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

Performance Grade:	PG 64						PG 70					
	10	16	22	28	34	40	10	16	22	28	34	40
LTPPBind calculated max pavement design temp, °C[b]	<64						<70					
Min pavement design temp, °C[b]	>–10	>–16	>–22	>–28	>–34	>–40	>–10	>–16	>–22	>–28	>–34	>–40
Original Binder												
Flash point temp, T 48, min °C	230											
Viscosity, T 316:[c] max 3 Pa•s, test temp, °C	135											
Dynamic shear, T 315: G*/sin d, min 1.00 kPa test temp @ 10 rad/s, °C	64						70					
Rolling Thin-Film Oven Residue (T 240)												
Mass change, max, percent[d]	1.00											
MSCR, T 350: Standard Traffic "S" $J_{nr3.2}$, max 4.5 kPa^{-1} J_{nrdiff}, max 75%[e] test temp, °C	64						70					
MSCR, T 350: Heavy Traffic "H" $J_{nr3.2}$, max 2.0 kPa^{-1} J_{nrdiff}, max 75%[e] test temp, °C	64						70					
MSCR, T 350: Very Heavy Traffic "V" $J_{nr3.2}$, max 1.0 kPa^{-1} J_{nrdiff}, max 75%[e] test temp, °C	64						70					
MSCR, T 350: Extremely Heavy Traffic "E" $J_{nr3.2}$, max 0.5 kPa^{-1} test temp, °C	64						70					
Pressurized Aging Vessel Residue (R 28)												
PAV conditioning temp, °C[f]	100						100					
Dynamic shear, T 315: "S" G* sin d,[g] max 6000 kPa d,[g] min 42° test temp @ 10 rad/s, °C	31	28	25	22	19	16	34	31	28	25	22	19
Dynamic shear, T 315: "H," "V," "E" G* sin d, max 6000 kPa test temp @ 10 rad/s, °C	31	28	25	22	19	16	34	31	28	25	22	19
Creep stiffness, T 313:[h] *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	–30
Direct tension, T 314:[h] Failure strain, min 1.0% test temp @ 1.0 mm/min, °C	0	–6	–12	–18	–24	–30	0	–6	–12	–18	–24	–30

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

Performance Grade:	PG 76					PG 82				
	10	16	22	28	34	10	16	22	28	34
LTPPBind calculated max pavement design temp, °C[b]	<76					<82				
Min pavement design temp, °C[b]	>–10	>–16	>–22	>–28	>–34	>–10	>–16	>–22	>–28	>–34
Original Binder										
Flash point temp, T 48, min°C	230									
Viscosity, T 316:[c] max 3 Pa•s, test temp, °C	135									
Dynamic shear, T 315: G*/sin d, min 1.00 kPa test temp @ 10 rad/s, °C	76					82				
Rolling Thin-Film Oven Residue (T 240)										
Mass change, max, percent[d]	1.00									
MSCR, T 350: Standard Traffic "S" $J_{nr3.2}$, max 4.5 kPa^{-1} J_{nrdiff}, max 75%[e] test temp, °C	76					82				
MSCR, T 350: Heavy Traffic "H" $J_{nr3.2}$, max 2.0 kPa^{-1} J_{nrdiff}, max 75%[e] test temp, °C	76					82				
MSCR, T 350: Very Heavy Traffic "V" $J_{nr3.2}$, max 1.0 kPa^{-1} J_{nrdiff}, max 75%[e] test temp, °C	76					82				
MSCR, T 350: Extremely Heavy Traffic "E" $J_{nr3.2}$, max 0.5 kPa^{-1} test temp, °C	76					82				
Pressurized Aging Vessel Residue (R 28)										
PAV conditioning temp, °C[f]	100					100				
Dynamic shear, T 315: "S" G* sin d,[g] max 6000 kPa d,[g] min 42° test temp @ 10 rad/s, °C	37	34	31	28	25	40	37	34	31	28
Dynamic shear, T 315: "H," "V," "E" G* sin d, max 6000 kPa test temp @ 10 rad/s, °C	37	34	31	28	25	40	37	34	31	28
Creep stiffness, T 313:[h] *S*, max 300 MPa *m*-value, min 0.300 test temp @ 60 s, °C	0	–6	–12	–18	–24	0	–6	–12	–18	–24
Direct tension, T 314:[h] Failure strain, min 1.0% test temp @ 1.0 mm/min, °C	0	–6	–12	–18	–24	0	–6	–12	–18	–24

a MSCR test on RTFO residue should be performed at the PG grade based on the environmental high pavement temperature. Grade bumping is accomplished by requiring a lower Jnr value while testing at the environmental temperature.

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

c 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.

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

e The J_{nrdiff} requirement shall not apply to asphalt binders having a Jnr3.2 value of 0.5 kPa–1 or lower at the selected test temperature.

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

g If the intermediate temperature stiffness, G* sin d, is below 5000 kPa, the phase angle minimum limit is not required. If the intermediate temperature stiffness, G* sin d, is between 5000 and 6000 kPa, the intermediate phase angle minimum limit is required.

h 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.

[1] Formerly AASHTO Provisional Standard MP 19. First published as a full standard in 2014.