Table 1—Performance-Graded Asphalt Binder Specification

Performance Grade:	PG 46			PG 52							PG 58					PG 64					
	34	40	46	10	16	22	28	34	40	46	16	22	28	34	40	10	16	22	28	34	40
LTPPBind calculated max pavement design temp, °C[a]	<46			<52							<58					<64					
Min pavement design temperature, °C[a]	>–34	>–40	>–46	>–10	>–16	>–22	>–28	>–34	>–40	>–46	>–16	>–22	>–28	>–34	>–40	>–10	>–16	>–22	>–28	>–34	>–40
Original Binder																					
Flash point temp, T 48, min °C	230																				
Viscosity, T 316:[b] max 3 Pa•s, test temp, °C	135																				
Dynamic shear, T 315: G*/sind, min 1.00 kPa test temp @ 10 rad/s, °C	46			52							58					64					
Rolling Thin-Film Oven Residue (T 240)																					
Mass change,[c] max, percent	1.00																				
Dynamic shear, T 315: G*/sind, min 2.20 kPa test temp @ 10 rad/s, °C	46			52							58					64					
Pressurized Aging Vessel Residue (R 28)																					
PAV conditioning temperature, °C[d]	90			90							100					100					
Dynamic shear, T 315: G* sind,[e] max 6000 kPa d,[e] min 42° test temp @ 10 rad/s, °C	10	7	4	25	22	19	16	13	10	7	25	22	19	16	13	31	28	25	22	19	16
Creep stiffness, T 313:[f] S, max 300 MPa *m*-value, min 0.300 test temp @ 60 s, °C	–24	–30	–36	0	–6	–12	–18	–24	–30	–36	–6	–12	–18	–24	–30	0	–6	–12	–18	–24	–30
Direct tension, T 314:[f] Failure strain, min 1.0% test temp @ 1.0 mm/min, °C	–24	–30	–36	0	–6	–12	–18	–24	–30	–36	–6	–12	–18	–24	–30	0	–6	–12	–18	–24	–30

Performance Grade	PG 70						PG 76					PG 82				
	10	16	22	28	34	40	10	16	22	28	34	10	16	22	28	34
LTPPBind calculated max pavement design temperature, °C[a]	<70						<76					<82				
Min pavement design temperature, °C[a]	>–10	>–16	>–22	>–28	>–34	>–40	>–10	>–16	>–22	>–28	>–34	>–10	>–16	>–22	>–28	>–34
Original Binder																
Flash point temp, T 48, min °C	230															
Viscosity, T 316:[b] max 3 Pa•s, test temp, °C	135															

Continued on next page.

Table 1—Performance-Graded Asphalt Binder Specification *(Continued)*

Dynamic shear, T 315: G*/sin δ, min 1.00 kPa test temp @ 10 rad/s, °C	70						76					82				
Rolling Thin-Film Oven Residue (T 240)																
Mass change,[c] max, percent	1.00															
Dynamic shear, T 315: G*/sin δ, min 2.20 kPa test temp @ 10 rad/s, °C	70						76					82				
Pressurized Aging Vessel Residue (R 28)																
PAV conditioning temperature, °C[d]	100						100					100				
Dynamic shear, T 315: G* sin δ,[e] max 6000 kPa δ,[e] min 42° test temp @ 10 rad/s, °C	34	31	28	25	22	19	37	34	31	28	25	40	37	34	31	28
Creep stiffness, T 313:[f] S, max 300 MPa *m*-value, min 0.300 test temp @ 60 s, °C	0	–6	–12	–18	–24	–30	0	–6	–12	–18	–24	0	–6	–12	–18	–24
Direct tension, T 314:[f] Failure strain, min 1.0% test temp @ 1.0 mm/min, °C	0	–6	–12	–18	–24	–30	0	–6	–12	–18	–24	0	–6	–12	–18	–24

[a] Pavement temperatures are estimated from air temperatures using an algorithm contained in the LTPPBind program, or may be provided by the specifying agency.

[b] This requirement may be waived at the discretion of the specifying agency if the supplier warrants that the asphalt binder can be adequately pumped and mixed at temperatures that meet all applicable safety standards.

[c] The mass change shall be less than 1.00 percent for either a positive (mass gain) or a negative (mass loss) change.

[d] For climates with an LTPPBind high pavement temperature of 76°C or above, the PAV conditioning temperature shall be 110°C.

[e] If the intermediate temperature stiffness, G* sinδ, is below 5000 kPa, the phase angle minimum limit is not required. If the intermediate temperature stiffness, G* sinδ, is between 5000 and 6000 kPa, the intermediate phase angle minimum limit is required.

[f] If the creep stiffness is below 300 MPa, the direct tension test is not required. If the creep stiffness is between 300 and 600 MPa, the direct tension failure strain requirement can be used in lieu of the creep stiffness requirement. The *m*-value requirement must be satisfied in both cases.