



# Standard Specification for Coal-Tar Pitch Used in Roofing, Dampproofing, and Waterproofing<sup>1</sup>

This standard is issued under the fixed designation D450/D450M; 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 Department of Defense.*

ε<sup>1</sup> NOTE—Units information was editorially corrected in January 2013.

## 1. Scope

1.1 This specification covers two types of coal-tar pitch suitable for use in the construction of built-up roofing, dampproofing, and membrane waterproofing systems.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

D4 Test Method for Bitumen Content

D20 Test Method for Distillation of Road Tars

D36 Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)

D70 Test Method for Density of Semi-Solid Bituminous Materials (Pycnometer Method)

D92 Test Method for Flash and Fire Points by Cleveland Open Cup Tester

D95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation

D140 Practice for Sampling Bituminous Materials

D2398 Test Method for Softening Point of Bitumen in Ethylene Glycol (Ring-and-Ball) (Withdrawn 1984)<sup>3</sup>

D2415 Test Method for Ash in Coal Tar and Pitch

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.03 on Surfacing and Bituminous Materials for Membrane Waterproofing and Built-up Roofing.

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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* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).

D3461 Test Method for Softening Point of Asphalt and Pitch (Mettler Cup-and-Ball Method)

## 3. Classification

3.1 Coal-tar pitches covered by this specification include two types:

3.1.1 *Type I*—Suitable for use in built-up roofing, dampproofing, and membrane waterproofing systems.

3.1.2 *Type II*—Suitable for use in dampproofing and in membrane waterproofing systems.

## 4. Materials and Manufacture

4.1 Coal-tar pitch shall be prepared from selected crudes using suitable refining processes to conform to the applicable specifications.

## 5. Physical Requirements

5.1 Coal-tar pitch shall be homogeneous and free of water.

5.2 Each type shall conform to the physical properties prescribed in Table 1.

## 6. Sampling and Test Methods

6.1 Sample the material and determine the properties enumerated in this specification in accordance with the following methods:

6.1.1 *Sampling*—Practice D140.

6.1.2 *Water*—Test Method D95.

6.1.3 *Specific Gravity*—Test Method D70.

6.1.4 *Softening Point*—Test Method D36 or D3461. In cases where a disagreement exists between the purchaser and the seller, Test Method D36 shall be used as the referee method.

6.1.5 *Flash Point*—Test Method D92.

6.1.6 *Pitch Soluble in Carbon Disulfide*—Test Method D4.

6.1.7 *Ash*—Test Method D2415.

6.1.8 *Distillation*—Test Method D20.

## 7. Inspection and Certification

7.1 Inspection and certification of the material shall be as agreed upon between the purchaser and the seller. Specific requirements shall be made part of the purchase contract.

**TABLE 1 Physical Requirements of Coal-Tar Pitch for Built-Up Roofing, Dampproofing, and Waterproofing**

|   | Type I                   | Type II                  |
|---|--------------------------|--------------------------|
| Water, max, %   | 0                        | 0                        |
| Specific gravity, 25/25°C   | 1.22 to 1.34             | 1.22 to 1.34             |
| Softening point (ring-and-ball), °C [°F] <sup>A</sup>                                       | 52 to 60<br>[126 to 140] | 41 to 52<br>[106 to 126] |
| Flash point, Cleveland open cup, min, °C [°F]   | 190 [374]                | 175 [347]                |
| Total pitch soluble in carbon disulfide, %  | 72 to 85                 | 72 to 85                 |
| Ash, max, %   | 0.5                      | 0.5                      |
| Total distillate:   |                          |                          |
| 0 to 300°C [32 to 572°F], max, %  | 10                       | 10                       |
| 0 to 315°C [32 to 599°F], max, %  | ...                      | ...                      |
| 0 to 360°C [32 to 680°F], max, %  | ...                      | ...                      |
| Specific gravity of distillate from 0 to 32 to 300°C [572°F], min, 38/15.5°C                | 1.03                     | 1.03                     |
| Softening point (ring-and-ball) of residue from distillation to 300°C [572°F], max, °C [°F] | 80 [176]                 | 80 [176]                 |

<sup>A</sup> These values are 2°C higher if Test Method **D2398** (ring and ball in ethylene glycol) is used in place of the specified Test Method **D36** (ring and ball in water).

## 8. Rejection and Rehearing

8.1 If the results of any test do not conform to the requirements of this specification, retesting to determine conformity shall be permitted to be performed as agreed upon between the purchaser and the seller.

## 9. Packaging and Package Marking

9.1 The material shall be suitably packaged to permit acceptance by the carrier and to afford adequate protection from the normal hazards of handling and shipment.

9.2 Unless otherwise agreed upon between the supplier and purchaser, each container or bill of lading on bulk shipments shall be plainly marked with the name and brand of the manufacturer or seller, the ASTM designation, flash point, and equiviscous temperature (EVT) for application.

## 10. Keywords

10.1 built-up; coal tar; dampproofing; roofing; waterproofing

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