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| **State:** ILLINOIS | **Materials:** Re: Section 1032, Bituminous Materials |
| **Date Last Reviewed:** 02-25-2011 | **Web Address:** www.dot.il.gov |
| **Materials Engineer:** Matthew Mueller | **Contact Info:** Matthew.Mueller@illinois.gov |

**ASPHALT BINDER:**

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|---|---|---|
| 1032.06 (a) | **Description** | Shall be uniform in character, appearance and consistency. Shall be free from water and shall not foam when heated to any temperature below the actual flash point; comply with requirements. |
| 1032.06 (b) | **PMA's:** | Elastomers shall be added to base asphalt They shall be either SB diblock, or triblock co-polymer without oil extension or an SBR. Smooth, homogeneous and comply with requirements. |
| | **Exclusions:** | Air Blown, Other Modifiers, Acid Modification, Asphalt modification at Mixture Plants |

| **PROPERTY** | | **Test Method AASHTO or Other** | **Requirements by Performance Grade, PG (Common Grades) (Not Modified)** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | **46-28** | **52-28** | **58-28** | **58-22** | **64-28** | **64-22** | **70-22** |
| **ORIGINAL:** | | | | | | | | | |
| Flash Point, °C | | T 48 | 230 min. | | | | | | |
| Rotational Viscosity, Pa Xs | 135°C | T 316 | 3.0 max. | | | | | | |
| Dynamic Shear, kPa (G* /sin δ, 10 rad./sec.) | At grade temperature | T 315 | 1.0 min. | | | | | | |
| **RTFOT RESIDUE:** | | | | | | | | | |
| Mass Loss, % | | T 240 | 1.0 max. | | | | | | |
| Dynamic Shear, kPa (G* /sin δ, 10 rad./sec.) | At grade temperature | T 315 | 2.2 min. | | | | | | |
| **PAV RESIDUE:** (20 hrs; 300 psi) | | R 28 | 90°C | | 100°C | | | | |
| Dynamic Shear, kPa (G* Xsin δ, 10 rad./sec.) | At test temperature | T 315 | 5,000 max. | | | | | | |
| | | | 13°C | 16°C | 19°C | 22°C | | 25°C | 28°C |
| Creep Stiffness | At test temperature | T 313 | Stiffness 300 max. MPa & m Value 0.300 min. | | | | | | |
| | | | -18°C | | | -12°C | -18°C | -12°C | |
| Direct Tension, (1mm/min.), % Strain | | T 314 | No Requirement | | | | | | |
| **PG PLUS REQUIREMENTS:** No, see next page for PMA's. | | | | | | | | | |
| **Notes:** Specific gravity at 15.6°C data is required on all bills of lading. | | | | | | | | | |

**MODIFIED BINDERS - PG+ REQUIREMENTS:**

| PROPERTY | | Test Method AASHTO or Other | Requirements by Performance Grade, PG (Common Grades) (Modified) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Table 1 | | | | | Table 2 | | | | |
| | | | SB/SBS | | | | | SBR | | | | |
| | | | 64-28 | 70-22 | 70-28 | 76-22 | 76-28 | 64-28 | 70-22 | 70-28 | 76-22 | 76-28 |
| **ORIGINAL:** | | | | | | | | | | | | |
| Flash Point, ℃ | | T 48 | 230 min. | | | | | | | | | |
| Rotational Viscosity, Pa Xs | 135°C | T 316 | 3.0 max. | | | | | | | | | |
| Dynamic Shear, kPa (G* /sin δ, 10 rad./sec.) | At grade temperature | T 315 | 1.0 min. | | | | | | | | | |
| **RTFOT RESIDUE:** | | | | | | | | | | | | |
| Mass Loss, % | | T 240 | 1.0 max. | | | | | | | | | |
| Dynamic Shear, kPa (G* /sin δ, 10 rad./sec.) | At grade temperature | T 315 | 2.2 min. | | | | | | | | | |
| **PAV RESIDUE:** | | R 28 | 100°C; 20 hrs; 300 psi | | | | | | | | | |
| Dynamic Shear, kPa (G* Xsin δ, 10 rad./sec.) | At grade temperature | T 315 | 5,000 max. | | | | | | | | | |
| | | | 22°C | 28°C | 25°C | 31°C | 28°C | 22°C | 28°C | 25°C | 31°C | 28°C |
| Creep Stiffness | At grade temperature | T 313 | Stiffness 300 max. MPa & m Value 0.300 min. | | | | | | | | | |
| | | | -18°C | -12°C | -18°C | -12°C | -18°C | -12°C | -18°C | -12°C | -18°C | |
| Direct Tension, (1mm/min.), % Strain | | T 314 | No Requirement | | | | | | | | | |
| **PG PLUS REQUIREMENTS:** YES | | | | | | | | | | | | |
| **ORIGINAL:** | | | | | | | | | | | | |
| Separation of Polymer, °C (°F) SP Difference Top - Bottom | | IL DOT[1] | 2 (4) max. | | | | | | | | | |
| Force Ratio ($f_2 / f_1$) (50 mm / min., 300 mm elongation) | 4°C | T 300 | 0.30 min. | | | 0.35 min. | | Not Required | | | | |
| Toughness & Tenacity | Toughness, in-lbs. | ASTM D 5801 | Not Required | | | | | 12.5 (110) min. | | | | |
| | Tenacity, in-lbs | 25°C | | | | | | 8.5 (75) min. | | | | |
| **RTFOT RESIDUE:** | | | | | | | | | | | | |
| Elastic Recovery, % 100 mm Elongation | 25°C | ASTM D6084 (Procedure A) | 60 min. | | | 70 min. | | 40 min. | | | 50 min. | |

**Notes:**

1. Heat sample until sufficiently fluid to pour (avoid localized overheating). Strain the melted sample through 300 µm (50 mesh) and stir thoroughly. Pour 50 grams into thin wall aluminum tube having approx dimension of 25 mm diameter x 140 mm length. Place sealed tube vertically in oven @163 ± 6°C, allow to stand undisturbed for 48 ± 1 hr. Remove and immediately place vertically in freezer at -7 ± 6°C for a minimum of 4 hrs. Remove from freezer, cut tube into three equal lengths. Place top & bottom into marked beakers and heat in a 163°C ± 6°C oven until sufficiently fluid. Remove pieces of aluminum tube, stir thoroughly, follow AASHTO T 53 for SP determination