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## Standard Specification for Adhesive Lubricant for Installation of Preformed Elastomeric Bridge Compression Seals in Concrete Structures<sup>1</sup>

This standard is issued under the fixed designation D 4070; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

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~~<sup>ε1</sup>Note—Keywords were added editorially in July 1996.~~

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### 1. Scope

1.1 This specification covers an adhesive lubricant for facilitating the insertion and positioning of preformed elastomeric bridge compression seals in either concrete or steel-faced joints, and which bonds the seal to the joint faces to waterproof the joint.

### 2. Referenced Documents

- 2.1 *ASTM Standards:*<sup>2</sup>  
D 1084 Test Methods for Viscosity of Adhesives

### 3. General Requirements

3.1 The adhesive lubricant shall be a one-component, moisture-curing, polyurethane compound extended with aromatic hydrocarbon solvent. The compound shall provide adequate lubrication for insertion of the seal into the joint and, in the actual field application, shall bond the seal to the joint face throughout repeated cycles of expansion and contraction, effectively sealing the joint against infiltration of moisture.

### 4. Physical Requirements

- 4.1 The material shall conform to the physical properties described in Table 1.

### 5. Sampling

5.1 Samples of the adhesive lubricant shall be 1 L (1 qt) consisting of a composite taken from three or more separate containers chosen at random from the same batch. A batch or lot shall be considered as all finished material that was manufactured simultaneously or continuously as a unit prior to packaging. Each of the containers sampled shall be resealed and marked for identification.

- 5.2 Samples shall be taken at the point of manufacture or warehouse prior to delivery, or at the point of delivery from each lot.

### 6. Test Conditions

6.1 Tests shall be conducted at standard laboratory conditions of  $23 \pm 2^\circ\text{C}$  ( $73.4 \pm 3.6^\circ\text{F}$ ). All materials and equipment shall be held at these conditions prior to test for a sufficient time to assure equilibrium.

### 7. Specimen Preparation

7.1 Using a square-tipped spatula, thoroughly hand-mix approximately 500 mL (1 pt) of lubricant adhesive in a round can for 1 min.

### 8. Apparatus

- 8.1 *Oven*—The oven shall be a circulating air oven capable of maintaining temperature of  $105 \pm 2^\circ\text{C}$  ( $221 \pm 4^\circ\text{F}$ ).

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<sup>+</sup> This specification is under the jurisdiction of ASTM Committee D-4 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.34 on Preformed Joint Fillers and Sealers.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards*, Vol 15.06, volume information, refer to the standard's Document Summary page on the ASTM website.

**TABLE 1 Physical Requirements**

Property	Requirements	Test-Method Method Section
Solids content, min %	60	9.1
<u>Homogeneity</u>	<del>shall be uniform, no lumps or agglomerates, no settlement in the container</del>	<del>None</del>
<u>Homogeneity</u>	shall be uniform, no lumps or agglomerates, no settlement in the container	None
Viscosity, cP	20 000 to 300 000	9.2
Shear ratio, min, for viscosity —in the range of:		9.2
in the range of:		
20 000 to 100 000 cP	1.5	
100 001 to 200 000 cP	2.0	
200 001 to 300 000 cP	2.5	
Shear ratio, max	4.0	9.2
Lubricating life, min, h	2	9.3
Sag	no sagging	9.4
Peel strength test	<del>maximum length peeled from concrete within 3 min</del>	<del>9.5</del>
<u>Peel strength test</u>	maximum length peeled from concrete within 3 min	9.6
500-g load	none	
1000-g load	12 mm (½ in.)	
<u>Shelf life</u>	<del>for 6 months after manufacture, no skinning over and settling in the container to the extent that it cannot be brought to a smooth uniform product by stirring</del>	
<u>Shelf life</u>	for 6 months after manufacture, no skinning over and settling in the container to the extent that it cannot be brought to a smooth uniform product by stirring	

8.2 *Viscometer*—It shall be a Brookfield Model RVT viscometer with helipath stand and, TA, TB, TC, TD and TE spindles.

8.3 *Rubber Strips*— The rubber strips shall be 150 mm (6 in.) long, 25 mm (1 in.) wide and 1.5 mm (¼ in.) thick, and shall be obtained from an outside wall of preformed elastomeric bridge seal representative of the seal to be bonded with the adhesive lubricant.  
<https://standards.iteh.ai/catalog/standards/sist/741b01e8-09aa-4800-94e8-b69b77388664/astm-d4070-08>

8.4 *Concrete Blocks*, 200 by 200 by 75 mm (8 by 8 by 3 in.) and made of concrete similar to the concrete to which the seal is to be bonded. The blocks shall be cured for at least 14 days in a moisture room followed by at least 7 days at normal laboratory air condition. The test surface shall be smooth, freshly sandblasted before testing.

8.5 *Steel Roller*— A suitable 50 mm (2 in.) wide roller weighing 4.5 kg (10 lb).

8.6 *Steel Blocks*, 165 mm (6½ in.) long by 50 mm (2 in.) wide weighing 4.5 kg (10 lb).

8.7 *Weights*—A 500-g and a 1000-g weight shall be provided.

8.8 *Glass Plates*, or smooth-surface paper test charts.<sup>3</sup>

8.9 *Paint Film Applicator* (doctor blade).

## 9. Test Methods

### 9.1 Solids Content:

9.1.1 Place approximately 20 g of the adhesive in a covered weighing bottle.

9.1.2 Weigh a small aluminum foil drying dish together with a small glass stirring rod to the nearest 1 mg. Weigh out to the nearest 1 mg approximately 1½ g of the adhesive by difference from the weighing bottle into the dish, keeping the bottle covered as much as possible. Distribute the adhesive uniformly over the bottom of the dish in as thin a layer as possible by means of the stirring rod.

9.1.3 Place the dish with the rod and contents in a circulating air oven at 105 ± 2°C (221 ± 3.6°F) for 3 h ± 5 min or until a constant weight is reached.

<sup>3</sup> Smooth-surface paper test charts, available from Morest Co., 211 Centre St., New York, NY 10013; and Leneta Co., P.O. Box 576, Ho Ho Kus, NJ 07423, have been found suitable.

<sup>3</sup> The sole sources of supply of the apparatus known to the committee at this time are Smooth-surface paper test charts, available from Morest Co., 211 Centre St., New York, NY 10013; and Leneta Co., P.O. Box 576, Ho Ho Kus, NJ 07423. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend.