



High Performance Permanent Pavement Repair Material Specification

No VOC Pavement Repair Material

DESCRIPTION

This material shall be a plant mixed, high performance pavement patching material capable of storage in an uncovered outdoor stockpile for a maximum of 2 years. It shall be composed of laboratory approved mineral aggregates and modified bituminous No VOC Liquid Blend. The permanent asphalt repair shall be uniform, remain flexible and cohesive to -15°F and be capable of retaining adhesive qualities in wet applications. The patching materials shall be able to repair asphalt, concrete, surface treated roads and shall not require removal and replacement if ever the pavement is overlaid.

ENVIRONMENTAL IMPACT

The repair material must be classified as non-hazardous and biologically non-toxic. No VOC Repair Material conforms to ASTM D402 requirements. Independent laboratory results are available for review.

MATERIALS

A) Aggregate

The aggregate shall consist of 100% crushed stone or a laboratory approved equivalent under ASTM C-136. All aggregate is to be from approved sources, and representative samples of both fine and coarse aggregate shall be from the plant site and laboratory tested. Sampling and testing methods shall be in accordance with accepted local practice.

Gradation analysis to comply with all local requirements. Recommended gradation analysis is as follows:

<u>SCREEN SIZES</u>	<u>PERCENTAGE PASSING</u>
3/8" (9.5mm)	100
#4 (4.75mm)	20 – 100
#8 (2.36mm)	2 – 30
#16 (1.18mm)	0 – 10
#50 (0.3mm)	0 – 6
#200 (0.075mm)	0 – 2

All aggregate percentages are based on the total weight of the aggregate.

ASTM	C-88	Soundness Loss	12.0% Max.
ASTM	C-131	Los Angeles Abrasion	40.0% Max.
ASTM	C-117-200	-200 Sieve (by wash)	2.0% Max.
ASTM	C-127, 127	Absorption	1.0 – 2.0% Max.
ASTM	C-127, 128	Specific Gravity	2.55 – 2.75% Max.
ASTM	C-122	Soft Aggregates	3.0% Max.



Aggregate Acceptance

Aggregate compatibility approval must be obtained from the GemPatch Quality Control Facility prior to any plant production.

B) Bituminous Material

The modified bituminous liquid blend shall be GemPatch No VOC Liquid which meets the following requirements:

ASTM D-1310	Flashpoint (TOC):	400°F (204°C) Min.
ASTM D-2170	Kinematic Viscosity at 140°F (60°C):	300-4000
ASTM D-95	Water	0.22% Max.
ASTM D-402	Distillate Test (volume of original sample):	
	To 437°F (255°C)	0%
	To 500°F (260°C)	0%
	To 600°F (315°C)	0%
	Residue from distillate at 680°F (360°C)	0%

Residue Tests

ASTM D-2171 ABS, Viscosity at 140°F (60°C)	125-425	Poises
ASTM D-5 Penetration:	200	Min.
ASTM D-113 Ductility at 39°F (4°C) 0.4 in./Min:	100	Min.
ASTM D-2042 Solubility in Trichloroethylene:	99%	Min.

GemPatch No VOC Liquid Blend shall be shipped from authorized blending terminal locations. Liquid shall be completely blended at terminal under supervision of authorized Quality Control personnel. No additives, modifiers, or extra ingredients are to be introduced into the liquid blend at any time after shipment from terminal. A copy of bill of lading and material certification shall accompany every shipment. GemPatch No VOC Liquid Blend shall be shipped in insulated tankers to maintain oil temperature during transportation.

PLANT MIX

The finished material shall consist of aggregates meeting material as specified in Section A) Aggregate, and the bituminous liquid blend meeting material specified in section B) GemPatch No VOC Bituminous Material as indicated in the proposed job mix formula. GemPatch No VOC Bituminous Material shall be accepted at the supplier's source and at the plant site on the basis of a supplier material certification.

The preferred mixing ratio shall be 4.0% to 6.0% liquid blend per finished ton (2,000 lbs.) of mixed material. Continuous on-site testing will determine exact final mixing ratio which will be identified in the final job mix formula. All aggregate percentages are based on the total weight of the aggregate. The GemPatch No VOC Liquid Blend content is based on the total weight of the mix.

The job mix formula information shall provide:

- Aggregate gradation band and aggregate type.
- GemPatch No VOC Liquid Blend – amount and type including any additives used.
- Temperature ranges for material preparation.



MATERIALS

Asphalt Plant Production

The mixture is to be produced through a conventional hot asphalt plant (210°F) only under direct supervision of a qualified sales representative and finished product will not exceed 180°F. The GemPatch No VOC Liquid Blend shall not be heated above 200°F. The final mixture must be tested in accordance with GemPatch on-site quality control requirements.

Stockpile Inspection

Prior to production, the stockpile site is to be inspected for any contaminant such as dirt, sand or other debris that may affect the quality of the No VOC Repair Material. The stockpile area should be a hard surface, preferably paved with concrete, or a bituminous surface.

Quality Control

On each load, a Quality Control Report will be prepared by the Quality Control Technician. All phases of production of the plant operation and the material testing on each 150 tons of production will be prepared and entered accordingly in each category. Site tests will be completed which include Spot Test, Strip Resistance, Coating Observation and Roll Test.

GemPatch No VOC High Performance Pavement Repair, when applied according to our directions to deteriorated concrete or bituminous pavement surfaces, is guaranteed to adhere permanently to the repaired area for the life of the repair or until the surrounding pavement area fails. GemSeal Pavement Products will replace actual volumes of GemPatch No VOC at no charge for any GemPatch. No VOC High Performance Pavement Repair that should ever ravel or release from a properly repaired area.