



Designation: D517 – 23

Standard Specification for Asphalt Plank¹

This standard is issued under the fixed designation D517; 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 asphalt plank used for bridge decks as well as for industrial floors.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *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. Classification

2.1 *Type I, a*—Plain, butt-edge asphalt plank for use as an industrial flooring.

2.2 *Type I, b*—Plain, butt-edge asphalt plank for use on a railroad bridge as a waterproofing system protection layer.

2.3 *Type II*—Ship-lap edge asphalt plank for use on a railroad bridge as a waterproofing system protection layer.

3. Ordering Information

3.1 The user should state the type and dimensions in the purchase order. If no type is specified, Type I shall be furnished.

4. Materials and Manufacture

4.1 Asphalt plank shall be formed from a mixture of asphalt, fibers, modifiers, or a combination thereof, and mineral filler in such a manner as to produce a uniformly dense mass.

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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4.2 In the case of Type II asphalt plank, the edges of the planks shall be of a lap joint configuration.

5. Requirements

5.1 *Asphalt*—The asphalt cement shall have such characteristics that when combined with the other ingredients, a plank meeting the requirements of this specification will result.

5.2 *Fiber*—The fibrous material shall consist of finely divided threads or any natural or synthetic fiber (except asbestos) from free lumps, and when used, shall be in a flocculent condition. The fabric and fibrous material shall be free from all foreign materials.

5.3 *Mineral Filler*—The mineral filler shall consist of finely crushed slate, limestone, silica, or other aggregate that has proven suitable for use with asphalt cement in constructing pavement wearing surfaces.

5.4 *Absorption*—The absorption of asphalt plank shall not exceed 1.0 % by weight when tested in accordance with 9.2.

5.5 *Brittleness*—At least 80 % of the specimens tested of each thickness of plank shall not show any detrimental cracking when tested in accordance with the method described in 9.3.

5.6 *Hardness*—The hardness of the plank, when tested in accordance with the method prescribed in 9.5, shall meet the following requirements:

	Temperature, °C (°F)	Load, kg (lb)	Penetration, mm (mils)
Type I, a	25 (77)	30 (66)	<0.889 (<35)
Type I, b	25 (77)	30 (66)	<1.651 (<65)
Type II	25 (77)	30 (66)	<1.651 (<65)

6. Dimensions, Mass, and Permissible Variations

6.1 Asphalt plank shall have the dimensions specified or shown on the plans and determined in accordance with 9.4. Tolerances of ± 1.6 mm ($1/16$ in.) in thickness, ± 3.2 mm ($1/8$ in.) in width, and ± 6.4 mm ($1/4$ in.) in length will be permitted. Plank sizes shall be 12 in. in width by either 24 in. or 48 in. in length. Thickness shall be $1/2$ in., $3/4$ in., 1 in., or 1.5 in.

6.2 The asphalt plank shall conform to the following mass requirements.

Specimen Thickness, mm (in.)	Min Mass, kg/m ² (lb/ft ²)
12.7 (0.5)	0.2 (5)
19 (0.75)	0.3 (7.5)
25.4 (1.0)	0.4 (10)
37.5 (1.5)	0.6 (15)

7. Workmanship, Finish, and Appearance

7.1 The asphalt plank shall be free from defects affecting its serviceability and appearance; it shall have straight edges and square corners.

8. Sampling

8.1 For the purpose of testing, three planks shall be selected at random by the purchaser or their representative for each 1000 planks or fraction thereof for each thickness included in the shipment.

9. Test Methods

9.1 *Scope*—The four test methods listed in this section are intended to measure those attributes necessary to measure the ability of asphalt plank to provide a reasonably long and satisfactory service. They are listed as follows:

Test Method	Section
Absorption	9.2
Brittleness	9.3
Dimensions	9.4
Hardness	9.5

9.2 Absorption:

9.2.1 *Scope*—This test method covers the determination of water absorption of asphalt plank.

9.2.2 *Significance and Use*—The ability of the plank to withstand significant water absorption is a measure of its porosity and therefore its ability to withstand freezing and thawing conditions. It is a measure of its density.

9.2.3 *Procedure*—A specimen 50.8 by 152.4 mm (2 by 6 in.) shall be cut from the asphalt plank in such a manner that all edges are freshly cut. The mass of the specimen shall be accurately determined to the nearest 0.10 g, immersed in water for 24 h, removed, and the surface water wiped off with a slightly dampened cloth. The mass of the specimen shall then be determined to the nearest 0.10 g and the percent absorption determined. The time elapsing between the removal of the specimen from the bath and its weighing shall not exceed 1 min.

9.3 Brittleness:

9.3.1 *Scope*—This test method covers the determination of brittleness of asphalt plank.

9.3.2 *Significance and Use*—This test measures the ability of the plank to function in cold temperatures without detrimental cracking.

9.3.3 *Procedure*—Two 152.4 by 152.4 mm (6 by 6 in.) specimens shall be cut from each of the three sample planks selected in accordance with Section 8. Five of those specimens shall be tested as follows: The specimens shall be conditioned and maintained at a temperature of 0 °C (32 °F) for not less than 3 h, and then tested immediately. A 0.9 kg (2 lb) weight

dropped from a height of 508 mm (20 in.) onto a 5.7 mm (0.225 in.) diameter cylindrical pin shall not cause a crack to extend more than 37.5 mm (1.5 in.) from the point of impact. The point of impact shall be as close to the center of the sample as possible.

9.4 Dimensions:

9.4.1 *Scope*—This test method covers the measurement of dimensions to determine if the sample complies with the plan or specification requirements.

9.4.2 *Significance and Use*—This test method will ensure that the finished product in place will afford an even, uniform bearing surface for subsequent construction.

9.4.3 *Procedure*—Plank from each lot shall be examined for appearance, straightness of edges, and squareness of corners, and measured for width and length to an accuracy required in Section 6. They shall also be calipered at four scattered points each, with a micrometer having flat bearing surfaces at both contact points of not less than 6.4 mm (¼ in.) in diameter. The average of the readings shall be considered the thickness of the plank.

9.5 Hardness:

9.5.1 *Scope*—This test method covers the determination of hardness of asphalt plank.

9.5.2 *Significance and Use*—This test method measures the ability of the asphalt plank to withstand serviceable loads and to ensure that the grade of asphalt used is proper to serve under warm temperature without excessive deformation.

9.5.3 *Procedure*—The hardness of the plank shall be determined by means of a McBurney penetrometer in which the pin in contact with the plank during the test is a hemispherical pin 5.7 mm (0.225 in.) in diameter. The specimen shall be kept submerged in water maintained at the temperature specified for a time sufficient to ensure that the specimen has attained this temperature throughout. The test shall be made with the specimen supported on a smooth, solid support. The tests shall be performed upon samples at least 152.4 mm (6 in.) in length and of the full width of the plank. In each case the required load shall be applied for a period of 60 s, and the contact pin of the penetrometer shall be applied to the specimen at points 37.5 mm (1.5 in.) or more from the edge of the specimen.

9.6 Precision and Bias:

9.6.1 *Precision*—Attempts are being made to determine the precision of the two tests in this standard that result in a numerical value.

NOTE 1—Since a precision estimate for this standard has not been developed, this test method should be used for research and informational purposes only. Therefore, this standard should not be used for the acceptance or rejection of a material for purchasing purposes.

9.6.2 *Bias*—No statement can be made on the bias of the tests in this standard because no material having an accepted reference value is available.

10. Keywords

10.1 asphalt plank; bridge deck waterproofing; industrial flooring; protection course