



Standard Specification for Joint Sealant, Hot-Applied, Elastomeric-Type, for Portland Cement Concrete Pavements¹

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1. Scope

1.1 This specification covers an elastomeric-type one component, hot-applied concrete joint sealant, resistant to weathering, for use in sealing joints and cracks in Portland cement concrete highway and airfield pavements.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* Specific precaution statements are given in Appendix X1.

2. Referenced Documents

2.1 ASTM Standards:

D 5167 Practice for Melting of Hot-Applied Joint and Crack Sealant and Filler for Evaluation²

D 5249 Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints²

D 5329 Test Methods for Sealants and Fillers, Hot-Applied, for Joints and Cracks in Asphaltic and Portland Cement Concrete Pavements²

3. General Requirements

3.1 The joint sealant, when in place, shall form a resilient and cohesive compound that is resistant to weathering, and shall effectively seal joints in concrete throughout repeated cycles of thermal expansion and contraction, and against the infiltration of moisture and incompressibles. It shall not flow from the joint or be picked up by vehicle tires. The joint sealant, before placement, shall be stable at the safe heating temperature for up to 6 h. The poured joints shall be free of internal voids due to placement or that develop subsequently in service.

4. Physical Requirements

4.1 *Safe Heating Temperature*—The highest temperature to

which the sealing compound can be heated and still conform to all the requirements specified herein. For the purposes of testing as specified hereafter, the pouring temperature for specimen preparation shall be the safe heating temperature, as recommended by the sealant manufacturer. The safe heating temperature shall be shown on all containers and shall be provided to the testing agency before any laboratory tests are begun. The safe heating temperature shall be a minimum of 20°F (11°C) higher than the manufacturer's recommended application temperature (See Appendix X1).

4.2 *Cone Penetration, Non-Immersed*—At $77 \pm 0.2^\circ\text{F}$ ($25 \pm 0.1^\circ\text{C}$), 150 g, for 5 s, shall not exceed 130 units.

4.3 *Flow*—There shall be no flow after 72 h at $158 \pm 2^\circ\text{F}$ ($70 \pm 1^\circ\text{C}$).

4.4 *Bond*—The sealant shall be tested at $0 \pm 2^\circ\text{F}$ ($-17.8 \pm 1.1^\circ\text{C}$) for three complete cycles of 50 % extension each. All three specimens shall meet the following requirements for bond:

4.4.1 *Nonimmersed*— No specimen shall develop any crack, separation, or other opening in the sealing compound or between the sealing compound and the concrete blocks.

4.4.2 *Water-Immersed*— No specimen shall develop any crack, separation, or other opening in the sealing compound or between the sealing compound and the concrete blocks.

4.5 *Resilience*—When tested at $77 \pm 0.2^\circ\text{F}$ ($25 \pm 0.1^\circ\text{C}$), the recovery shall be a minimum of 60 %.

4.6 *Resilience, Oven-Aged*—When conditioned in a forced-draft oven maintained at $158 \pm 2^\circ\text{F}$ ($70 \pm 1^\circ\text{C}$) for 24 ± 2 h, and tested at $77 \pm 0.2^\circ\text{F}$ ($25 \pm 0.1^\circ\text{C}$), the recovery shall be a minimum of 60 %.

4.7 *Artificial Weathering*—After 160 h exposure, the joint sealant shall not flow, show tackiness, the presence of an oil-like film or reversion to a mastic-like substance, form surface blisters, either intact or broken, form internal voids, have surface crazing, cracking, hardening, or loss of rubber-like properties. Evidence of physical change in the surface of the material by visual and tactile examination shall constitute failure of this test.

4.8 *Tensile Adhesion*— The average of three test specimens shall be a minimum of 500 % elongation.

4.9 *Flexibility*— When conditioned in a forced-draft oven maintained at $158 \pm 2^\circ\text{F}$ ($70 \pm 1^\circ\text{C}$) for 72 h, and bent at 90° over a 0.25 in. (6.4 mm) diameter mandrel, the specimen shall

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² *Annual Book of ASTM Standards*, Vol 04.03.