



High Performance, *PERMANENT* Pavement Repair



## Material Specifications

### DESCRIPTION

This material shall be a plant or pugmill mixed, high performance pavement patching material capable of storage in an uncovered outdoor stockpile for a minimum of 12 months. It shall be composed of laboratory approved mineral aggregates and modified bituminous QPR Liquid Blend capable of coating wet aggregates (up to 4% moisture) without stripping and have stripping resistance of retained coating of not less than 95%. 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.

### 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:

#### SCREEN SIZES PERCENTAGE PASSING

3/8" 100

#4 20 - 85

#8 2 - 30

#16 0 - 10

#50 0 - 6

#200 0 - 2

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

ASTM C-88 Soundness Loss 12.0% Max.

ASTM C-131 Los Angeles Abrasion 40.0% Max.

ASTM C-117 -200 Sieve (by wash) 2.0% Max.

ASTM C-127, 128 Absorption 1.0 - 2.0% Max.

ASTM C-127, 128 Specific Gravity 2.55 - 2.75% Max

ASTM C-123 Soft Aggregates 3.0% Max.

#### Aggregate Acceptance

Aggregate compatibility approval must be obtained from the QPR quality control facility in Mississauga, Ontario prior to material mixing at any mixing plant.

#### B) Bituminous Material

The modified bituminous liquid blend shall be QPR which meets the following requirements:

ASTM D-1310 Flashpoint (TOC): 200° F (94° C.) minimum

ASTM D-2170 Kinematic Viscosity at 60° C (140° F): 300-4000

ASTM D-95 Water: 0.2% maximum

ASTM D-402 Distillate Test (Volume of original sample):

To 457° F (225° C) None

To 500° F (260° C) 0 - 5%

To 600° F (315° C) 0 - 25%

Residue from distillate at 680° F (360° C) 72 - 95%

#### RESIDUE TESTS

ASTM D-2171 ABS. Viscosity at 140° F (60° C): 125-425 poises

ASTM D-5 Penetration: . 200 Minimum

ASTM D-113 Ductility at 39° F (4° C) 0.4 in./Min: 100 Minimum

ASTM D-2042 Solubility in Tricloroethylene: 99% Minimum

QPR 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. Liquid Blend shall be shipped in insulated tankers to maintain oil temperature during transportation.

#### PLANT MIX

The cold mix shall consist of aggregates meeting material as specified in Section A) Aggregate, and the bituminous liquid blend meeting material specified in section B) Bituminous Material as indicated in the proposed job mix formula. 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 4.5% to 6% liquid blend finished ton (2000 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 bituminous 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.
- Bituminous material - amount and type including any additives used.
- Temperature ranges for material preparation.

## MANUFACTURING PREPARATION & OPERATION

### Hot Mix Plant Production

The mixture is to be produced through a conventional hot asphalt plant only under the direct supervision of a qualified QPR sales representative and finished product will not exceed 180°F. The bituminous liquid blend shall not be heated above 200°F. The final mixture must be tested in accordance with QPR on-site quality control requirements,

### Pugmill Production

The mixture can be produced through a cold manufacturing process (PUGMILL). The QPR Bituminous Liquid Blend shall be heated between 200°F to 220°F. The QPR Liquid Blend temperature is elevated to help with the adhesion process between the bituminous liquid and the aggregate. The finished mix will not exceed 180°F when produced through the Pugmill. The final mixture must be tested in accordance with the QPR 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 debris that may affect the quality of the QPR High Performance Cold Patch. The stockpile area should be a hard surface, preferably paved with concrete, or a bituminous surface.

## ENVIRONMENTAL TOXICITY TESTING

The modified bituminous cold patch QPR must have an independent test conducted by a certified laboratory as to toxicology results in a Static Acute Bio Assay Procedures for Hazardous Materials which determines effect of runoff into waterways, lakes, ponds and groundwater.

## SPECIFICATION SAMPLING

A one quart sample of the QPR Liquid Blend will be retained at the asphalt depot prior to shipping. On delivery of the tank truck, an additional one-quart sample will be taken by the QPR sales representative and is to be retained by the customer/producer for a period of one year, or until the stockpile is depleted.

## QPR QUALITY CONTROL

On each load, a Quality Control Report will be prepared by the QPR 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.

## HEATING OF FINISHED PRODUCT

QPR should not be heated above 700F (210C) when utilizing a hot box.

## TRAINING OF INSTALLATION CREWS

Lafarge will make available a complete training program for all road crews to ensure correct patching methods, along with updates on this subject.

## STOCKPILING

One (1) year shelf life. QPR may be stockpiled up to 12 months in an uncovered outdoor stockpile.

### PERFORMANCE GUARANTEE

QPR 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. Lafarge will replace actual volumes of QPR at no charge for any QPR High Performance Pavement Repair that should ever ravel, release or otherwise fail in a properly repaired area.

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