



## Standard Specification for ROAD TAR<sup>1</sup>

This standard is issued under the fixed designation D 490; 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.

*This specification has been approved for use by agencies of the Department of Defense and for listing in the DoD Index of Specifications and Standards.*

<sup>1</sup>NOTE—The title of this specification was changed editorially in October 1983.

### 1. Scope

1.1 This specification covers 14 grades of tar as follows: RT-1, RT-2, RT-3, RT-4, RT-5, RT-6, RT-7, RT-8, RT-9, RT-10, RT-11, RT-12, RT.C.B.-5, and RT.C.B.-6.

### 2. Applicable Documents

#### 2.1 *ASTM Standards:*

- D 4 Test Method for Bitumen Content<sup>2</sup>
- D 8 Definitions of Terms Relating to Materials for Roads and Pavements<sup>3</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 of Semi-Solid Bituminous Materials<sup>3</sup>
- D 95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation<sup>2</sup>
- D 139 Method of Float Test for Bituminous Materials<sup>3</sup>
- D 140 Methods of Sampling Bituminous Materials<sup>2</sup>
- D 633 Volume Correction Table for Road Tar<sup>3</sup>
- D 872 Test Method for Sulfonation Index of Road Tars<sup>3</sup>
- D 1665 Test Method for Engler Specific Viscosity of Tar Products<sup>3</sup>
- D 2415 Test Method for Ash in Coal Tars and Pitches<sup>2</sup>
- D 2728 Recommended Practice for Paving Uses and Application Temperatures for Road Tars<sup>3</sup>
- D 2764 Test Method for Dimethylformamide-

Insoluble (DMF-I) Content of Tar and Pitch<sup>2</sup>

D 3515 Specification for Hot-Mixed, Hot-Laid Bituminous Mixtures<sup>3</sup>

### 3. Physical Requirements

3.1 The tar shall conform to the requirements in Table 1.

### 4. Sampling

4.1 The material shall be sampled in accordance with Methods D 140.

### 5. Test Methods

5.1 The properties enumerated in Table 1 shall be determined in accordance with the following methods, with the exception of the test specified in 5.1.3:

5.1.1 *Water*—Test Method D 95.

5.1.2 *Specific Gravity*—Test Method D 70.

5.1.3 *Specific Viscosity*—Test Method D 1665. The results shall be reported as specific viscosity compared with water at 25°C.

5.1.4 *Float Test*—Method D 139.

5.1.5 *Distillation*—Test Method D 20.

5.1.6 *Softening Point*—Test Method D 36.

5.1.7 *Sulfonation Index*—Test Method D 872.

5.1.8 *Total Bitumen*—Test Method D 4.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D-4 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.43 on Specifications and Tests for Tar and Tar Products.

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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.

**TABLE 1 Requirements for Tar**

	Grade RT-1	Grade RT-2	Grade RT-3	Grade RT-4	Grade RT-5	Grade RT-6	Grade RT-7
Water by volume %, max	2.00	2.00	2.00	2.00	1.5	1.5	1.0
Specific gravity at 25/25°C (77/77°F), min	1.08	1.08	1.09	1.09	1.10	1.10	1.12
Specific viscosity: <sup>4</sup> Engler, 50 cm <sup>2</sup> :							
at 40°C (104°F)	5 to 8	8 to 13	13 to 22	22 to 35	...	...	...
at 50°C (122°F)	...	...	...	...	17 to 26	26 to 40	...
Float test, <sup>4</sup> s:							
at 32°C (89.6°F)	...	...	...	...	...	...	50 to 80
at 50°C (122°F)	...	...	...	...	...	...	...
Distillation test on water-free material:							
Total distillate, mass %:							
to 170°C (338°F)	7.0 max	7.0 max	7.0 max	5.0 max	5.0 max	5.0 max	3.0 max
to 200°C (392°F)	...	...	...	...	...	...	...
to 235°C (455°F)	...	...	...	...	...	...	...
to 270°C (518°F)	35.0 max	35.0 max	30.0 max	30.0 max	25.0 max	25.0 max	20.0 max
to 300°C (572°F)	45.0 max	45.0 max	40.0 max	40.0 max	35.0 max	35.0 max	30.0 max
Softening point (ring-and-ball method) of residue from distillation test	30 to 60°C (86 to 140°F)	30 to 60°C (86 to 140°F)	35 to 65°C (95 to 149°F)	35 to 65°C (95 to 149°F)	35 to 70°C (95 to 158°F)	35 to 70°C (95 to 158°F)	35 to 70°C (95 to 158°F)
Sulfonation index (when specified)							
Total distillate to 300°C (572°F)	8 max	7 max	6 max	6 max	5 max	5 max	...
Fraction of distillate from 300 to 355°C (572 to 671°F)	1.5 max	1.5 max	1.5 max	1.5 max	1.5 max	1.5 max	...
Total bitumen (soluble in car- bon disulfide) weight %, min	88	88	88	88	83	83	78

TABLE 1 Continued

	Grade RT-8	Grade RT-9	Grade RT-10	Grade RT-11	Grade RT-12	Grade RT.C.B.-5	Grade RT.C.B.-6
Water by volume %, max	none	none	none	none	none	1.0	1.0
Specific gravity at 25/25 C (77/77 F), min	1.14	1.14	1.15	1.16	1.16	1.09	1.09
Specific viscosity: <sup>4</sup> Engler, 50 cm <sup>3</sup> at 40°C (104°F)	...	...	...	...	...	...	...
at 50°C (122°F)	...	...	...	...	...	17 to 26	26 to 40
Float test, <sup>4</sup> s at 32°C (89.6°F)	80 to 120	120 to 200	...	...	...	...	...
at 50°C (122°F)	...	...	75 to 100	100 to 150	150 to 220	...	...
Distillation test on water-free material:							
Total distillate by mass %:							
to 170°C (338°F)	1.0 max	1.0 max	1.0 max	1.0 max	1.0 max	2.0 to 8.0	2.0 to 8.0
to 200°C (392°F)	...	...	...	...	...	5.0 min	5.0 min
to 235°C (455°F)	...	...	...	...	...	8.0 to 18.0	8.0 to 18.0
to 270°C (518°F)	15.0 max	15.0 max	10.0 max	10.0 max	10.0 max	...	...
to 300°C (572°F)	25.0 max	25.0 max	20.0 max	20.0 max	20.0 max	35.0 max	35.0 max
Softening point (ring-and-ball method) of residue from distillation test	35 to 70°C (95 to 158°F)	35 to 70°C (95 to 158°F)	40 to 70°C (104 to 158°F)	40 to 70°C (104 to 158°F)	40 to 70°C (104 to 158°F)	40 to 70°C (104 to 158°F)	40 to 70°C (104 to 158°F)
Sulfonation index (when specified)							
Total distillate to 300°C (572°F)	...	...	...	...	...	...	...
Fraction of distillate from 300 to 355°C (572 to 671°F)	...	...	...	...	...	...	...
Total bitumen (soluble in car- bon disulfide) by mass %, min	78	78	75	75	75	80	80

<sup>4</sup> The consistency limits are subdivided into grades RT-1 to RT-12, inclusive, and grades RT.C.B.-5, RT.C.B.-6, so that material may be chosen to meet the local conditions of temperature, road conditions, and climate.

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