

SECTION 853 - HOT MELT BITUMEN ADHESIVE FOR RAISED PAVEMENT MARKER INSTALLATION

853.01 DESCRIPTION

This section covers the requirements for hot melt bitumen adhesive for use in bonding raised pavement markers complying with the requirements of AS 1906 Part 3, to bituminous and concrete road surfaces.

The requirements relate to physical properties and packaging.

853.02 PHYSICAL PROPERTIES

Hot melt bitumen adhesive is a homogeneous mixture of bitumen and mineral filler.

Component Properties

(a) Bitumen	Min.	Max.	Method
Penetration, 100 g, 5 s, 25°C		15	- ASTM D5
Viscosity, 135°C, Poise		12	- ASTM D2171
(b) Filler	Min.	Max.	Method
Filler content, % by dry mass of adhesive		65	75
Filler grading, % passing AS 0.150 mm sieve		100	
		85	

Adhesive Properties	Min.	Max.	Method
Softening Point, °C		100	116 ASTM D36
Penetration		7	16 ASTM D5
Flow, mm		-	5 ASTM D3407 as modified
Heat Stability Flow, mm		-	5 ASTM D3407 as modified
Viscosity, 205°C, Poise		-	75 ASTM D2669 as modified
Flash Point, C.O.C., °C		250	- ASTM D92
Shelf Life, years from date of delivery		2	-
Recommended Pouring Temperature, °C		185	220

Strength Requirements

Bond Strength Development

When tested in accordance with Appendix E of AS 3554 (as modified to allow use of hot melt adhesive), the adhesive shall attain a bond strength of 1.4 MPa within the times specified in Table 853.021.

Table 853.021 - Maximum Times for Bond Strength Development

Adhesive	(minutes)		
	Bond Curing at 23°C	Bond Curing at 10°C	Bond Curing at 0°C
Bitumen Hot Melt	35	35	35

Bond Strength in Slant Shear

When tested in accordance with Appendix F of AS 3554 (as modified to allow use of hot melt adhesive), the adhesive shall have minimum slant shear bond strengths as specified in Table 853.022.

Table 853.022 - Slant Shear Failure Stress

Substrate	Condition	Minimum Slant Shear Stress MPa
Dry Steel	Adhesive bond cured for 24 ± 2 h at $23^\circ\text{C} \pm 2^\circ\text{C}$	7
Dry Steel	Adhesive bond cured for 24 ± 2 h at $23^\circ\text{C} \pm 2^\circ\text{C}$ and water soaked for 7 days	6.7
Wet Hardened Concrete	Adhesive bond cured for 24 ± 2 h at $23^\circ\text{C} \pm 2^\circ\text{C}$	5
Wet Hardened Concrete	Adhesive bond cured for 24 ± 2 h at $23^\circ\text{C} \pm 2^\circ\text{C}$ and water soaked for 24 h	2.2
Wet Hardened Concrete	Adhesive bond cured for 24 ± 2 h at $23^\circ\text{C} \pm 2^\circ\text{C}$ and water soaked for 7 days	3

Bond Strength in Shear

When tested in accordance with Appendix G of AS 3554 (as modified to allow use of hot melt adhesive), the adhesive shall have a minimum bond strength in compressive shear as specified in Table 853.023.

Table 853.023 - Bond Strength in Shear

Substrate	Minimum Bond Strength in Compressive Shear MPa
All ceramic and reflective markers in accordance with AS 1906.3, Types A, B and A/B, dry or bond cured for 24 ± 2 h at $23 \pm 1^\circ\text{C}$ and 7 days soak	4.0

Bond Behaviour Under Impact Shear

When the adhesive is tested in accordance with Appendix H of AS 3554 (as modified to allow use of hot melt adhesive), there shall be no relative displacement of a slant shear block assembly when subjected to a drop impact energy of 150 J.

853.03 PACKAGING AND IDENTIFICATION

Each container shall display the following information:

- Manufacturer's Identification of Product
- Manufacturer's Name
- Supplier's Name
- Date of Manufacture
- Batch Number
- Directions for Using