criteria meets equipment and test procedures.

Producers should maintain a complete record of all test reports for the previous and current calendar year.

- D. Disqualification.** CST/M&P may disqualify and remove a product from the MPL if any of the following infractions occurs:

- Material tested by CST/M&P 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&P.
- Producer fails to report changes in the formulation or production process of the material to CST/M&P.
- Producer fails to comply with this Specification.

If CST/M&P disqualifies a material, the producer will not be allowed to supply that material to the Department for six months, or as determined by the Director of CST/M&P. After this period has expired, the producer must re-qualify to regain QMP status. Disqualification will only apply to the loop sealant 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&P and include a test report with data certifying that the loop sealant meets the material requirements in this Specification. Once accepted, all procedures and requirements as stated in Article 6340.4 apply.

6340.6. Material Requirements.

A. General Requirements.

- Sealants are one- or two-component materials and are suitable for use in both asphaltic and concrete pavement.
- Sealants do not shrink, swell, or crack during or after its curing process.
- Application equipment, techniques, and temperature range are in accordance with the manufacturer's recommendations.
- Material temperature must not exceed 350°F (177°C) in its preheated or chemically reactive state.
- The sealant, upon application, is of sufficient free-flowing consistency to fill the road cavity thoroughly.
- Sealants have a minimum shelf life of 12 months.

B. Physical Properties. Sealants have physical characteristics as classified and outlined by the following requirements.

1. Type I.

Table 1
Type I Physical Properties

Property	Requirements	Test Method
Tack-Free Time, hr.	24 Max	<ul style="list-style-type: none"> ▪ ASTM C 679 ▪ Use template 3 x 6 x 0.040 in. (152 x 76 x 1.0 mm) thickness ▪ 77°F (25°C), 50% RH
Tensile strength <ul style="list-style-type: none"> ▪ Strength after air curing, psi. ▪ Strength after water Immersion, psi. ▪ Strength after oven aging, psi. 	<ul style="list-style-type: none"> ▪ 50 Min. or reaches 50% extension without de-bonding ▪ 40 Min. or reaches 50% extension without de-bonding ▪ 40 Min. or reaches 50% extension without de-bonding. 	<ul style="list-style-type: none"> ▪ Tex-525-C ▪ Initial cure time: 6 days ▪ Extend specimen to 50% extension; record maximum load
Asphalt Compatibility	No Reaction	<ul style="list-style-type: none"> ▪ ASTM D 5329 ▪ Cure for 24 hr. at 77°F (25°C) and 48 hr. at 140°F (60°C)

Note—To prevent tracking, the Department recommends broadcasting sand over a Type I sealant immediately after application and before opening sealed slot to traffic.

2. Type II.

Table 2
Type II Physical Properties

Property	Requirements	Test Method
Gel Time, min.	5 Min	<ul style="list-style-type: none"> ▪ Tex-614-J ▪ 77°F (25°C)
Tensile Bond Strength, psi (kPa)	200 (1379) Min	<ul style="list-style-type: none"> ▪ Tex-614-J ▪ Cure for 48 hr. at 77°F (25°C) ▪ Use a 0.5 in. gap between the briquettes
Elongation, %	10 Min	<ul style="list-style-type: none"> ▪ Tex-618-J ▪ Cure for 48 hr. at 77°F (25°C)
Tack-Free Time, min.	45 Max	<ul style="list-style-type: none"> ▪ ASTM C 679 ▪ Use template 3 x 6 x 0.040 in. (152 x 76 x 1.0 mm) thickness ▪ 77°F (25°C), 50% RH
Asphalt Compatibility	No Reaction	<ul style="list-style-type: none"> ▪ ASTM D 5329 ▪ Cure for 24 hr. at 77°F (25°C) and 48 hr. at 140°F (60°C)

3. Type III.

Table 3
Type III Physical Properties

Property	Requirements	Test Method
Tack-Free Time, min.	45 Max	<ul style="list-style-type: none"> ▪ ASTM C 679 ▪ Use template 3 x 6 x 0.040 in. (152 x 76 x 1.0 mm) thickness ▪ 77°F (25°C), 50% RH
Tensile Bond Strength, psi (kPa)	50 (345) Min	<ul style="list-style-type: none"> ▪ Tex-614-J ▪ Cure for 48 hr. at 77°F (25°C) ▪ Use a 0.5 in. gap between the briquettes
Ductility, cm	10 Min	<ul style="list-style-type: none"> ▪ ASTM D 113 ▪ 77°F (25°C) at 5 cm per min.
Asphalt Compatibility	No Reaction	<ul style="list-style-type: none"> ▪ ASTM D 5329 ▪ Cure for 24 hr. at 77°F (25°C) and 48 hr. at 140°F (60°C)

4. Type IV.

Table 4
Type IV Physical Properties

Property	Requirements	Test Method
Tack-Free Time, hr.	4 Max	<ul style="list-style-type: none"> ▪ ASTM C 679 ▪ Use template 3 x 6 x 0.040 in. (152 x 76 x 1.0 mm) thickness ▪ 77°F (25°C), 50% RH
Residue by Evaporation, %	65 Min	ASTM D 2939
Viscosity, Poises	300 Max	<ul style="list-style-type: none"> ▪ ASTM D 2196 ▪ 77°F (25°C), 5 RPM, No. 4 spindle
Tensile Strength, psi	50 Min	<ul style="list-style-type: none"> ▪ Tex-618-J
Asphalt Compatibility	No Reaction	<ul style="list-style-type: none"> ▪ ASTM D 5329 ▪ Cure for 24 hr. at 77°F (25°C) and 48 hr. at 140°F (60°C)

C. Chemical Resistance. The cured sealants must be resistant to the chemicals listed in Table 5.

Table 5
Chemical Resistance

Chemical	Effect	Standard
Deicers	No effect	<ul style="list-style-type: none"> ▪ ASTM D 471 ▪ 77°F (25°C) after 22 hr.
Motor oil		
Sodium Chloride Solution (5%)		
Hydraulic Brake Fluid		

6340.7. Packaging and Labeling. Producers must package loop sealant in airtight containers to protect from moisture. Include with each shipment detailed instructions for the application of the material and all safety information.

Labels must include the following information:

- Name of material
- Name of manufacturer
- Ratio of components to be mixed by volume, if applicable
- Unique batch number
- Temperature range for storage
- Date of manufacture
- Expiration date

6340.8. Archived Versions. Archived versions are available.