



UNIVERSAL LINK AGENCY LTD.

Viscosity Grade

Bitumen is graded based on absolute viscosity at 60 °C or kinematic viscosity at 135 °C. The SI physical unit of dynamic viscosity is Poise and kinematic viscosity is expressed in Centistokes. Pure bitumen has been graded based on AASHTO-M226 and ASTM-D3381 standards.

Table 1-1: Technical Specifications of Pure Bitumen Based on Viscosity at 60 °C (AASHTO-M226)

	5/2 AC-	5 AC-	10 AC-	20 AC-	40AC-
Viscosity at 60 C	50±250	100±500	200±1000	400±2000	800±4000
Viscosity at 135 C	80	110	150	210	300
Penetration at 25 C, 100 grams, five seconds	200	120	70	40	20
	163	177	219	232	232
Solubility in trichloroethylene	0/99	0/99	0/99	0/99	0/99
Test on the residue of thin bitumen layer					
Viscosity at 60 C	1000	2000	4000	8000	16000
Ductility at 25 C, 5cm/min	≥100	100	50	20	10
Stain Test					
Naphtha Solvent	Negative				
Naphtha-Xylene Solvent, Xylene Percentage	Negative				
Naphtha-Xylene Solvent, Xylene Percentage	Negative				



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Table 1-2: Technical Specifications of Pure Bitumen Based on Viscosity at 60 °C (AASHTO-M226)

Viscosity						Test
40AC-	30AC-	20 AC-	10 AC-	5 AC-	5/2 AC-	
800±4000	600±3000	400±2000	200±1000	100±500	50±250	Viscosity at 60 C
400	350	300	250	175	125	Viscosity at 135 C
40	50	60	80	140	220	Penetration at 25 C, 100 grams, five seconds
232	232	232	219	177	163	Flash point, Cleveland open cup
0/99	0/99	0/99	0/99	0/99	0/99	Solubility in trichloroethylene
Test on the residue of thin bitumen layer						
5/0	5/0	5/0	5/0	0/1	-	Heating loss
16000	12000	8000	4000	2000	1000	Viscosity at 60 C
25	40	50	75	100	ω100	Ductility at 25 C, 5cm/min
Stain Test						
Negative						Naphtha Solvent
Negative						Naphtha-Xylene Solvent, Xylene Percentage
Negative						Naphtha-Xylene Solvent, Xylene Percentage



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Table 1-3: Technical Specifications of Pure Bitumen Based on Viscosity at 60 °C (AASHTO-M226)

Viscosity					Test
160AR-	80AR-	40AR-	20AR-	10AR-	
4000±16000	2000±8000	1000±4000	500±2000	250±1000	Viscosity at 60 C
550	400	275	200	140	Viscosity at 135 C
20	20	25	40	65	Penetration at 25 C, 100 grams, five seconds
52	50	45	40	-	Penetration at 25 C, 100 grams, five seconds. minimum
75	75	75	(2)100	(2)100	Ductility at 25 C, 5cm/min
Test on Primary Bitumen					
238	232	227	219	205	Flash point, Cleveland open cup
0/99	0/99	0/99	0/99	0/99	Solubility in trichloroethylene



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Table 1-4: Technical Specifications of Pure Bitumen Based on Viscosity at 60 °C (AASHTO-M226)

Viscosity					Test
40AC-	20AC-	10AC-	5AC-	5/2AC-	
800 ±4000	400 ±2000	200 ±1000	100 ±500	50 ±250	Viscosity at 60 C
300	210	150	110	80	Viscosity at 135 C
20	40	70	120	200	Penetration at 25 C, 100 grams, five seconds
232	232	219	177	163	Flash point, Cleveland open cup
0/99	0/99	0/99	0/99	0/99	Solubility in trichloroethylene
Test on Residue					
20000	10000	5000	2500	1250	Viscosity at 60 C
10	20	50	100	(1)100	Ductility at 25 C, 5cm/min



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Table 1-5: Technical Specifications of Pure Bitumen Based on Viscosity at 60 °C (AASHTO-M226)

Test	Viscosity					
	5/2AC-	5AC-	10AC-	20AC-	30AC-	40AC-
Viscosity at 60 C	50 ±250	100 ±500	200 ±1000	400 ±2000	600±3000	800 ±4000
Viscosity at 135 C	125	175	250	300	350	400
Penetration at 25 C, 100 grams, five seconds	220	140	80	60	50	40
Flash point, Cleveland open cup	163	177	219	232	232	232
Solubility in trichloroethylene	0/99	0/99	0/99	0/99	0/99	0/99
Test on the residue of thin bitumen layer						
Viscosity at 60 C	1250	2500	5000	10000	15000	20000
Ductility at 25 C, 5cm/min	(1)100	100	75	50	20	10



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Table 1-6: Technical Specifications of Pure Bitumen Based on Viscosity at 60 °C (AASHTO-M226)

Test on the residue of thin bitumen layer	Viscosity				
	1000AR-	2000AR-	4000AR-	8000AR-	16000AR-
Viscosity at 60 C	250 ±1000	500±2000	1000 ±4000	2000±8000	4000 ±16000
Viscosity at 135 C	140	200	275	400	550
Penetration at 25 C, 100 grams, five seconds	65	40	25	20	20
Penetration at 25 C, 100 grams, five seconds. minimum		40	45	50	52
Ductility at 25 C, 5cm/min	(1)100	(2)100	75	75	75
Test on residue					
Flash point, Cleveland open cup	205	219	227	232	238
Solubility in trichloroethylene	0/99	0/99	0/99	0/99	0/99