

Recommend Approval: <u>Robert A. Voelkel</u> 1/19/12 Team Leader Date <u>[Signature]</u> 1/19/12 Division Chief Date	Maryland Department of Transportation State Highway Administration Office of Materials Technology MARYLAND STANDARD METHOD OF TESTS	
Approved: <u>[Signature]</u> 03/09/12 Director Date	HOT APPLIED JOINT SEALER AND CRACK FILLER	MSMT 404

SCOPE:

This procedure is used to test hot applied joint sealers for sealing joints and filling cracks in Portland cement concrete and hot mix asphalt (HMA) pavements.

REFERENCED DOCUMENTS:

- D 6690 (Type II) Specification for Joint and Crack Sealants, Hot Applied, For Concrete and Asphalt Pavements
- D 5329 Test Methods for Sealants and Fillers, Hot Applied, For Joints and Cracks in Asphaltic and Portland Cement Concrete Pavements.

TERMINOLOGY:

- Adhesion - The ability of the material to stick to the joint being sealed.
- Cohesive - The ability of the test material to hold together while being subjected to deformation.

SUMMARY OF PROCEDURE:

A sample is melted and continuously agitated in a special melting unit. The melted material is then used to fabricate specimens for the following tests:

- Penetration - Consistency measurements are made with a penetrometer using a cone instead of a needle.
- Flow - Specimens are cast onto panels, placed in an oven at a specified angle, and at the end of the test are measured for movement.
- Bond - Prepared specimens are placed between two concrete blocks, extended at a low temperature, and measured for loss of adhesion or cohesion.
- Resilience - A ball penetration is conducted by using a specified insertion depth and time. The load is removed and the recovery is computed.

Asphalt

Compatibility - Specimens are cast into a precut groove on an HMA specimen and placed in an oven for a specified time and temperature. The sample is then examined for any evidence of incompatibility.

SIGNIFICANCE OF USE:

These methods establish test procedures for laboratory evaluation of materials that will form a resilient and adhesive compound capable of effectively sealing joints against the infiltration of moisture and foreign material throughout repeated cycles of expansion and contraction with temperature changes.

MATERIALS AND EQUIPMENT:

Refer to D 5329 except as modified below.

TEST PROCEDURE:

Testing shall be conducted as specified in D 5329 except as modified below.

SAMPLE PREPARATION

1. The portion of the sample selected for testing shall weigh a minimum of 1200 g.
2. The manufacturer's recommended maximum heating and pouring temperatures shall be used when testing the materials. If a range of temperatures is recommended, the midpoint shall be used.

FLOW

1. A brass panel may be used in lieu of a tin panel.

CONCRETE BLOCK PREPARATION

1. Prepare cement mortar blocks, each 1 x 2 x 3 in., using one part Portland cement, Type III, conforming to M 85, to two parts by weight of sand conforming to M 6. Use sufficient water to produce a flow of 100 when tested as specified in T 106.
2. After curing for one day in moist air and six days in lime saturated water at 73.4 ± 3 F, surface one 2 x 3 in. face of each block by wet grinding with a silicone carbide stone until the aggregate is uniformly exposed and the face is smooth.

EXTENDED HEATING

Continue heating the sample at the safe heating temperature until 3 hr have elapsed after adding the first segments to the sample melting pot.

CALCULATIONS:

As specified in D 6690.

REPORT:

As specified in D 6690.