

**DEPARTMENT OF TRANSPORTATION  
STATE OF GEORGIA  
SUPPLEMENTAL SPECIFICATION**

**Section 833—Joint Fillers and Sealers**

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*Delete Subsection 833.2.06 and substitute the following:*

**A. Requirements**

1. Silicone

Furnish silicone sealant in a one-part or two part silicone formulation. Use sealant that is compatible with the surface to which it is applied. Do not use acid-cure sealants on Portland cement concrete.

- a. Use silicone that meets the physical requirements in [Table 1](#). For a list of silicone joint sealant sources, please see [QPL 66](#). Identify silicones as the following types:
  - 1) Type A—A one part, low modulus, non-sag silicone. Used to seal horizontal and vertical joints in Portland cement concrete pavements and bridges. Tooling is required.
  - 2) Type B—A one part, very low modulus, self-leveling silicone. Used to seal horizontal joints in Portland cement concrete pavements and bridges. Tooling is not normally required.
  - 3) Type C—A one part, ultra low modulus, self-leveling silicone. Used to seal horizontal joints in Portland cement concrete pavements and bridges and joints between Portland cement concrete pavement and asphaltic concrete shoulders. Tooling is not normally required.
  - 4) Type D—A two part, ultra low modulus, self-leveling, rapid cure silicone. Used to seal horizontal joints in Portland cement concrete pavements and bridges and joints between Portland cement concrete pavement and asphaltic concrete shoulders. Tooling is not required.
- b. Use silicone sealant evaluated by the National Transportation Product Evaluation Program (NTPEP).
- c. Use sealant that is compatible with the surface to which it is applied. Do not use acid-cure sealants on Portland cement concrete.
- d. Use silicone that meets the following physical requirements:

**Table 1—Physical Requirements for Silicone Sealants**

Type Silicone	A	B	C	D
Tensile Stress at 150% Strain, Max. psi (kPa) (Note 1)	45 (310)	40 (275)	15 (105)	25 (175)
Durometer Hardness, Score [0 °F and 77 °F ± 3 °F (-18 °C and 25 °C ± 2 °C)] (Note 1)	“A” 10-25	“00” 40-80	“00” 20-80	“00” 40-80
Bond to Concrete Mortar, Min. psi ( kPa) (Note 1) (Note 3)	50 (345)	40 (275)	35 (240)	35 (240)
Tack Free Time (Skin-over) (Max. Minutes) (Note 2)	90	90	90	30
Extrusion Rate (Min. Grams/Minute) (Note 4)	75	90	100	200-550
Non-volatile (Min. %)	90	90	90	90
Specific Gravity	1.1 - 1.5	1.1 - 1.5	1.1 - 1.5	1.2 - 1.5

Type Silicone	A	B	C	D
Shelf Life (from date of shipment)	6 Months	6 Months	6 Months	6 Months
Movement Capability & Adhesion (Note 1)	No adhesive or cohesive failure after 10 cycles at 0 °F (-18 °C).			
Ozone and U.V. Resistance (Note 1)	No chalking, cracking or bond loss after 5,000 hours.			
Note 1: The cure time for these specimens shall be 21 days for Type A and 28 days for Type B, C and D. Specimens shall be cured at 77 °F ± 3 °F (25 °C ± 2 °C) and 50±5% relative humidity.				
Note 2: At conditions of 77 °F ± 3 °F (25 °C ± 2 °C) and 50±5% relative humidity.				
Note 3: Type C and D silicone shall also meet its bond strength requirement to asphalt concrete.				
Note 4: Type D extrusion rate shall be within the range specified.				

## 2. Bond Breakers

Bond breakers shall be chemically inert and resistant to oils, gasoline, solvents, and primer, if one is required. Install silicone sealants over a bond breaker to prevent the sealant from bonding to the bottom of the joint.

- Use bond breakers that are chemically inert and resistant to oils, gasoline, solvents, and primer, if one is required.
- Do not use bond breaker that will stain or adhere to the sealant.
- Use either a backer rod or tape bond breaker.

### 1) Backer Rods

Type L	Closed-cell, expanded polyethylene foam
Type M	Closed-cell, polyolefin foam with a closed-cell skin over an open-cell core

Use backer rods that meet the following physical requirements:

Physical Property	Requirement
Density	2 lb/ft <sup>3</sup> (30 kg/m <sup>3</sup> )min.
Tensile strength	25 psi (170 kPa) min.
Water absorption	0.02 g/cm <sup>3</sup> max.

### 2) Bond Breaking Tapes

Type N bond breaking tapes are made from extruded polyethylene with a pressure-sensitive adhesive on one side.

Bond breaking tapes may be used with all three types of silicone, but is suitable for bridge joints only.

Bond breaking tapes shall have a minimum thickness of .005 in (0.13 mm.).

## 3. Joint Sealant Certification

Submit, at no cost to the Department, a minimum of 30 gal (100 L) of material and certified test results on each lot of joint sealant furnished to a Project.

Submit a certification that verifies the sealant meets all the test requirements of this Specification, except the Bond to Concrete Mortar and Shore Durometer Hardness at 0 °F (-18 °C).

## B. Fabrication

Prepare and install silicone and bond breakers according to [Section 461](#).

## C. Acceptance

### 1. Silicone

Test the silicone as follows:

Test	Method
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<b>Test</b>	<b>Method</b>
Tensile stress	ASTM D 412 (die C)
Durometer hardness	ASTM D 2240
Bond to concrete mortar	<a href="#">GDT 106</a>
Tack free time (skin-over)	<a href="#">GDT 106*</a>
Extrusion rate	<a href="#">GDT 106</a>
Non-volatile	<a href="#">GDT 106</a>
Specific gravity	ASTM D 792 (Method A)
Movement capability and adhesion	<a href="#">GDT 106</a>
Ozone and UV resistance	ASTM C 793
*In cases of dispute, use ASTM C 679 as a referee test.	

2. Bond Breakers

Test the bond breaker backer rods as follows:

<b>Test</b>	<b>Method</b>
Density	ASTM D 1622
Tensile strength	ASTM D 1623
Water absorption	ASTM C 1016

3. Department Responsibility

The Department will:

- a. Evaluate the sealant in the field before accepting any silicone sealants that meet the requirements of this Specification.
- b. Install the material submitted by the Contractor in roadway and/or bridge joints. The material shall be in place for two winters without failure before being accepted.
- c. Reject any sealant or bond breaker that is evaluated and approved, yet fails in actual use.

**D. Materials Warranty**

General Provisions 101 through 150.