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.

Filler content % by dry mass of adhesive 65 75

Filler grading % passing AS 0.150 mm sieve 100

% passing AS 0.075 mm sieve 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 (minutes)** | | | |
| **Adhesive** | **Bond Curing**  **at 23°C** | **Bond Curing**  **at 10°C** | **Bond Curing**  **at 0°C** |
| Bitumen Hot Melt | 35 | 35 | 35 |

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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°C ± 2°C | 7 |
| Dry Steel | Adhesive bond cured for 24 ± 2 h at 23°C ± 2°C  and water soaked for 7 days | 6.7 |
| Wet Hardened Concrete | Adhesive bond cured for 24 ± 2 h at 23°C ± 2°C | 5 |
| Wet Hardened Concrete | Adhesive bond cured for 24 ± 2 h at 23°C ± 2°C  and water soaked for 24 h | 2.2 |
| Wet Hardened Concrete | Adhesive bond cured for 24 ± 2 h at 23°C ± 2°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 ± 1°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

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