MAC
McConnell & Associates
Pavement Maintenance Products

MAC 52®

MAC 52
Premium Pavement Sealer
Product Specification

1. SCOPE & CLASSIFICATION

1.1 The material furnished under this specification shall be a high solids dispersion of coal tar pitch produced in accordance with advanced turbine technology procedures. It shall be suitable for coating bituminous pavements in order to provide a protective barrier that is highly resistant to water, sun, oxidation, oil and gasoline.

2. APPLICABLE DOCUMENTS

2.1 American Society for Testing and Materials (ASTM) Publications:

D 140-	Standard Methods of Sampling Bituminous Materials
D 466-	Methods of Testing Films Deposited from Bituminous Emulsion
D 490-	Specifications for Road Tar
D 529-	Recommended Practice for Accelerated Weathering Test of Bituminous Materials
D2939-	Methods of Testing Emulsified Bitumens Used as Protective Coatings
D3320-	Emulsified Coal-Tar Pitch (Mineral Colloid Type)
D 3699-	Specifications for Kerosene

3. PHYSICAL COMPOSITION AND PERFORMANCE REQUIREMENTS

3.1 **Material** – The material shall be homogenous and show no separation or coagulation or components that cannot be overcome by moderate stirring. It shall be capable of application by squeegee, brush or by approved mechanical methods. The emulsion shall be prepared from straight run high temperature coke-oven coal tar pitch (grade RT-12) conforming to requirement of ASTM D 490. Petroleum tar and oil and water gas tars shall not be used even though they comply with ASTM D 490.

3.2 **Chemical and physical requirements** – The material shall be comprised of finely dispersed particles with a controlled, consistent ratio of components:

	MAC – 52 Specifications	R-P-355E Requirements
Water, %	48%+/- 2%	53% Max.
Nonvolatile, %	49%+/- 2%	47% Min.
Ash of Nonvolatile %	36%+/- 2%	30% - 40%
Solubility of Nonvolatile in CS2, %	20% Min.	20% Min.
Specific Gravity 25 Deg. C/25 Deg. C	1.20 Min.	1.20 Min.

The material shall meet or exceed all requirements of R-P-355E, Pitch, Coal Tar Emulsion (Coating for Bituminous Pavements) and far exceeds ADTM D 3320- Emulsified Coal Tar Pitch (Mineral Colloid Type).

3.3 **Drying time** – The coating shall exhibit "final set" in not more than 8 hours.

3.4 **Adhesion and resistance to kerosene** – The cured coating shall exhibit no penetration or loss of adhesion. Kerosene shall be defined as material complying with ASTM D 3699.

3.5 **Adhesion and resistance to water** – The cured coating shall exhibit no blistering, loss of adhesion or tendency to re-emulsify after immersion for 14 days.

3.6 **Resistance to standard gasoline** – The cured coating shall exhibit no penetration or loss of adhesion after 48 hours immersion.

3.7 **Resistance to motor oil SAE# 10** – The cured coating shall exhibit no penetration or loss of adhesion after 48 immersion.

3.8 **Resistance to salt water** – The cured coating shall exhibit no blistering, loss of adhesion or tendency to re-emulsify after immersion for 14 days.

3.9 **Resistance to heat** – The cured coating shall show no signs of blistering, sagging or slipping when heated at 80 degrees C. (176 degrees F.) for 2 hours.

3.10 **Flexibility** – The coating shall show no flaking, cracking or loss of adhesion to the metal.

3.11 **Resistance to impact** – The cured coating shall exhibit no chipping, flaking, cracking or loss of adhesion extending more than ¼" beyond the periphery of the area of impact.

3.12 **Wet film continuity** – Emulsion, when wet, shall be uniformly smooth, non-granular consistency, free from coarse particles.

3.13 **Resistance to volatilization** – Resistance to volatilization shall be determined in accordance with ASTM D 3320, except the loss in weight shall not exceed 10 percent.

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4. SAMPLING AND TEST PROCEDURES

4.1 **Sampling** – Sample shall be taken in accordance with ASTM D 140 and shall be stored in clean, airtight sealed, glass or metal containers at a room temperature not less than 40 degrees F. until tested.

4.2 **Tests**

4.2.1. Determinations except for resistance to impact and resistance to kerosene, shall be made in accordance with the following sections of ASTM D 2939 with noted exceptions:

Determination	Section	Requirement paragraph
Water content	11 1/	3.2
Non-volatiles	8	3.2
Ash of non-volatiles in CS2	9	3.2
Specific gravity	5 4/	3.2
Drying time	14 5/	3.3
Resistance to heat	15 2/	3.6
Flexibility	16	3.7
Resistance to volatilization	6.6 3/	3.9

1/ Deduct determined weight of non-volatiles from original weight of sample.

2/ This determination shall be made at 80 +/- 3 degrees Celsius.

3/ This determination shall be made in accordance with ASTM D 3320 and on the residue from "non-volatiles" determination.

4/ Converted to specific gravity.

5/ Test period shall be 8 hours.

4.2.2 Determinations which follow shall be in accordance with ASTM D 466 except that:

A. The material shall be applied in two coats using a brass mask 4/64-inch in thickness for the first coat, and 8/64-inch mask, for the second coat, so that the cured film has a minimum thickness of 0.06 inch.

B. Each of the coatings shall be cured for 96 hours in activated air at 25 degrees C. and 50% relative humidity.

DETERMINATION	PARAGRAPH
Resistance to kerosene	3.4
Resistance to distilled water	3.5
Resistance to salt water	3.5
Resistance to standard gasoline	3.4
Resistance to motor oil SAE# 10	3.4

4.2.3 **Resistance to impact** – Prepare by applying a coat of material with a doctor blade set at an opening of 1/16 inch to the clean, unpainted surface of each to two plates, 3" x 6" x 1/8". (The steel plates will first e cleaned and one side coated with a corrosion resistant paint before applying the material.) The coating shall be conditioned in a well ventilated room at 25 degrees C. and 50% relative humidity, for 96 hours and then placed in an accelerated weathering unit for exposure to 25 cycles of cycle B, as described in ASTM D 529. Each specimen shall then be placed, coating uppermost, on a solid horizontal bas and subjected to impact of a two-pound steel ball, dropped from a height of eight feet, at a temperature of 25-degree C. The coating shall be examined immediately for evidence of chipping, cracking, or loss of adhesion to the metal.

4.2.4 **Wet film continuity** – The wet emulsion, when spread on a sheet of standard 18 pound mimeograph paper with a spatula to a thin film, shall show a uniformly smooth non-granular consistency, free from coarse particles which are either apparent or cause film voids as the wet emulsion is drawn out to a smear.

4.2.5 **Limitations**

1. Keep from freezing.
2. Avoid application over gilsonite type sealers and asphalt emulsion sealers.
3. Newly constructed asphalt pavements must cure for a minimum of 30 days prior to application.
4. MAC-52 shall not be applied when the weather is foggy or rainy, or when ground and air temperatures are 50 degrees F. or lower or when such conditions are anticipated within 24 hours following application.
5. MAC-52 is a preventative maintenance coating and is not designed to correct pavements that are highly cracked or structurally deficient.

CAUTION

Refined coal tar is a collection of organic compounds, primarily aromatic hydrocarbons. If individuals with sensitive skin are overexposed to MAC 52 M.S.D.S. sheets for more information. Wear gloves, long pants, and long sleeve shirt. Avoid breathing vapors. In case of ingestion, give two tablespoons of activated charcoal USP (Drug grade) and seek medical attention. In case of eye contact, flush with water for 15 minutes and consult a physician. In case of skin contact, wash with soap and water or a waterless hand cleaner. Avoid using solvent to remove coal tar emulsion from skin. In case of spillage, absorb and dispose of in accordance with local, state and federal regulations.

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