



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

This standard is issued under the fixed designation D 450; 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.*

<sup>ε1</sup> NOTE—Editorial changes were made throughout in November 2000.

## 1. Scope

1.1 This specification covers three 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 SI units are to be regarded as the standard. The values in parentheses are for information only

## 2. Referenced Documents

### 2.1 ASTM Standards:

D 4 Test Method for Bitumen Content<sup>2</sup>

D 20 Test Method for Distillation of Road Tars<sup>3</sup>

D 36 Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)<sup>2</sup>

D 70 Test Method for Specific Gravity and Density of Semi-Solid Bituminous Materials<sup>3</sup>

D 92 Test Method for Flash and Fire Points by Cleveland Open Cup<sup>4</sup>

D 95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation<sup>4</sup>

D 140 Practice for Sampling Bituminous Materials<sup>3</sup>

D 2398 Test Method for Softening Point of Bitumen in Ethylene Glycol (Ring-and-Ball)<sup>5</sup>

D 2415 Test Method for Ash in Coal Tars and Pitch<sup>2</sup>

D 3461 Test Method for Softening Point of Asphalt and Pitch (Mettler Cup-and-Ball Method)<sup>6</sup>

## 3. Classification

3.1 Coal-tar pitches covered by this specification include three 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.

3.1.3 *Type III*—Suitable for use in built-up roofing, dampproofing, and membrane waterproofing systems, but having less volatile components than Type I or II.

## 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 D 140.

6.1.2 *Water*—Test Method D 95.

6.1.3 *Specific Gravity*—Test Method D 70.

6.1.4 *Softening Point*—Test Method D 36 or D 3461. In cases where a disagreement exists between the purchaser and the seller, Test Method D 36 shall be used as the referee method.

6.1.5 *Flash Point*—Test Method D 92.

6.1.6 *Pitch Soluble in Carbon Disulfide*—Test Method D 4.

6.1.7 *Ash*—Test Method D 2415.

6.1.8 *Distillation*—Test Method D 20.

## 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.

## 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

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 04.04.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 04.03.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 05.01.

<sup>5</sup> Discontinued—See 1984 *Annual Book of ASTM Standards*, Vol 04.04.

<sup>6</sup> *Annual Book of ASTM Standards*, Vol 05.02.

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

	Type I	Type II	Type III
Water, max, %	0	0	0
Specific gravity, 25/25°C	1.22 to 1.34	1.22 to 1.34	1.22 to 1.34
Softening point (ring-and-ball), °C (°F) <sup>A</sup>	52 to 60 (126 to 140)	41 to 52 (106 to 126)	56 to 64 (133 to 147)
Flash point, Cleveland open cup, min, °C (°F)	190 (374)	175 (347)	205 (401)
Total pitch soluble in carbon disulfide, %	72 to 85	72 to 85	72 to 85
Ash, max, %	0.5	0.5	0.5
Total distillate:			
0 to 300°C (32 to 572°F), max, %	10	10	0
0 to 315°C (32 to 599°F), max, %	...	...	0
0 to 360°C (32 to 680°F), max, %	...	...	5
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 D 2398 (ring and ball in ethylene glycol) is used in place of the specified Test Method D 36 (ring and ball in water).

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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