

DMS - 4410**FIBERGLASS REINFORCED PLASTIC SIGN SUPPORTS****EFFECTIVE DATE: SEPTEMBER 2007**

4410.1. Description. This Specification governs for the material, composition, quality, sampling, and testing and prequalification procedures of fiberglass reinforced plastic sign supports.

4410.2. 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.

4410.3. Material Producer List. The Traffic Engineering Section of the Traffic Operations Division (TRF/TE) maintains the Material Producer List (MPL) of all materials conforming to the requirements of this Specification. Materials appearing on the MPL, entitled "[Work Zone Traffic Control Devices](#)," require no further testing, unless deemed necessary by the Project Engineer or CST/M&P.

4410.4. Bidders' and Suppliers' Requirements. Before any material is considered, it must be pre-qualified by the Materials and Pavements Section of the Construction Division (CST/M&P).

4410.5. Pre-Qualification Procedure.

- A. Pre-Qualification Request.** Submit a written request for evaluation under DMS-4410 to the Texas Department of Transportation, Traffic Operations Division (TRF), 125 East 11th Street, Austin, Texas 78701-2483.

Submit test reports with the request documenting formal crash tests in accordance with National Cooperative Highway Research Program (NCHRP) 230 and meeting the requirements of the latest specifications on breakaway sign supports including the 1985 American Association of State Highway and Transportation Officials (AASHTO) *Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals*.

- B. Pre-Qualification Sample.** Submit five randomly selected posts that are representative of normal production to the Texas Department of Transportation, Construction Division, Materials & Pavements Section, 9500 Lake Creek Parkway, (CP51), Austin, Texas 78717.

Tex-729-I describes the sampling procedure.

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

The Department reserves the right to perform any or all of the tests specified as a check of the tests reported by the manufacturer. In the case of any variance, the Department's tests will govern.

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

- 1. Qualification.** If approved for use by the Department, the material will be added to the MPL. If material is listed on the MPL, no additional submittals are required for that product.

Report changes in the composition or in the manufacturing process of any material to CST/M&P. Significant changes reported by the manufacturer, as determined by the Director of CST/M&P, may require a re-evaluation of performance.

When, in the opinion of the Director of CST/M&P, changes have been made in the composition or in the manufacturing process of a prequalified material, a re-evaluation of the performance may be required. The Department may conduct additional tests to identify changes in the material. Detected changes in the composition or in the manufacturing process that have not been reported by the manufacturer may be cause for removal of that material from the MPL.

- 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.

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 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. Products will not be retested until costs for previously failed tests have been paid.

D. Performance History. Some of the tests specified may extend over a prolonged period. Therefore, testing for acceptance of materials supplied on any contract or State purchase order will only be considered on those materials that are determined by the Director of CST/M&P, to be identifiable as a material having an established performance history of compliance with the criteria specified.

E. Periodic Evaluation. The Department reserves the right to evaluate the performance of materials periodically. Samples will be selected at random from materials submitted to the Department on contracts or on direct State purchase orders.

An authorized Department representative will do the sampling. Random samples will be taken so that the samples can reasonably be considered representative of all materials being supplied. A sample will consist of a minimum of three posts from each lot or shipment. Unless otherwise noted, the Department will sample at the jobsite.

Failure of materials to comply with the requirements specified may be cause for removal of those materials from the list of pre-qualified materials.

4410.6. Material Requirements. This Specification covers the requirements for fiberglass reinforced plastic sign supports (referred to as 'supports').

A. Dimensions. The outside diameter of the supports must be 75 ± 1 mm (3 ± 0.025 in.) The length of the supports must be as specified on the plans or on the purchase order. The supports must meet the applicable tolerances specified in ASTM D 3917.

B. Glass Content. The total percent glass of the supports, in accordance with ASTM D 2584, must not differ more than 5% from the average total percent glass of the pre-qualification samples.

The total percent glass of the individual pre-qualification samples must not vary more than 5% from their (minimum of five supports tested) average.

C. Hardness. The hardness of the supports, in accordance with ASTM D 2240, Type D, must not vary more than ± 6 from the pre-qualification average. ASTM D 2240 is modified to allow for use of a specimen that is not flat.

The variation among individual pre-qualification samples must not vary more than six from their (minimum of five supports tested) averages.

D. Color. The color of the supports must be yellow and must fall within the CIE color coordinates and reflectance values listed below, both before and after 2,000 hours of exposure in accordance with ASTM G 155, using Exposure Cycle 1 with a quartz inner filter glass and Type "S" Borosilicate outer filter glass.

Color must be determined in accordance with Tex-839-B, which is modified to allow the use of a sample that is not completely flat to allow for the curvature of the support samples.

Table 1
CIE Color Coordinates and Reflectance

CIE Color Coordinates		Reflectance
X	y	
0.440	0.460	30-60
0.490	0.510	
0.540	0.460	
0.490	0.410	

E. Tensile Strength. The average tensile strength of each support tested, determined in accordance with ASTM F 711, must not vary more than 103 MPa (15,000 lb. psi) from the average of the supports tested for prequalification. ASTM F 711 is modified to allow the use of the slightly curved tensile coupons placed directly in the grips.

Test a minimum of five samples for each support.

F. Apparent Tensile Strength. The apparent tensile strength of each support tested, determined in accordance with ASTM D 2290, must not vary more than 25% from the apparent tensile strength of the pre-qualification samples. ASTM D 2290 is modified to allow the use of samples of uniform 12.7 mm (1/2 in.) width.

Test a minimum of five samples for each support.

- G. Chemical Analysis.** The infrared spectrum of material from supports furnished must match the spectrum for the pre-qualified supports. (Refer to Tex-888-B.)
- H. Density.** The specific gravity of material from supports furnished must not vary more than ± 0.12 from the specific gravity of the pre-qualified supports tested in a gas pycnometer using helium as the pressure gas. The pycnometer will be operated according to the manufacturer's procedure.
- I. Workmanship.** The supports must exhibit good workmanship and must be free from objectionable marks or defects that will adversely affect appearance or serviceability.

4410.7. Payment.

- A. Procurement by the State.** Payment for all materials will be in accordance with the conditions prescribed in the contract awarded by the State.
- B. Contracts.** Payment for all materials will be in accordance with the bid item in the contract, or as otherwise shown on the plans.

4410.8. Archived Versions. Archived versions are available.