

Special Specification 8043

Asphaltic Concrete Patching Material (Stockpile Storage or Bagged) (Materials Only)



1. DESCRIPTION

This Specification governs for crushed stone asphaltic concrete intended primarily as a cool- to cold-weather stockpile or bagged patching mix for maintenance. The mixture must remain workable in the stockpile for 6 mo. from the day of delivery and have good adhesion to wet surfaces. The length of satisfactory stockpiling and the lowest temperature at which it can be used will vary according to the type and grade of asphaltic binder specified.

Provide the mix as designated on the plans or requisition and following the combinations of asphalt and aggregate listed in Table 1.

Table 1
Asphalt and Aggregate Combinations

Aggregate	Asphalt									
	MC-250	MC-800	MC-800 w/Diesel	SCM I	SCM II	AES-300S	CMA-SG	CMA-WG	ASPPM	NVM
Gradation I	X	X	X	X	X	X				X
Gradation II	X	X	X	X	X	X	X	X		X
Gradation III							X	X		X
Gradation IV				X	X				X	X

2. UNITS OF MEASUREMENTS

The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

3. MATERIAL PRODUCER LIST (MPL)

The Flexible Pavements Section of the Materials and Tests Division maintains the MPL of all materials conforming to the requirements of this Specification. Materials appearing on the MPL, titled "[Asphaltic Concrete Patching Material \(Stockpile Storage or Bagged\)](#)," require no further testing unless deemed necessary by the Engineer. Materials not appearing on the MPL may not be used on Department projects.

4. BIDDERS' AND SUPPLIERS' REQUIREMENTS

The Department will only purchase or allow on projects those products listed by producer and product code or designation shown on the MPL.

Use of pre-qualified product does not relieve the Contractor of the responsibility to provide product that meets this Specification. The Department may inspect or test material at any time and reject any material that does not meet the specifications.

5. MATERIAL REQUIREMENTS

5.1. **Asphaltic Material.** Provide MC-250, MC-800, SCM I, SCM II, AES-300S, CMA, ASPPM, or NVM in conformance with the requirements below. Provide asphaltic material for use as designated by the Engineer on the plans or requisition.

5.1.1. **MC-250 or MC-800.** Provide asphaltic material in accordance with Item 300, "Surface Courses and Pavements."

5.1.2. **SCM I (Special Cutback Material I).** Use an asphalt material to produce mixture in accordance with Table 2.

Table 2
Asphalt Material Properties for SCM I

Property	Test Procedure	Min	Max
Kinematic viscosity, 140°F, cSt	T 201	500	1,000
Water, %	T 55	—	0.2
Flash point, T.O.C., °F	T 79	174	—
Distillation test:	T 78		
Distillate, percentage by volume of total distillate to 680°F			
to 437°F		0	0
to 500°F		0	0.5
to 600°F		20	60
Residue from distillation, volume %		76	100
Tests on distillation residue:			
Penetration, 150 g, 5 sec., 77°F	D 5 ¹	180	—
Solubility in trichloroethylene ² , %	T 44	99.0	—

Note—Test procedures beginning with T are AASHTO procedures. Test procedures beginning with D are ASTM procedures.

1. Use cone in accordance with ASTM D 217. Lower the level of water in the transfer dish to less than the height of the sample, and decant water from top of the sample before transferring from the bath to the penetrometer.
2. Only perform this test if the binder does not appear homogenous.

5.1.3. **SCM II (Special Cutback Material II).** Use an asphalt material to produce mixture in accordance with Table 3.

Table 3
Asphalt Material Properties for SCM II

Property	Test Procedure	Min	Max
Kinematic viscosity, 140°F, cSt	T 201	1,000	2,000
Water, %	T 55	—	0.2
Flash point, T.O.C., °F	T 79	174	—
Distillation test:	T 78		
Distillate, percentage by volume of total distillate to 680°F			
to 437°F		0	0
to 500°F		0	0.5
to 600°F		15	50
Residue from distillation, volume %		82	100
Tests on distillation residue:			
Penetration, 150 g, 5 sec., 77°F	D 5 ¹	180	—
Solubility in trichloroethylene ² , %	T 44	99.0	—

Note—Test procedures beginning with T are AASHTO procedures. Test procedures beginning with D are ASTM procedures.

1. Use cone in accordance with ASTM D 217. Lower the level of water in the transfer dish to less than the height of the sample, and decant water from top of the sample before transferring from the bath to the penetrometer.
2. Only perform this test if the binder does not appear homogenous.

5.1.4.

AES-300S. Provide a high float and mixing-grade type emulsion using a polymer-modified asphalt base in accordance with Table 4.

Table 4
Asphalt Material Properties for AES-300S

Property	Test Procedure	Min	Max
Viscosity, Saybolt Furol 77°F, sec.	T 72	75	400
Sieve test, %	T 59	—	0.1
Coating ability and water resistance: dry aggregate/after spray wet aggregate/after spray	T 59	Good/Fair Fair/Fair	
Storage stability, 1 day, %	T 59	—	1
Distillation test: Residue by distillation, % by wt. Oil distillate, % by volume of emulsion	T 59	65 —	— 7
Tests on residue from distillation: Penetration, 77°F, 100 g, 5 sec. Solubility in trichloroethylene, % Float test, 140°F, sec.	T 49 T 44 T 50	300 97.5 1,200	— — —
Elastic Recovery, 50°F, %	Tex-539-C	30%	

Note—Test procedures beginning with T are AASHTO procedures.

1. Undisturbed emulsion will not show white milky substance at either the top or bottom of the test cylinder after the 24-hr. period.
2. Perform test on cured residue. Cure by pouring material into two rolling film containers and testing in accordance with ASTM D 2872.

5.1.5.

Cold Mix Asphalt Summer Grade (CMA-SG). Use only aggregate gradations II and III to produce CMA-SG. Use an asphalt material to produce CMA-SG in accordance with Table 5.

Table 5
Asphalt Material Properties for CMA-SG

Property	Test Procedure	Min	Max
Viscosity, 77°F, Poises	D 4957 ¹	3,000	5,000
Water, %	T 55	—	1.0
Flash point, T.O.C., °F	T 79	158	—
Distillation test: Distillate, percentage by volume of total distillate to 680°F to 437°F to 500°F to 600°F Residue from distillation, volume %	T 78	 0 0 30 78	 0 5 70 100
Tests on distillation residue: Penetration, 100 g, 5 sec., 77°F Float test, 140°F, sec. Solubility in trichloroethylene, %	T 49 T 50 T 44	100 1,200 99.0	250 — —

Note—Test procedures beginning with T are AASHTO procedures. Test procedures beginning with D are ASTM procedures.

1. Use a #200 modified Koppers viscometer at 300 mm of vacuum.

5.1.6.

Cold Mix Winter Grade (CMA-WG). Use only aggregate gradations II and III to produce CMA-WG. Use an asphalt material to produce CMA-WG in accordance with Table 6.

Table 6
Asphalt Material Properties for CMA-WG

Property	Test Procedure	Min	Max
Viscosity, 77°F, Poises	D 4957 ¹	1,500	4,000
Water, %	T 55	—	1.0
Flash point, T.O.C., °F	T 79	158	—
Distillation test:	T 78		
Distillate, percentage by volume of total distillate to 680°F			
to 437°F		0	0
to 500°F		0	5
to 600°F		30	70
Residue from distillation, volume %		78	100
Tests on distillation residue:			
Penetration, 100 g, 5 sec., 77°F	T 49	100	250
Float test, 140°F, sec.	T 50	1,200	—
Solubility in trichloroethylene, %	T 44	99.0	—

Note—Test procedures beginning with T are AASHTO procedures. Test procedures beginning with D are ASTM procedures.

- Use a #200 modified Koppers viscometer at 300 mm of vacuum.

5.1.7.

All Season Pre-Coated Patching Mixture (ASPPM). Use only aggregate gradation IV to produce ASPPM. Pre-coat the coarse and fine aggregates with at least 1% of AC-10, PG 64-22, or equivalent material in accordance with Item 300 before mixing with the asphalt material meeting the requirements of Table 7.

Table 7
Asphalt Material Properties for ASPPM

Property	Test Procedure	Min	Max
Kinematic viscosity, 140°F, cSt	T 201	300	700
Water, %	T 55	—	0.1
Flash point, T.O.C., °F	T 79	250	—
Distillation test:	T 78		
Distillate, percentage by volume of total distillate to 680°F			
to 437°F		0	0
to 500°F		0	5
to 600°F		55	—
Residue from distillation, volume %		73	100
Tests on distillation residue:			
Penetration, 100 g, 5 sec., 77°F	T 49	200	—
Solubility in trichloroethylene ¹ , %	T 44	99.0	—

Note—Test procedures beginning with T are AASHTO procedures.

- Only perform this test if the binder does not appear homogenous.

- 5.1.8. **Non-Volatile Mixture (NVM).** Use aggregate gradations I, II, III, or IV to produce NVM. Use a non-volatile binder to produce NVM in accordance with Table 8.

Table 8
Asphalt Material Properties for NVM

Property	Test Procedure	Min	Max
Flash point, T.O.C., °F	T 79	174	—
Distillation test:	T 78		
Distillate, percentage by volume of total distillate to 680°F			
to 437°F		0	0
to 500°F		0	0
to 600°F		0	0
Residue from distillation, volume %		100	100
Tests on distillation residue:			
Penetration, 100 g, 5 sec., 77°F	T 49	180	—
Solubility in trichloroethylene ¹ , %	T 44	99.0	—

Note—Test procedures beginning with T are AASHTO procedures.

1. Only perform this test if the binder does not appear homogenous.

- 5.2. **Asphaltic Additives.** Use one or more asphalt additives in the mixture to prevent stripping of the asphalt from the aggregate in the presence of water and promote bonding to damp or wet surfaces. Add the additives to the asphalt material at the point of origin or meter in at the mix plant to provide a uniform concentration of the agents. The Engineer will approve the type and number of additives used in the design stage based on the resistance to stripping, and desired bonding and workability characteristics.
- 5.3. **Distillate.** When an MC-800 is designated as the asphaltic material to be used, the Engineer may also direct that distillate in amounts not to exceed 5% by weight of the MC-800 be added to extend stockpile life and improve cold weather workability. Furnish the distillate that meets the requirements for No. 1 or No. 2 diesel, ASTM D 975, with the exception that the maximum water content does not exceed 0.2%.

Meter the distillate into the mix plant separately from the MC-800, or, when approved by the Engineer, blend with the MC-800.

- 5.4. **Aggregate.** Furnish aggregate meeting the requirements of Item 334, "Hot-Mix Cold-Laid Asphalt Concrete Pavement."

6. MIXTURE PROPERTIES

- 6.1. **General Testing.** Produce a mixture in accordance with the mixture property requirements listed in Table 9.

Table 9
Mixture Property Testing Requirements

Property	Test Procedure	Min	Max
Residual Asphalt Content, exclusive of volatiles, % by weight ¹	Tex-210-F	3.0	7.0
Hydrocarbon Volatile Content of mix, % by weight ²	Tex-213-F	0.3	1.0
Moisture Content of Mix, % by weight ³	Tex-212-F , Part I		2.0
Hveem Stability of as-received mix (no curing) at 77°F ±2°F (molded at 77°F ±2°F)	Tex-208-F	35	
Hveem Stability of cured mix (cured to a constant weight) at 140°F (molded at 140°F in accordance with Tex-206-F), %	Tex-208-F	35	

1. Residual asphalt content allowed for ASPPM only is in the range of 4.0%–6.0%.
2. No hydrocarbon volatile content allowed for NVM only.
3. This requirement does not apply to mixtures produced at mixing temperatures of 174°F or less.

- 6.2. **Mixture Design and Aggregate Gradation.** Mixtures produced must adhere to the density requirements specified in Table 10.

Table 10
Laboratory-Molded Density Requirements

Minimum	Optimum	Maximum
90.0	93.0	96.0

The Engineer will select the asphalt content within the range specified in Table 11 for mixtures produced with aggregate gradation I, II, III, or IV.

Table 11
Aggregate Gradation Requirements (% Passing by Weight or Volume)¹

Sieve Size	Gradation I	Gradation II	Gradation III	Gradation IV
3/4"	—	—	100	100
1/2"	100	100	70–90	100
3/8"	95–100	95–100	40–70	100
No. 4	90–100	17–40	10–30	65–90
No. 10	10–30	2–15	5–20	20–40
No. 40	0–25	—	0–10	10–30
No. 80	0–10	—	0–5	0–15
No. 200	0–5	0–3	0–4	0–5
AC % ²	—	4.5–6.5	4.0–5.5	5.0–7.0

- Determine percent passing in accordance with [Tex-200-F](#), Part II.
- Allowed range for asphalt content as measured in accordance with [Tex-210-F](#). This asphalt content includes volatiles.

- 6.3. **Resistance to Water Damage.** Evaluate the as-received mix for resistance to water damage by soaking a 100-g representative sample of the total mixture in 200 mL (7 fluid oz.) of distilled or de-ionized water at 140°F ±2°F for 24 hr. ±2 hr. Perform the soaking test in an approximately 400-mL (14-fluid oz.) glass. Evaluate the mixture upon completion of the 24-hr. soaking period while submerged in the testing water. No visible evidence of stripping of the material is allowed.

7. MIXTURE PREPARATION

Provide a plant-produced mixture. Heat the asphaltic material in accordance with Item 300, Table 19. Apply SCM I and SCM II when specified at 170°F–200°F, unless otherwise specified by the material supplier. Apply AES-300S and CMA when specified at the temperature specified by the material supplier. Mix the aggregate with asphaltic material at a temperature not exceeding 200°F, unless otherwise approved by the Engineer. Discharge the bituminous mixture at a temperature not exceeding 200°F at the point of discharge from the mixer, unless otherwise approved by the Engineer. Mix the aggregate and bituminous material until all the aggregate is uniformly coated.

8. MEASUREMENT AND PAYMENT

- 8.1. Material will be measured as follows:

- **Material (Pick Up).** The ton or any cubic yard method;
- **Material (Stockpile).** The ton or any cubic yard method; and
- **Material (Bag).** The 60-lb. bag.

A stockpile can be either on the roadway right of way or at a maintenance yard. The quantity to be paid is the quantity shown in the proposal, unless modified by Section 10.4.3, "Changes in the Work." Additional measurements or calculations will be made if adjustments of quantities are required.

Payment will be made in the measurements defined as follows:

- **Cubic Yard in Vehicle.** By the cubic yard in vehicles of uniform capacity at the point of delivery.
- **Cubic Yard in Stockpile.** By the cubic yard in the final stockpile position by the method of average end areas for roadway right of way stockpiles and with the Stockpile App for maintenance yard stockpiles.

- **Ton.** By the ton of dry weight in vehicles as delivered. The dry weight is determined by deducting the moisture in the material at the time of the weighing from the gross weight of the material. The Engineer will determine the moisture content in the material in accordance with [Tex-103-E](#) from samples taken at the time of weighing.

When material is measured in trucks, the weight of the material will be determined on certified scales, or the Contractor must provide a set of standard platform truck scales at a location approved by the Engineer. Scales must conform to the requirements of Item 520, "Weighing and Measuring Equipment."

When material is measured by the ton, provide a conversion rate to cubic yards on each haul ticket.

- **Bag.** By each 60-lb. bag.

8.2.

Payment:

- **Material (Pick Up).** Payment will be made for the type and grade specified. For cubic yard measurement, "In Vehicle" will be specified. This price is full compensation for furnishing materials; assistance provided in sampling; loading provided vehicles; furnishing scales and labor for weighing and measuring; and equipment, labor, tools, and incidentals.
- **Material (Stockpile).** Payment will be made for the type and grade specified. For cubic yard measurement, "In Vehicle" or "In Stockpile" will be specified. This price is full compensation for furnishing materials; stockpiling; loading; hauling; delivery of materials to the stockpile; furnishing scales and labor for weighing and measuring; and equipment, labor, tools, and incidentals.
- **Material (Bag).** Payment will be made for the type and grade specified. This price is full compensation for furnishing materials; stockpiling; loading; hauling; delivery of materials; furnishing scales and labor for weighing and measuring; and equipment, labor, tools, and incidentals.