



Standard Specification for Emulsified Refined Coal-Tar (Driveway Sealer, Ready to Use, Primarily Residential Grade)¹

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1. Scope

1.1 This specification covers mineral-colloid-stabilized, emulsified refined coal tar suitable for use as a weather-protective and petroleum (aliphatic) solvent resistant coating over bituminous concrete pavements.

1.2 Both products specified are prepackaged ready to use driveway sealers primarily for retail homeowner use.

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 and health practices and determine the applicability of regulatory requirements prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

C 136 Test Method for Sieve Analysis of Fine and Coarse Aggregates²

C 142 Test Method for Clay Lumps and Friable Particles in Aggregates²

D 140 Practice for Sampling Bituminous Materials³

D 490 Specification for Road Tar³

D 2939 Test Methods for Emulsified Bitumens Used as Protective Coatings⁴

D 5727 Specification for Emulsified Refined Coal Tar (Mineral Colloid Type)⁴

3. Terminology

3.1 For both types of mixtures, the ingredients are combined during the manufacturing process and shipped ready-to-use.

3.1.1 *Type I material*—a mixture of refined coal tar emulsion meeting Specification D 5727, water, and optional additive.

3.1.2 *Type II material*—a mixture of refined coal tar emulsion meeting Specification D 5727, water, aggregate, and optional additive.

4. Classification

4.1 This specification is designed to give specifying authorities the information necessary to ensure that the appropriate refined coal tar emulsion mixtures are specified for protecting bituminous concrete pavements where fuel resistance is required.

5. Materials and Manufacture

5.1 *Base Refined Coal Tar Emulsion*—This emulsion shall be made using binders prepared from a high temperature refined coal tar conforming to the requirements of Specification D 490 for RT11 or higher. Base refined coal tar emulsion shall be in accordance with all requirements of Specification D 5727.

5.2 *Aggregate*—Aggregate is used in Type II materials to improve traction and wearability. The aggregate shall be either a natural or manufactured aggregate composed of clean, hard, durable particles free of clay and other objectionable material when tested in accordance with Test Method C 142. (Boiler slag has been used successfully.)

NOTE 1—It is recommended that the nominal maximum size of the aggregate not exceed the 0.6 mm (No. 30) sieve when tested in accordance with Test Method C 136.

6. Performance Requirements

6.1 *Composition*—The refined coal tar emulsion seal coat shall consist of a mixture of ingredients listed in Section 5 for either specific Type I or II and shall meet all the requirements of Table 1.

6.2 *Aggregate Verification Test*—In order to verify that the proper amount of aggregate specified in Table 1 is contained in the mixture, conduct an aggregate content test according to Test Methods D 2939.

6.3 The material, after stirring to homogeneity, shall be suitable for application brush, squeegee, roller, or suitable spray equipment without heating. The mixture shall be of suitable consistency for application by the selected method in single coats of approximately (depending on pavement texture) 2.9 to 4.9 m²/L (60 to 100 ft²/gal) without appreciable drainage on inclines up to 0.8 %. The mixture shall conform to the physical properties prescribed in Table 1 for Type I or Type II.

¹ This specification is under the jurisdiction of ASTM Committee D08 on Roofing and Waterproofing and is the direct responsibility of Subcommittee D08.09 on Bituminous Emulsions.

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² *Annual Book of ASTM Standards*, Vol 04.02.

³ *Annual Book of ASTM Standards*, Vol 04.03.

⁴ *Annual Book of ASTM Standards*, Vol 04.04.

**TABLE 1 Physical Requirements for Emulsified Refined Coal Tar
(Mineral Colloid Type)**

| Laboratory Test Method ^A | Type I Characteristics | | Type II Characteristics | |
|---|---|-----|----------------------------|-------------|
| | min | max | min | max |
| Uniformity | Pass | | Pass | |
| Wet film continuity | Pass | | Pass | |
| Density at 25°C (77°F), gm/ml (lb/gal) | 1.1 (9.0) | -- | 1.24 (10.3) | 1.44 (12.0) |
| Residue by evaporation, % | 37 | -- | 40 | -- |
| Water content, % | -- | 63 | -- | 60 |
| Resistance to volatilization, residue weight loss, % | -- | 15 | -- | 12 |
| Solubility of residue in CS ₂ , % | 25 | -- | 20 | -- |
| Ash content of residue, % | 30 | 40 | 39 | 58 |
| Aggregate content test, % | 0 | 0 | 9.7 | 50.0 |
| Drying time, firm set, h | -- | 8 | -- | 8 |
| Resistance to kerosene | Pass | | Pass | |
| Resistance to water | Pass | | Pass | |
| Flexibility | No flaking, cracking through to the substrate, or loss of adhesion to the substrate. | | | |

^A See Test Methods D 2939.

NOTE—The customary mix designs in the sealing industry are based on the volume of concentrated Specification D 5727 coal tar sealer. This specification does not follow the customary mix design because the product is a ready to use material purchased in a prepackaged pail primarily for the retail homeowner use without modification.

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7. Sampling

7.1 Sample in accordance with Practice D 140 and Test Methods D 2939.

8. Inspection

8.1 Inspection of material shall be made as agreed upon between the purchaser and the supplier.

9. Packaging and Package Marking

9.1 Emulsion shall be packaged to permit acceptance by carrier for transportation and to afford adequate protection from normal hazards of handling and shipping.

9.2 Each package shall be plainly marked with the name and brand of the manufacturer/ supplier, ASTM designation as well as the type or grade of the product, production code or lot number.

10. Keywords

10.1 bituminous pavement sealer; emulsified coal tar; mineral colloid