

CITY OF DETROIT

MIKE DUGGAN

Mayor

Specifications

Cold Patch

Street Maintenance Division

Department of Public Works

**CITY OF DETROIT
DPW-STREET MAINTENANCE DIVISION SPECIFICATIONS
FOR
BITUMINOUS COLD PATCH MATERIAL**

Specifications for Bituminous and Cold Patching Mixture

1. GENERAL

This bituminous patching mix is designed for use when the outside ambient temperature is in the range of -15°F. to 100°F. The cold mix shall be effective for wet or dry weather conditions, as well as during hot weather in bituminous and concrete pavement.

2. PREPARATION OF MIXTURE

Bituminous material shall be prepared from a base asphalt stock of either 85-100 pen., 120-150 pen., AC-5. AC-20, and shall comply with the following:

Kinematic Viscosity @140°F (60°)	ASTM D 2170	300 TO 4000 cSt
Flash Point, Tab Open Cup	ASTM D 1310	200°F (93°C) min
Percentage of Water	ASTM D 95	Less Than 0.2%
Distillation to 680°F (360°C)	ASTM D 402	See Values Below

<u>Temperature</u>	<u>Volume % Total Distillate</u>		<u>Volume % Original Sample</u>	
	<u>Minimum</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Maximum</u>
to 437°F (225°C)	0	0	0	0
to 500°F (260°C)	0	0.5	0	0
to 600°F (316°C)	10	65	0	18
Residue from distillation to 380°F (360°C) % Volume by Difference			73	95

The aggregate shall be crushed limestone and shall meet the requirements specified for aggregates for HMA mixtures, Section 902.09 2012 Standard Specifications of M.D.O.T. and the additional requirement of 2% maximum absorption when tested in accordance with ASTM C-127.

The aggregate shall meet the following requirements:

Soundness Loss (Sodium, 5 Cycles)	ASTM C 88	12.0 maximum
Loss Angeles Abrasion Loss	ASTM C 131	45.0% maximum
Specific Gravity	ASTM C 127	2.45 - 2.75
Absorption	& 128	1.0% - 3.0%
Minus 200 Sieve Wash Loss	ASTM C 117	2.5% maximum

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SIEVE ANALYSIS*

<u>Sieve</u>	<u>#9 ASTM D 448 Percent Passing</u>	<u>ASTM C 136 #89 ASTM D 448 Percent Passing</u>	<u>Between #9 & #89 Percent Passing</u>
1/2"	-	100	100
3/8"	100	90 – 100	90 – 100
# 4	85 – 100	15 – 55	55 – 85
# 8	10 – 40	0 – 30	5 – 40
# 16	0 – 10	0 – 10	0 – 10
# 50	0 – 5	0 – 5	0 – 5
#200		0 – 4	

Note: * The number #9 gradation is the preferred sieve analysis followed by the #89 gradation.

The mixture shall be prepared whenever possible with no heat applied to the aggregate and the asphalt heated to a temperature between 190° – 275° F.

Moderate heat, not exceeding 170°F., may be applied to the aggregate under the following conditions: Frozen aggregate, plant has a bag system for dust collection, screens are clogged because of moisture, or when determined as necessary by laboratory testing.

Mixing in the pug mill should be 30 to 45 seconds or until the aggregate is uniformly coated.

The mixture shall consist of an aggregate and asphalt combined in a pug mill in the following proportions:

Aggregate 93.5% to 95.0%
Asphalt 5.0% to 6.5%

The asphalt cold mix shall meet the following requirements:

Coating and Stripping		Above 95%
Extraction of Bituminous Material	ASTM D 2172	3.5% min. 9.0% max.
Shelf Life	Visual	One Year Minimum

1. SPECIFIC REQUIREMENTS

The material shall remain workable, in an uncovered stockpile, if applicable, for a period of not less than twelve (12) months. Repaired potholes shall not show any significant signs of shoving, rutting, tracking, kick-up or ravel-out within a period of twelve (12) months from the time of repair.

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4. SAMPLING AND TESTING

Sampling and testing shall be in accordance with the 2012 M.D.O.T. Standard Specifications and the City of Detroit DPW Materials Laboratory methods.