

Understanding ASTM Crack Sealant Specifications

Testing and Standards Explained

ASTM International is the leader in establishing testing and quality standards, especially in the construction industry. Some ASTM standards related to crack sealant are procedural/testing related. A brief description of these is in Table 1. Other ASTM standards are quality or result orientated, as is the case with ASTM D 6690. The quality ASTM standards relate to roads, highways and bridges. The standards are not applicable for driveways and parking lots. In 2000, ASTM discontinued the D 3405 and D 1190 specifications. They were replaced with D 6690. Although the 3405 & 1190 are formally discontinued, they are still being referred to. The current standard, D 6690, has 4 types associated with it, as outlined in Table 2.

Table 1: Understanding Crack Sealing Tests

Penetration (ASTM D 5329)	The higher the penetration test results the "softer" the crack sealant. For driveway and parking lot applications, it is best to have a low penetration test in order to withstand the elements of foot traffic, power steering and shopping carts.
Resiliency (ASTM D 5329)	Resiliency refers to the speed the crack sealant recovers after a foreign object is dislodged from it. The higher the number the more the material has recovered.
Flow (ASTM D 5329)	This measures how likely sealant is to move within the crack at 140°F. The higher the measurement, the more movement. A low test result is desirable, especially for use on sloped surfaces.
Softening Point (ASTM D 36)	A high softening point (anything over 200°F) is desirable when working on parking lots and driveways. Materials with a high softening point may take longer to melt.
Bond & Tensile Adhesion (ASTM D 5329)	The bond test measures the cohesion and adhesion of the crack sealant at low temperatures. The tensile adhesion tests these properties at room temperature.
Low Temperature Flexibility (ASTM D 3111 modified)	In cool/cold climates it is important to use a product with at least a 0°F low temperature flexibility. Choosing a material without low temperature flexibility in a cold climate may result in the crack sealant cracking in the winter months.
Viscosity (ASTM D 4402 / 2669)	The viscosity is a measurement of thickness at liquid stage. The higher the number, the thicker the material. Additions of recycled crumb rubber tend to increase viscosity. On a jobsite, it is difficult to use a higher viscosity product on thinner cracks.

Table 2: ASTM D 6690

	Type 1	Types 2 & 3	Type 4
Former Spec	1190	3405	3405 modified
Recommended Climate	Moderate	Moderate to Cold	Cold
Penetration	90 dmm Max	90 dmm Max	90 - 150 dmm
Resiliency	no spec	60 % Min	60 % Min
Flow	5.0 mm Max	3.0 mm Max	3.0 mm Max
Softening Point	176 F Min	176 F Min	176 F Min
Bond	0 F, 50% extension	-20 F, 50% extension &	-20 F, 200% extension
P&T Products' Material	Dura-Fill DUO, 1190, 1190 R, 1190 NR, 620	Dura-Fill 3405 3405 R, 3405 NR	Dura-Fill 3405 LM(M), 3405 LM(K), 3725

P&T Products

472 Industrial Parkway, Sandusky, Ohio 44870
(419) 621-1966 • Fax (419) 621-1988 • (877) 690-4093 • www.pntproducts.com

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