Copeland Coating Co., Inc. Pavement Maintenance Products

1. **General Description:**
Material furnished under this specification shall be a coal tar pitch (RT-11 or harder) meeting or exceeding the requirements of Federal Specification RT-143. Oil and water gas tars shall be excluded. The coal tar pitch emulsion shall be fortified (rubberized) with high performance latex polymers. The rubber (latex polymer) shall be oil and distillate resistant, compatible with coal tar pitch and shall not be adversely modified when blended with hot coal tar pitch or when dispersed through a colloidal mill. The above coal tar pitch and fortifiers, when dispersed in water by means of mineral colloids, shall form a homogenous emulsion that is suitable for application by brush, squeegee or mechanical equipment. Properly applied over sound bituminous concrete, the fully cured coal tar pitch emulsion shall result in a contiguous, unbroken, adherent coating which is highly resistant to the effects of oxidation, water, weather, petroleum derivatives and de-icing salts.

The homogeneity of the coal tar pitch emulsion and continuity of its particle size shall be insured by the dispersing of all ingredients through a colloidal mill. The resulting finished product shall require viscosity adjustment in accordance to jobsite requirements and specifications. The finished material shall conform to Federal Specification RP-355d and MIL-C-15203C.

2. **Applicable Specifications and Standards:**
ASTM Standards -

D95-83:	Water in Petroleum Products and Bituminous Materials by Distillation.
D140-70:	(Reapproved 1981) Sampling of Bituminous Materials.
D466-42:	(Reapproved 1981) Methods of Testing Films Deposited from Bituminous Emulsion.
B177-68:	Salt Spray (Fog) Testing.
D529-82:	Recommended Practice for Accelerated Weathering Test of Bituminous Materials.
D2939-78:	Bituminous-Base Emulsions for Use as Protective Coatings.
D1655-85:	Aviation Turbine Fuels.

3. **Physical Composition and Performance Requirements:**
The material shall be homogenous and show no separation or coagulation of components that cannot be overcome by moderate stirring.
Chemical and Physical Requirements - The material shall conform to the following minimum requirements of Federal Specification RP-355d:

	Maximum	Minimum
Water	53%	
Non Volatiles		47%
Ash of Non Volatiles	40%	30%
Solubility of Non Volatiles		20%
Specific Gravity 25°C/25 °C		1.20

The material shall meet the following performance requirements:

- **Drying Time** - The material shall "set to touch" in one hour and exhibit "final set" in less than eight hours.
- **Resistance to Standard Gasoline** - The cured coating shall exhibit no penetration or loss of adhesion after 48 hours' immersion.
- **Resistance to Aviation Turbine Fuels** - The cured coating shall exhibit no penetration or loss of adhesion after 48 hours' immersion.
- **Resistance to Motor Oil SAE #10** - The cured coating shall exhibit no penetration or loss of adhesion after 48 hours' immersion.

- **Resistance to Distilled Water** - The cured coating shall exhibit no penetration, blistering, loss of adhesion or tendency to re-emulsify after immersion for 14 days.
- **Resistance to Salt Water** - The cured coating shall exhibit no penetration, blistering, loss of adhesion or tendency to re-emulsify after immersion for 14 days.
- **Resistance to Heat** - The cured coating shall show no sign of sag or blistering when heated to 100°C (212°F) for one hour.
- **Resistance to Direct Flame** - The cured coating, after flame exposure, shall show no combustion after ten seconds.
- **Resistance to Impact** - The cured coating, after being exposed in an accelerated weathering unit, shall exhibit no chipping, flaking, cracking or loss of adhesion extending more than ¼" beyond the periphery of the area of impact.
- **Flexibility** - The cured coating shall show no flaking, cracking or loss of adhesion.
- **Resistance to Irradiation** - The cured coating shall show no visible damage or gas evolution when subjected to 100 megarep of cobalt gamma irradiation.
- **Wet Film Continuity** - The wet material, when spread on a sheet of standard mimeograph paper with a spatula, shall show a uniformly smooth, non granular consistency, free from coarse particles which are either apparent or cause voids as the wet material is drawn out to a smear.
- **Non Flammability** - The wet material, when subjected to flame, shall show no tendency to flash or ignite.
- **Package Life** - The package life of the wet material, when stored in airtight containers at ambient temperatures of 40° to 100°F, shall be one year minimum.

4. **Sampling and Test Procedures:**

Sampling - Samples of the material shall be taken in accordance with ASTM Designation D140-70 and shall be stored in clean, airtight, sealed glass or metal containers at ambient temperatures not less than 40°F until tested.

Tests -

- Determinations which follow shall be in accordance with ASTM Designation D2939-78 with exceptions noted:

Determination	Section
Water Content	ASTM D95-83
Non Volatiles	8.3 *
Ash of Non Volatiles	10
Solubility of Non Volatiles in CS_2	9
Drying Time	14 **
Resistance to Heat	15
Flexibility	16
Resistance to Volatilization	ASTM D3320 6.6

* Tests shall be run in a forced-draft oven for four hours +/- five minutes. Oven temperature: 107° +/- 2°C. Sample size 10.0 grams, +/- 0.25 grams. Dish size 63 mm.

** Except that wet film thickness shall not exceed 1/32".

- Determinations which follow shall be in accordance with ASTM Designation D466-81, except that (a) the material shall be applied in two coats, using a brass mask 4/64" in thickness for the first coat and an 8/64" brass mask with the same rectangular opening as the first mask for the second coat, so that the cured film has a minimum thickness of 0.06", and (b) each of the coatings be cured for 96 hours in activated air at 25°C and 50% relative humidity +/- 2%.

Determination

Resistance to Standard Gasoline
Resistance to Aviation Turbine Fuels
Resistance to Motor Oil SAE #10
Resistance to Distilled Water
Resistance to Salt Water †

- Salt water shall be prepared as described in ASTM Designation B117-68, Section 6.

- **Resistance to Impact** - Prepare specimens by applying a coat of material with a doctor blade set at an opening of 1/16" to clean, unpainted surface of each of two steel plates of 3 X 6 X 1/8". (The steel plates will first be cleaned and one side coated with corrosion-resistant paint before applying the material.) The coating shall be conditioned in a well ventilated room at 25°C (+/- 1°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 Designation D529-82. Each specimen shall then be placed, coating uppermost, on a solid horizontal base and subjected to impact of a two pound steel ball dropped from a height of eight feet at a temperature of 25°C (+/- 1°C). The coating shall be examined immediately for evidence of chipping, cracking or loss of adhesion to the metal.

- **Resistance to Irradiation** - A specimen of the material shall be prepared by applying a coat of the material with a doctor blade set at an opening of 1/16" to a clean aluminum plate and allowed to cure for 96 hours in activated air at 25°C and 50% relative humidity and then subjected to 100 megarep of cobalt gamma irradiation.

- **Non Flammability** - Determination shall be in accordance with ASTM Designation D2939-78, Section 12.

- **Resistance to Direct Flame** - Determination shall be in accordance with ASTM Designation D2939-78, Section 18.

- **Limitations** -
  1. DO NOT allow to freeze.
  2. DO NOT apply over asphalt or Gilsonite based sealers.
  3. DO NOT apply when rain is expected within eight hours, or when ground and air temperatures are 50°F or lower or such temperatures are anticipated within eight hours of application.
  4. Allow new bituminous concrete to cure a minimum of 15 days prior to application. Clean water flooded onto the surface must completely wet the surface without beading, separating, puddling or showing oily rings. If any of the above signs are evident the bituminous concrete is not sufficiently cured for coating and must be aged for a further period of time. Evidence of tire scarring or power steering marking on the new bituminous concrete indicates that further curing is necessary.
  5. Action Pave™ sealer for bituminous concrete is designed as a maintenance coating and is not designed for use in pavement repairs where the bituminous concrete is cracked or broken through improper design, structural failure or neglect.

CAUTION ***

Contains refined coal tar. Avoid prolonged breathing of vapor. May cause eye and skin irritation. If ingested give two tablespoons U.S.P. (pharmaceutical) activated charcoal and seek medical attention. In case of eye contact flush with clean water for fifteen minutes and see a physician. In case of skin contact wash with soap and water or waterless hand cleaner. Do not use gasoline or solvent to remove coal tar emulsion from skin. Wear goggles, gloves, long pants and long sleeved shirts. Store material in airtight containers. Keep from freezing. In case of spillage contain, absorb and dispose of in accordance with local, state and federal regulation.