

Standard Guidelines for Product Review

Standard Bituminous Adhesive for Pavement Markers

Section 00855.00

December 2, 2010

00855.00 – Standard Bituminous Adhesive for Pavement Markers

ODOT allows the use of standard bituminous adhesive to adhere temporary pavement markers to pavement surfaces. Some marker manufacturers limit what type of adhesive (epoxy vs bituminous) they will allow their markers to be installed with. Since we require the Contractor to install pavement markers according to the manufacturer's recommendations this will limit some applications. The Qualified Products List (QPL) lists additional limitations, under the pavement marker section. To have your product listed in the QPL, you must show compliance with the specification listed below.

Specification:

- (1) **General** - The bituminous adhesive is an asphaltic material with a homogeneously mixed mineral filler and shall be suitable for bonding markers to portland cement concrete, asphaltic concrete, and chip sealed road surfaces. They should be designed to be applied to the road surface when temperatures are in the range of 4 °C to 71 °C. The adhesive properties shall not deteriorate when heated to and applied at temperatures up to 218 °C using either air or oil-jacketed melters. Material shall not contain rubber polymers since necessary application temperatures cause decomposition resulting in unsatisfactory performance.

(2) **Adhesive Properties:**

<u>Property</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Method</u>
Softening Point, °C	93	120	AASHTO T 53 (ASTM D 36)
Penetration	10	20	AASHTO T 49 (ASTM D 5)
Viscosity, 204°C, Pa•s	-	7.5	ASTM D 2669, as modified in 2840.61 (b-5-a).
Flash Point, C.O.C., °C	287	-	AASHTO T 48 (ASTM D 92)

- (3) **Properties of the Base Asphalt** - Asphalt properties determined on the filler-free material derived from the extraction and modified Abson recovery process as explained in 2840.61 (b-5-d) .

<u>Property</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Method</u>
Penetration, 100 g, 5 sec, 25 °C	18	-	AASHTO T 49 (ASTM D 5)

(4) **Filler Properties -**

<u>Property</u>	<u>Minimum</u>	<u>Maximum</u>	<u>Method</u>
Filler Content, % by mass	65	75	ODOT TM421

Sieve Size:

150 µm	100	-	
75 µm	95	-	
45 µm	75	-	

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(5) Test Methods:

- a. **Viscosity** - Determine viscosity according to ASTM D 2669 using a spindle speed of 10 rev/min. Heat the adhesive to approximately 210 °C and allow it to cool. Determine viscosity at 204 °C ± 1 °C.

- b. **Base Asphalt** - Determine properties of the base asphalt on the material obtained from the following extraction and modified Abson recovery methods. Extract the asphalt by heating the adhesive just to the point where it will easily flow and then transferring 125 g to 150 g into 400 mL of trichloroethylene with a temperature of 51 °C to 65 °C. Thoroughly stir this mixture to dissolve the asphalt. Decant the trichloroethylene-asphalt mixture and recover the asphalt using the modified Abson recovery method, ODOT TM 314 as modified by the following. The extraction methods of ODOT TM 314 shall not apply and there shall be no filtration of the solvent-asphalt mixture. Centrifuge the extraction solution of trichloroethylene and asphalt for at least 30 minutes at 770 times gravity in a batch centrifuge. Decant this solution into the distillation flask, then recover per ODOT TM 314. Repeat the above extraction-recovery method as necessary to obtain the desired quantity of asphalt. Use the asphalt recovered to determine penetration.

- (6) Packaging and Labeling** - Package the adhesive in silicone lined cardboard containers which will stack properly. The label shall show the product name, lot or batch number, manufacture's name and address. Print "Bituminous Adhesive for Pavement Marker" in bold lettering on the label.

To Apply for inclusion on the QPL, submit the following:

- [Preliminary information for Product Evaluation Form.](#)
- Independent test results showing compliance with specs listed above.
- Legible copy of the MSDS.
- Spec data sheet.
- Detailed installation instructions.
- List of limitations and precautions.

Submit documentation to:

Oregon DOT
Product Evaluation Coordinator
800 Airport Road SE
Salem OR 97301-4798

<http://www.oregon.gov/ODOT/HWY/CONSTRUCTION/QPL/QPIndex.shtml>

Please send no samples at this time.