Designation: D2835 – 89 (Reapproved 2017)

Standard Specification for Lubricant for Installation of Preformed Compression Seals in Concrete Pavements[1]

This standard is issued under the fixed designation D2835; 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 (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope*

1.1 This specification covers a lubricant suitable for facilitating the insertion and positioning of preformed elastomeric compression seals in prepared voids (usually contraction joints) in concrete pavement.

1.2 The requirements of the lubricant are based on the performance of the lubricant as measured by its solids content, homogeneity, consistency, and drying rate.

1.3 The values stated in inch-pound units are to be regarded as the standard. The metric equivalents of U.S. customary units may be approximate.

1.4 The following precautionary caveat pertains only to the test method portion, Section 7 of this specification. *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D1084 Test Methods for Viscosity of Adhesives

D1644 Test Methods for Nonvolatile Content of Varnishes

3. Classification

3.1 The lubricant shall be based on polychloroprene, containing only soluble phenolic resins blended together with antioxidants and acid acceptors in a suitable mixture of organic solvents.

4. Requirements

4.1 *Homogeneity*—The lubricant shall be uniform and contain no lumps or agglomerates.

4.2 *Solids Content*—The nonvolatile content of the lubricant shall be no less than 24.0 weight %.

4.3 *Consistency*—The lubricant shall exhibit a viscosity in one of the following ranges:

4.3.1 *Type I*—For hand or machine application, 3000 to 8000 cP.

4.3.2 *Type II*—For machine application, 8000 to 15 000 cP.

4.4 *Drying Rate*—A bond between lubricant-coated papers prepared after 8-min drying time shall separate completely in less than 10 s when a 50-g load is applied in shear. A similar bond prepared after 20-min drying time shall remain unseparated for a minimum of 10 s when a 50-g load is applied in shear.

5. Basis of Purchase

5.1 Each lot of lubricant shall be accompanied by the manufacturer's certified test results attesting compliance with this specification, unless an alternative agreement is concluded by the manufacturer and the purchaser.

6. Sampling

6.1 The lubricant samples shall be a 1-quart (1-litre) aliquot consisting of a composite taken when possible from three or more separate containers chosen at random. Samples also shall be taken from containers which appear to be nonrepresentative and shall be tested separately. Before a sample is withdrawn, the contents in the container shall be mixed to uniform consistency. The sample shall be placed immediately in an airtight glass jar or metal can until tested.

[1] This specification is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.34 on Preformed Joint Fillers, Sealers and Sealing Systems.

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard**

7. Test Methods

7.1 *Homogeneity*—Stir the test sample by hand for 2 min with a spatula. Withdraw the spatula and examine the lubricant as it flows from the spatula for lumps or agglomerates. Particles smaller in diameter than 0.015 in. (0.38 mm) shall not be considered cause for rejection.

NOTE 1—At the consumer's request, compliance with the 0.015-in. (0.38-mm) requirement shall be determined by a sample diluted 1+4 with Xylene through a 40-mesh sieve.

7.2 *Solids Content*—Determine in accordance with Method A of Test Methods D1644.

7.3 *Consistency*—Determine in accordance with Method B of Test Methods D1084. Use a No. 4 spindle at 20 rpm at a test temperature of 77 ± 0.9 °F (25 ± 0.5 °C).

7.4 *Drying Rate:*

7.4.1 *Apparatus:*

7.4.1.1 *Film Applicator,*[3] 2 in. (50 mm) wide, 5 to 25-mils (0.127 to 0.635-mm) clearance set at 14 mils (0.356 mm).

7.4.1.2 *Nonabsorbent Stiff Paper Surface,*[4] 3½ by 6 in. (100 by 150 mm).

7.4.1.3 *Brush-Out Panels.*[4]

7.4.1.4 *Stopwatch.*

7.4.1.5 *Wire.*

7.4.1.6 *Weights,* 50-g, and 500-g.

7.4.1.7 *Aluminum Plate,* ⅛ by 1 by 2 in. (3 by 25 by 50 mm).

7.4.2 *Procedure:*

7.4.2.1 Condition the lubricant for at least 3 h at 73.4 ± 3.6 °F (23 ± 2 °C). Apply a series of 2 in. wide (wet thickness) (14 ± 2.5-mils) 0.356 ± 0.064-mm films of the lubricant to four separate nonabsorbent paper surfaces. A film applicator as specified in 7.4.1.1 has been found to produce a wet film in the specified range with this class of materials, but the deposited film thickness from any specific spreader and lubricant system should be checked to determine the conformance to the specified thickness. Films should be at least 4 in. (100 mm) long, centered on the paper and parallel to the long axis of the sheet. Allow to dry in a horizontal position in a draft-free area. The time upon completion of the casting of the second film of each pair cast is recorded as the initial drying time for that pair of films.

7.4.2.2 After several minutes drying, cut off at least 1½ in. (40 mm) from the bottom of the cast films and discard. After drying 8 min, overlap the cut edges of the first pair 1 in. and place face-to-face to form a 1 by 2-in. area lap shear bond. Take care to align the two films so that a force applied along their center lines will impose a direct shear force without a twisting movement. Form the bond by placing the overlapped papers on a horizontal smooth surface, placing a ⅛-in. thick, 1 by 2-in. aluminum plate over the bond area, and placing a 500-g laboratory weight on this plate for 10 s. Hang the bonded pieces immediately in a vertical position and attach a 50-g weight with a small loop of wire, weighing less than 1 g, to the lower piece of paperboard forming the bond. Align the point of support and the point of attachment for the weight on the center lines of the cast films.

7.4.2.3 Record the time needed for the 50-g load to completely separate the bonded pieces with the aid of a stopwatch. If separation is not complete in 1 min, discontinue the test and record the separation time as more than 1 min.

7.4.2.4 Repeat the above procedure with a pair of cast films which are allowed to dry for 20 min before forming a bond.

7.4.2.5 Testing should be conducted at 73.4 ± 3.6 °F (23 ± 1 °C) and at a relative humidity of 50 ± 5 %.

8. Precision and Bias

8.1 No statement is made about either the precision or bias of this specification for measuring homogeneity and drying rate, since the result merely states whether there is conformance to the criteria for success specified in the procedure.

9. Packaging and Package Marking

9.1 *Packaging*—The material shall be packaged in standard commercial containers, so constructed as to ensure acceptance by common or other carrier for safe transportation at the lowest rate to the point of delivery, unless otherwise specified in the contract or order.

9.2 *Marking*—Shipping containers shall be marked with the following information:

9.2.1 Manufacturer's name or trademark, product code, and batch or lot number,

9.2.2 Date of manufacture and recommended time limit of storage before use,

9.2.3 Weight per gallon of lubricant to the nearest ⅒ lb (0.05 kg)/gal,

9.2.4 Special handling instructions during product transfer, and

9.2.5 Special precautions required because of product toxicity, flammability, or other such information pertinent to the proper storage and use of the product.

[3] The sole source of supply of the apparatus known to the committee at this time is the Gardner Ultra Applicator, available from Gardner Laboratories, Inc., P.O. Box 5728, Bethesda, MD, Catalog No. Ag 3816J. 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,[1] which you may attend.

[4] The sole source of supply of the apparatus known to the committee at this time is the Morest Co., Inc., 211 Center St., New York, NY 10013. 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,[1] which you may attend.

SUMMARY OF CHANGES

Committee D04 has identified the location of selected changes to this standard since the last issue (D2835 – 89 (1998)) that may impact the use of this standard.

(1) Section 1.2 was revised to delete "resistance to aging."
(2) Section 1.3 was added and the following section renumbered.
(3) The 10-g weight was deleted from 7.4.1.6.
(4) The temperature range was broadened in 7.4.2.1 and 7.4.2.5.
(5) The fourth sentence in Section 7.4.2.2 was revised to correct an omission in the previous published issues.
(6) Section 8 on Precision and Bias was added.