



R-P-355e

June 19, 1987

SUPERSEDING

R-P-355d

April 16, 1965

FEDERAL SPECIFICATION

**PITCH, COAL TAR EMULSION
(COATING FOR BITUMINOUS PAVEMENTS)**

*This specification is approved by the Commissioner, Federal Supply Service,
General Services Administration, for the use of all Federal agencies.*

1. SCOPE AND CLASSIFICATION

1.1 This specification covers one type of coal tar (refined) pitch emulsion for coating bituminous pavements.

2. APPLICABLE DOCUMENTS

2.1 Government Publications. The following specifications and standards, of the issues in effect on date of invitation for bids form a part of this specification to the extent specified herein:

Federal Specifications:

PPP-D-729 — Drums, Shipping and Storage, 55-Gallon (208 Liters).

PPP-P-704 — Pails, Metal: (Shipping, Steel, 1 through 12 Gallons).

Federal Standards:

FED-STD-102 — Preservation, Packaging, and Packing Levels.

FED-STD-123 — Marking for Domestic Shipment (Civilian Agencies).

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards and Commercial Item Descriptions at the prices indicated in the Index. The Index, which includes cumulative monthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.)

3. REQUIREMENTS

3.1 Material. The material shall be homogenous and show no separation or coagulation of components that cannot be overcome by moderate stirring. It shall be capable of application and complete coverage, by squeegee, brush, or by approved mechanical methods, to the surface of bituminous pavements at a spreading rate of 1.5 to 2.5 gallons

per 100 square feet in two coats. The emulsion shall be prepared from straight run high temperature coke-oven tar conforming to requirements 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 conform to the following requirements prior to fortification with antifreeze:

	Max.	Min.
Water, percent	53	—
Nonvolatile, percent	—	47
Ash of nonvolatiles, percent	40	30
Solubility of nonvolatiles in Carbon Disulfide, percent	—	20
Specific gravity @ 25/25 degrees Celsius	—	1.20

3.3 Drying Time. The coating shall exhibit firm set in not more than eight 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.

3.6 Resistance to heat. The cured coating shall show no sign of blistering, sagging, or slipping when heated to 80 ± 3 degrees Celsius (176 ± 5 degrees Fahrenheit) for two hours.

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

3.8 Resistance to impact. The coating shall exhibit no chipping, flaking, cracking, or loss adhesion extending more than 1/4 inch beyond the



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periphery of the area of impact. (NOTE: This requirement may be waived at the discretion of the purchaser or engineer in charge of the project, provided the supplier can furnish a certification of satisfactory field performance record of not less than three years.)

3.9 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.

3.10 Wet film continuity. Emulsion, when wet, shall be uniformly smooth, nongranular consistency free from coarse particles.

3.11 Resistance to freezing. When specified (see 6.2), emulsion shall be fortified with antifreeze and be capable of exposure for 24 hours at -17 degrees Celsius (0 degrees Fahrenheit) and when warmed to 25 degrees Celsius (77 degrees Fahrenheit) shall return to a homogenous consistency with stirring.

4. SAMPLING, INSPECTION, AND TEST PROCEDURES

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.1.1 Sampling. Sampling for inspection shall be in accordance with Military Standard No. 105. The inspection level for tests shall be S-2 and the AQL shall be 2.5 percent defective. Samples shall be taken in accordance with ASTM D 140 and shall be stored in clean, air-tight sealed, glass or metal containers at a temperature not less than 5 degrees Celsius (140 degrees Fahrenheit) 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 the noted exceptions:

Determination	Section	Requirement paragraph
Water content	11 ¹	3.2
Nonvolatiles	8	3.2
Ash of nonvolatiles	10	3.2
Solubility of nonvolatiles in CS ₂	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 nonvolatiles from original weight of wet 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 "nonvolatiles" 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 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 inch, and (b) that each of the coatings be cured by 96 hours in activated air at 25 ± 1 degrees Celsius (77 ± 2 degrees Fahrenheit) and 50 ± 2 percent relative humidity.

Determination	Requirement paragraph
Resistance to kerosene	3.4
Resistance to distilled water	3.5

4.2.3 Resistance to impact. Specimens shall be prepared by applying a coat of material with a doctor blade set at an opening of 1/16 inch to the unpainted surface of each of two plates, 3 by 6 by 1/8 inches. The steel plates will first be 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 ± 1 degrees Celsius and 50 ± 2 percent 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 base and subjected to impact of a two-pound steel ball dropped from a height of eight feet at a



temperature of 25 ± 1 degrees Celsius. 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 nongranular 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 Resistance to freezing. When specified (see 6.2) winter grade emulsion fortified with antifreeze shall be tested according to ASTM D 244, section 48, except the test shall consist of only one cycle with exposure for 24 hours at -17 degrees Celsius (0 degrees Fahrenheit). After exposure the emulsion when warmed to 25 degrees Celsius (77 degrees Fahrenheit) shall return to homogeneous consistency with stirring.

4.3 Examination of preparation for delivery. An examination will be made to determine that the packing and marking conforms to the requirements of section 5. Defects shall be scored in accordance with the list below. The sample unit shall be one container fully prepared for delivery. The inspection level shall be S-2 and the AQL shall be 2.5 defects per hundred units.

Examine	Defect
Marking	Omitted, incorrect, illegible, or improper size, location, or method of application
Material	Any component missing, damaged or not as specified
Workmanship	Inadequate application of components, such as top incorrectly fastened

5. PREPARATION FOR DELIVERY

For civil agency procurement, the definitions and application of levels of packing shall be in accordance with Fed. Std. No. 102.

5.1 Packing. Packing shall be level A or C, as specified (see 6.2)

5.1.1 Level A. The product shall be packed in 5 gallon or 55 gallon quantities as specified (see 6.2), in containers conforming to PPP-P-704, type II, class 3, and PPP-D-729, type IV, respectively.

5.1.2 Level C. The product shall be packed to insure carrier acceptance and safe delivery to destination, in containers complying with the rules and

regulations applicable to the mode of transportation.

5.2 Marking.

5.2.1 Civil agencies. In addition to markings required by the contract or order, the shipping containers shall be marked in accordance with Federal Standard No. 123.

5.2.2 Military agencies. In addition to markings required by the contract or order, the shipping containers shall be marked in accordance with Military Standard No. 129.

6. NOTES

6.1 Intended use. Coal tar pitch emulsion is intended for use as a coating for bituminous pavements to provide a continuous and adherent coating resistance to water, petroleum derivatives, and weather.

6.2 Ordering data. Purchasers should exercise any desired options offered herein, and procurement documents should specify the following:

- (a) Title, number, and date of this specification.
- (b) When antifreeze is required (see 3.11).
- (c) Level of packing required (see 5.1).
- (d) Size of containers (see 5.1.1).

6.3 Transportation description. The transportation descriptions and minimum weights applicable to this commodity are:

Rail:

Pitch, coal or petroleum.
 Carload minimum weight 40,000 pounds.

Motor:

Pitch, not otherwise indexed by name.
 Truckload minimum weight 40,000 pounds subject to Rule 115, National Motor Freight Classification.

MILITARY INTERESTS:

NONE: DoD has determined that no military activity has an official interest in this Federal Specification.

CIVIL AGENCY COORDINATING ACTIVITY
 DOT — FAA

Preparing Activity
 GSA — FSS

AMGUARD[®]

We hereby confirm and certify that American Stone-Mix Asphalt Pavement Sealer is in compliance with Federal Specification R-P-355e as outlined above.

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