



Designation: ~~D6297 – 01 (Reapproved 2007)~~ **D6297 – 13**

~~Standard Specification for~~ **Standard Specification for Asphaltic Plug Joints for Bridges¹**

This standard is issued under the fixed designation D6297; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers the material, testing and application requirements for a field molded asphaltic plug joint (APJ) used in expansion joint sealing on asphalt concrete overlay and portland cement concrete decks. The scope of this specification is limited to field molded APJ. This molded element can consist of multilayer, or single layer, or both, application systems depending upon individual manufacturing requirements. The details of this specification are limited to the materials used in the application of APJ. It is recommended that a practical means of testing the watertightness aspects of the individual systems, either in the field or at the testing laboratory, be developed. When used on highway bridges, limits on maximum joint movements shall be specifically identified for each type of APJ. APJs should not be used for movement applications exceeding ± 25 mm from the installation width.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are provided for information only.

1.3 *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.*

2. Referenced Documents

2.1 *ASTM Standards:*²

~~A36/A36M Specification for Carbon Structural Steel~~

~~B209 Specification for Aluminum and Aluminum-Alloy Sheet and Plate~~

~~D5 Test Method for Penetration of Bituminous Materials~~

~~D36 Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)~~

~~D113 Test Method for Ductility of Bituminous Materials~~

~~D217 Test Methods for Cone Penetration of Lubricating Grease~~

~~D3405 Specification for Joint Sealants, Hot-Applied, for Concrete and Asphalt Pavements (Withdrawn 2002)~~³

~~D3407 Test Methods for Joint Sealants, Hot-Poured, for Concrete and Asphalt Pavements (Withdrawn 1996)~~³

~~D5167 Practice for Melting of Hot-Applied Joint and Crack Sealant and Filler for Evaluation~~

~~D5249 Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints~~

~~D5329 Test Methods for Sealants and Fillers, Hot-Applied, for Joints and Cracks in Asphaltic and Portland Cement Concrete Pavements~~

3. Terminology

3.1 *Acronyms:*

3.1.1 *APJ*—Asphaltic Plug Joint.

3.1.2 *AB*—Asphaltic Binder.

¹ This specification is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.32 on Bridges and Structures.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

4. Material

4.1 The AB shall be a thermoplastic polymeric-modified asphalt conforming to the physical properties in [Table 1](#).

4.2 Type of aggregate shall be one of the following: granite, basalt, gabbro, porphyry or gritstones. The specified aggregate shall be crushed, washed, and dried. Specific size and gradations of aggregate shall be agreed upon by the purchaser and APJ manufacturer. The aggregate shall be preweighed and packaged to avoid confusion on the jobsite. It shall be noted that specific sizes of aggregate may be proprietary to certain manufacturers.

4.3 The closed cell foam expansion joint filler shall be nongassing and capable of withstanding the elevated installation temperature ~~(+199°C)~~ (199°C) of the AB and meet Specification [D5249](#).

4.4 The steel bridging plate shall conform to Specification [A36/A36M](#) for mild steel or Specification ~~steel~~ [B209](#) for aluminum.

5. Physical Properties

5.1 The thermoplastic polymeric modified asphalt samples shall be melted for sample preparation in accordance to Practice [D5167](#).

5.2 The thermoplastic polymeric modified asphalt shall conform to the physical properties prescribed in [Table 1](#).

6. Dimensions and Tolerances

6.1 The size, shape, and dimensional tolerance shall be agreed upon by the purchaser and the producer or supplier. These tolerances shall be in compliance with the field construction specifications. The standard minimum blockout dimensions are 50 × 500 mm; however, it should be noted that values fluctuate depending on existing field conditions.

7. Procedure

7.1 The AB shall be heated to a temperature as specified by the manufacturer. The melter must be supplied with a continuous agitation system and calibrated thermometers.

7.2 The specified aggregate shall be heated to the manufacturer's prescribed temperature in a manufacturer's recommended mixer. The temperature of the specified aggregate shall be controlled by a digital temperature sensor.

7.3 The AB shall be blended with the heated aggregate at a ratio of aggregate to AB as specified by the manufacturer. The blend tolerance shall be ±5 % by weight. The minimum aggregate content shall be 68 % by weight.

TABLE 1 Physical Properties

	ASTM Standards	Required Physical Properties
Softening point, min	D36	83°C
Tensile adhesion, min	D5329	700 %
Ductility, min at 25°C (77°F)	D113	400 mm
Penetration	D3407	
Penetration	D5329	
Max at 25°C		
—(77°F) 150 g, 5 s		7.5 mm
(77°F) 150 g, 5 s		75 units
Low temperature penetration	9.1	
Low temperature penetration	9.1	
Min at -18°C (0°F) 200 g,		
—60 s		1.0 mm
60 s		10 units
Flow, max 5 h at 60°C (140°F)	D3407	3.0 mm
Flow, max 5 h at 60°C (140°F)	D5329	3.0 mm
Resiliency, min—max at 25°C (77°F)	D3407	40 - 70 %
Resiliency, min - max at 25°C (77°F)	D5329	40 - 70 %
Asphalt compatibility	D3407	Pass
Asphalt compatibility	D5329	Pass
Recommended installation		
Recommended application heating		182°C - 199°C
Temperature range		182°C - 199°C
Safe heating temperature range		199°C - 216°C
Temperature range		
Bond 3 Cycles at -7°C (+20°F),	D3405	Pass
Bond 3 Cycles at -7°C (+20°F),	D5329	Pass
100 % Elong		
100 % Elongation		
Flexibility, at -23°C (-10°F)	D5329	Pass
Flexibility, at -23°C (-10°F)	9.2	Pass