

SealMaster Bituminous Surface Treatment

May 2021

Phone: 866-289-6767, 503-289-6696

Website: www.sealmaster.net

E-mail: office@sealmasterportland.com

Engineering Specification: Liquid Road Ultra Bituminous Surface Treatment for Pavement

Application Specification- Quick Spec

LIQUID ROAD ULTRA BITUMINOUS SURFACE TREATMENT

Specifier's Notes: This Bituminous Surface Treatment Specification is furnished as a guide for specifying the application of Liquid Road on Asphalt Road Surfaces. It is written in the CSI 3-Part Format.

If you need more specific information regarding a product visit www.sealmaster.net or contact your local SealMaster Representative at 1-800-395-7325. SealMaster Representatives are also available to answer any questions you may have regarding your specific project.

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Bituminous Surface Treatment - Liquid Road Ultra Application

1.2 REFERENCE STANDARDS

- A. American Society for Testing Materials (ASTM)
 - 1. D 2939-03 (Sections 7,8,9,10,11,12,13,14,15,16) Standard Test Methods for Emulsified Bitumens Used as Protective Coatings
 - 2. The following ASTM test methods: ASTM D5, ASTM D6937, ASTM D6930, ASTM D113, ASTM E70, ASTM D6378, ASTM D36, ASTM D93, ASTM D562, ASTM D4060, ASTM D552, ASTM D870, ASTM D6904, ASTM D4585, ASTM D1735, ASTM D2247, ASTM D4541, ASTM E303, ASTM E70, ASTM E274, ASTM D3359, ASTM D3910, ASTM D4799
 - 3. Liquid Road meets ASTM D8099/D8099M-17 Standard Specification for Asphalt Emulsion Pavement Sealer and FAA Item P-623 specification for emulsified asphalt spray sealcoat.
- B. South Coast Air Quality Management District
 - 1. SCAQMD Method 304 – Determination of Volatile Organic Compounds (VOC) In Various Materials.
- C. Federal Specifications for Waterborne Traffic and Airfield Marking Paints
 - 1. TT-P-1952E Types I, II, and III
 - 2. TT-P-1952D

1.3 SUBMITTALS

A. Product Data

1. Submit manufacturer's Product Data Sheet.

1.4 PROJECT/SITE CONDITIONS

A. Ambient Conditions

1. Both surface and ambient temperature must be a minimum of 50°F and rising before applying cold applied crack fillers, oil spot primers, pavement sealers or traffic paints (materials). Ambient and surface temperature shall not drop below 50°F for a 24 hour period following application of materials.
2. Apply materials during dry conditions when rain is not imminent or forecast for at least 24 hours after application.

B. Pavement/Surface Conditions

1. Newly placed (paved) asphalt pavement surfaces should be allowed to cure a minimum of four (4) weeks under ideal weather conditions (70°F) before applying coatings.
2. New pavement surfaces shall be free of residual oils or chemicals associated with the placement of new asphalt pavement.
3. Aged pavement surfaces shall be cleaned and prepared as recommended in this specification under PART 3 of this specification.

PART 2 PRODUCTS

2.1 MANUFACTURER

- #### **A. SealMaster Pavement Products and Equipment.** SealMaster has a nationwide network of manufacturing and distribution facilities. Phone: 800-395-7325. Website: www.sealmaster.net. E-mail: office@sealmasterportland.com.

2.2 LIQUID ROAD ULTRA PAVEMENT COATING

- #### **A. Liquid Road Ultra** is a polymer-modified, fiber-reinforced asphalt emulsion coating that contains specifically graded aggregate and is applied to asphalt pavement surfaces, providing a highly durable, slip-resistant bituminous surface treatment that greatly extends pavement service life.

Liquid Road Ultra provides a "like new" black appearance to oxidized and weathered asphalt pavement surfaces. The deep black color helps to melt snow and ice significantly faster than untreated pavements.

Liquid Road Ultra produces an even textured surface with no loose stones, making it ideal for vehicle, bicycle and pedestrian traffic.

TABLE 1- PHYSICAL PROPERTIES OF LIQUID ROAD ULTRA		
ASTM	Test Description	Result
D2939-8	Residue by Evaporation, %	Min. 52%
E303	Measuring Surface Frictional Properties- British Pendulum Tester	Min. 70 BPN
E274	Locked Wheel Skid Testing	> 30 SN
D4060	Abrasion Resistance- Taber Abraser Dry Method	< 1% Loss
D3910-6.4	Wet Track Abrasion Test	< 25g/ft ² Loss
D5	Penetration of Bituminous Materials-Base Asphalt	12-45 Pen
D113	Ductility of Bituminous Materials-Base Asphalt	5-15 cm
Std. %	Percent Polymer Solids to Asphalt by wt.	5-15 cm
E70	PH of Aqueous Solutions with Glass Electrodes	6-10 PH
D6378	Vapor Pressure (VPX), mm Hg @ 25° C (77° F)	22-26 mm Hg
D36	Softening Point of Emulsion Residue (Ring and Ball Apparatus)	> 200° F
D93	Flash Point of Liquid Emulsion	None detected
D562	Viscosity using a Stormer-Type Viscometer	60-110 KU
D870	Water Resistance of Coatings using Water Immersion	No Delamination
D6904	Resistance to Wind-Driven Rain	No Delamination
D4585	Water Resistance of Coatings Using Controlled Condensation	No Delamination
D1735	Water Resistance of Coatings Using Water Fog Apparatus	No Delamination
D2247	Water Resistance of Coatings in 100% Relative Humidity	No Delamination
D4541	Adhesion Strength over Asphalt Pavement	> 200 PSI
D2939-7	Weight per Gallon	10-12 lbs./gal
D2939-13	Drying Time- 50% humidity, 73.4 ± 3.6°F. Firm in 24 hrs.	PASS
D2939-14	Resistance to Heat- No Blistering, sagging or slipping	PASS
D2939-15	Resistance to water- No softening, delamination or re-emulsification	PASS
D2939-16	Flexibility- No Cracking or Delamination	PASS
D2939-26	Resistance to Impact- No Chipping, Cracking or Delamination	PASS
D2939-27	Resistance to Impact After Accelerated Weathering	PASS
D4799	QUV UV Aging-1,000 Hours	No Color Fade
D3359	Measuring Adhesion by Tape- No More than a Trace of Peeling	PASS
SCAQMD Method 304	Determination of Volatile Organic Compounds (VOC) in various Coatings	< 50 g/l

2.3 MATERIALS

- A. SealMaster FlexMaster Crack Sealant (Cold-applied pourable crack sealant)
- B. SealMaster Pourable Crack Sealant (Cold-Applied crack sealant)
- C. SealMaster CrackMaster Hot Rubberized Crack Sealant
- D. SealMaster Asphalt Binder Plus
- E. SealMaster Asphalt Binder
- F. SealMaster Pothole Patch (Cold Patch)
- G. SealMaster Liquid Thermoplastic Traffic Marking Paint (White and Yellow)
- H. SealMaster Fast-Dry Traffic Paint (White and Yellow)

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine pavement surface prior to performing work
- B. Notify project engineer of any adverse or unacceptable conditions that would affect successful repair efforts or application of materials
- C. Do not commence work until unacceptable conditions are corrected

3.2 CRACK REPAIR

Specifier's Notes: Specifier should select between Option A. (Fill Cracks with Cold-Applied Sealants and/or Crack Fillers) or, Option B. (Fill Cracks with Hot Applied Rubberized Asphalt Crack Sealant) listed below. Hot Applied Rubberized Crack Sealant provides a more durable solution for crack filling. However, Cold-Applied Materials offer an acceptable and more economical approach.

- A. Cold Applied Crack Filling Materials and Methods
 1. Clean cracks of all dirt, debris and vegetation prior applying crack filling.
 2. For cracks up to 1/2" apply SealMaster FlexMaster or SealMaster Pourable Crack Sealant. FlexMaster or Pourable Crack Sealant may be applied directly from container, pour pot, crack banding equipment or mechanized pumping equipment. Allow to dry before sealcoating.

3. Contractor or other Entity Responsible for performing work shall refer to Manufacturer's Product Data Sheet for more detailed application instructions for FlexMaster and Pourable Crack Sealant.
- B. Hot Applied Crack Sealant/Filling Materials and Methods
1. Cracks must be free from dust, dirt, vegetation and moisture. Clean cracks with mechanical wire brush followed by a compressed air heat lance to remove loose debris and moisture.
 2. For all cracks up to 1" wide apply SealMaster CrackMaster 6690 Type 1 Hot Rubberized Crack Sealant
 3. SealMaster CrackMaster Rubberized Crack Sealant shall be melted in a conventional oil-jacketed unit equipped with an agitator.
 4. Apply heated CrackMaster Rubberized sealant using a pump and wand system, a crack banding unit or a pour pot.
 5. Contractor or other Entity Responsible for performing work shall refer to Manufacturer's Product Data Sheet for more detailed application instructions for CrackMaster 6690 Type 1 Crack Sealant.

3.3 ALLIGATORED PAVEMENT REPAIR

Specifier's Notes: Alligator cracks are interconnected cracks forming a series of small blocks resembling an alligator's skin or chicken wire. Specifier should select between Option A- (Infrared Patch Repair Method) or Option B- (Removal of distressed pavement material and replacement with 4 inches of Hot Mix Asphalt). With regards to longevity of pavement repair, these options represent a better (A), best (B) approach.

- A. Repair Alligator Cracks with Infrared Heater Method
1. Remove all dirt, dust and vegetation on alligatored area.
 2. Heat alligatored pavement area to a temperature between 290°F and 325°F to soften pavement. Scarify heated softened asphalt with an asphalt rake to a depth of 2-3 inches. Add SealMaster Asphalt Binder Plus at a rate of .20 gallon per square yard while pavement material is still soft and workable. Mix Asphalt Binder Plus into heated softened asphalt with the asphalt rake. Level smooth with rake and compact area with either a plate compactor or asphalt roller. Note- A small amount of fresh Hot Mix blacktop may be added to heated material if needed to assure a smooth, flush finish to adjoining pavement surface.
 3. Contractor or other Entity Responsible for performing work shall refer to Manufacturer's Product Data Sheet for more detailed application instructions for SealMaster Asphalt Binder Plus.
- B. Repair Alligator Cracks with Full-Depth Hot Mix Asphalt
1. Saw cut and remove the alligatored pavement to the depth necessary to reach firm support (firm base materials).
 2. Prime bottom of patch area and vertical sides of saw cut with SealMaster Asphalt Binder Plus.
 3. Fill patch area with fresh hot mix asphalt.

4. Compact fresh hot mix with hand tamper, vibratory-plate compactor or asphalt roller. Finished patchwork shall be flush and level with adjoining pavement.
5. Contractor or other Entity Responsible for performing work shall refer to Manufacturer's Product Data Sheet for more detailed application instructions for SealMaster Asphalt Binder Plus.

3.4 POTHOLE REPAIR

Specifier's Notes: Specifier should select between Option A. (Fill Potholes with SealMaster Pothole Patch (Cold Patch)) or, Option B. (Fill Potholes with Hot Mix Asphalt). Hot Mix Asphalt provides a more durable solution for patching. However, SealMaster PatchMaster Pothole Patch offers an acceptable and more economical approach to filling potholes.

- A. Fill Potholes with SealMaster PatchMaster Pothole Patch
 1. Remove loose material, debris and standing water from pothole prior to application.
 2. Apply PatchMaster directly from bag into pothole.
 3. Compact PatchMaster with a hand-tamper, vibratory-plate compactor or asphalt roller. Finished patchwork shall be flush and level with adjoining pavement.
 4. Contractor or Entity responsible for performing work shall refer to Manufacturer's Product Data Sheet for more detailed application instructions for SealMaster PatchMaster pothole patch.

- B. Fill Potholes with Hot Mix Asphalt
 1. Remove loose material, debris and standing water from pothole prior to application.
 2. Apply Hot Mix Asphalt directly into pothole. Compact Hot Mix with a hand-tamper, vibratory-plate compactor or asphalt roller. Finished patchwork shall be flush and level with adjoining pavement.

3.5 LIQUID ROAD ULTRA APPLICATION

- A. Traffic Control
 1. Implement Traffic Control Program to allow for safety of workers, pedestrians, and vehicle traffic.

- B. Surface Protection
 1. Use tar paper to mask off end of streets and intersections to provide crisp start and finish lines when applying Liquid Road Ultra.
 2. Use tar paper or suitable material to mask off manhole covers and sewer grates
 3. Protect curbs, gutters and sidewalks from material spatter or over-coating.

C. Surface Cleaning

1. Surface must be clean and free from dirt, debris and loose material. Street sweepers, power blowers, mechanical sweeping devices and push brooms are acceptable cleaning methods.

D. Tack Coating (Optional)

1. Tack Coating (priming surface) with diluted SealMaster Asphalt Binder, SS1h or CSS1h asphalt emulsion is beneficial on extremely oxidized and weathered road surfaces.
2. Dilute 1 part SealMaster Asphalt Binder, SS1h or CSS1h with 4 parts of water.
3. Apply one thin coat of diluted asphalt emulsion at a rate of .05 to .10 gallon per square yard.
4. Allow tack coat to dry thoroughly before applying Liquid Road Ultra.

E. Equipment Requirements

1. Equipment used to apply Liquid Road Ultra shall have continuous agitation or mixing capabilities to maintain homogeneous consistency of pavement sealer mixture throughout the application process. Truck mounted tanks shall be equipped with a hydraulic extendable drag box up to 12' wide, with 1,500-gallon minimum mixing capability. Drag box shall have at least 2 squeegee or brush devices (one behind the other) or combination of squeegee and brush device to assure adequate distribution and penetration of sealer into pavement surface. Self-propelled squeegee machine (300 gallon minimum) with at least 2 squeegee or brush devices is acceptable on smaller areas where truck is not adequate. Hand squeegees and brushes shall be acceptable in areas where practicality prohibits the use of mechanized equipment.
2. A mobile Bulk Storage Tank with a minimum of 4,500-gallon capacity is required in a designated staging area onsite for production capabilities. Bulk Storage Tank shall have continuous agitation or mixing capabilities to maintain homogeneous consistency of pavement sealer mixture. This requirement only applies to projects consisting of 10,000 gallons of Liquid Road Ultra or more.

F. Liquid Road Ultra Mixing Procedure

1. Mix Liquid Road Ultra thoroughly before applying.
Note: If required, a small amount of water may be added to facilitate application of mixed material.

G. Application Procedure

1. Apply first squeegee/brush coat at a rate of .25 to .35 gallon per square yard. Allow first coat to dry thoroughly before applying second coat.
2. Apply second squeegee/brush coat at a rate of .17 to .22 gallon per square yard. Spray is accepted with computerized shot rate equipment for second coat only.
3. Allow second coat to dry completely before opening to vehicle traffic

3.9 TRAFFIC MARKINGS/LINE STRIPING

Specifier's Notes: Specifier should select between Option A- (SealMaster Fast Dry Traffic Paint-White or Yellow), or Option B- (SealMaster Liquid Thermoplastic Traffic Paint-White or Yellow). These options represent a better (A), or best (B) approach to material selection. SealMaster Fast-Dry Traffic Paint meets Federal Specification TT-P-1952D and TT-P-1952E Type I and II. SealMaster Liquid Thermoplastic Traffic Paint meets Federal Specification TT-P-1952E Type III.

A. Applying SealMaster Traffic Paint

1. Refer to SealMaster technical data sheets for proper mixing and application of Traffic Paints.
2. SealMaster Fast-Dry Traffic meets the requirements of Federal Specification TT-P-1952D, TT-P-1952E Type I and II
3. SealMaster Liquid Thermoplastic Traffic Paint meets the requirements of TT-P-1952E Type III

END OF SECTION