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100 Barr Harbor Dr., West Conshohocken, PA 19428
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Standard Specification for Acrylonitrile-Butadiene Rubberized Tar[1]

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1. Scope

1.1 This specification covers one grade of rubberized tar for use in construction of rubberized tar concrete pavement.

2. Referenced Documents

2.1 *ASTM Standards:*

D 20 Test Method for Distillation of Road Tars[2]
D 70 Test Method for Density of Semi-Solid Bituminous Materials (Pyrometer Method)[2]
D 95 Test Method for Water in Petroleum Products and Bituminous Materials by Distillation[3]
D 139 Test Method for Float Test for Bituminous Materials[2]
D 140 Practice for Sampling Bituminous Materials[2]
D 872 Test Method for Sulfonation Index of Road Tars[2]
D 2042 Test Method for Solubility of Asphalt Materials in Trichloroethylene[2]
D 2398 Test Method for Softening Point of Bitumen in Ethylene Glycol (Ring-and-Ball)[4]
D 2994 Test Methods for Rubberized Tar[2]

3. Significance and Use

3.1 This specification gives the requirements for rubberized tar suitable for constructing bituminous concrete pavement.

4. Requirements

4.1 The rubberized tar shall consist of unvulcanized acrylonitrile butadiene rubber (NBR), solid or latex, containing necessary additives preblended with high-temperature, residual coke oven tar conforming to the requirements prescribed in Table 1. The rubberized tar shall conform to the requirements prescribed in Table 2.

4.2 The blending operation of the tar with the rubber and subsequent storage of the rubberized tar blend shall be carried out in equipment free from contamination by asphaltic, petroleum, or other noncoke oven tar materials. The rubberized tar shall be held in storage (which may be in either the manufacturing equipment or approved storage tanks) for a minimum of 20 h or until testing is completed.

TABLE 1 Physical Requirements for Tar

Property	Requirement	ASTM Method
Sampling		D 140
Float test, at 50°C, s	150 to 200	D 139
Specific gravity, 25/25°C	not less than 1.20	D 70
Total bitumen soluble in CS_2, weight %	not less than 75	D 2042
Water, volume %:	not more than 0.05	D 95
Distillation, weight %:		D 20
Total to 170°C	0 to 1	
Total to 235°C	0 to 2	
Total to 270°C	0 to 7	
Total to 300°C	0 to 12	
Total to 355°C	not more than 26	
Specific gravity of distillate at 38/38°C:		D 70
To 300°C	not less than 1.035	
300 to 355°C	not less than 1.085	
Softening point of residue from distillation,° C:		D 2398
To 300°C	42 to 52	
To 355°C	not more than 95	
Sulfonation index:		D 872
Total distillate to 300°C	not more than 1.0	
Distillate 300 to 355°C	not more than 1.0	

5. Sampling

5.1 Take samples of rubberized tar in accordance with Methods D 10.

6. Test Methods

6.1 Determine the properties of the rubberized tar given in Table 2 in accordance with Test Method D 2994.

TABLE 2 Physical Requirements for Rubberized Tar Cement

Property	Requirements
Penetration, mm/10; 25°C:	
Fuel immersed	100 to 250
Nonimmersed	100 to 225
Difference between samples	not more than 50
Volume and weight change, percent	
Volume	not more than 2.5
Weight	not more than 2.0
Flow, mm, 38°C	not more than 40
Softening point, °C	not less than 34
Viscosity, cP	
90°C	4 800 to 18 500
105°C	2 050 to 7 600
120°C	860 to 3 050
Moisture content, %	not more than 0.05
Homogeneity	no lumps retained on sieve

[1] 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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[2] *Annual Book of ASTM Standards,* Vol 04.03.

[3] *Annual Book of ASTM Standards,* Vol 05.01.

[4] Discontinued; see 1984 *Annual Book of ASTM Standards,* Vol 04.04.

7. Keywords

7.1 rubberized tar; acrylonitrile-butadiene ruber; coke-oven tar