

BITUMEN

Domestic and international Supplier

SPECIFICATION

PRODUCTS

Air Blowing Bitumen

Penetration Grade
Performance Grade (PG)
Viscosity Grade (VG)

Australian Standard

Cutback Bitumen - Medium Curing

Bitumen Emulsion

Modified bitumen

Customized Bitumen

Performance Grade (PG)

PG 52 - 28
PG 52 - 22
PG 52 - 16
PG 52 - 10
PG 58 - 22
PG 58 - 16
PG 58 - 10
PG 64 - 22
PG 64 - 16
PG 64 - 10
PG 70 - 22
PG 70 - 16
PG 70 - 10
PG 76 - 10

Cutback Bitumen

MC - 30
MC - 70
MC - 250
MC - 800
MC - 3000

Australian Standard

170 WA
C 170
C 240
C 330
C 450
C 600

Viscosity Grade (VG)

VG 10
VG 20
VG 30
VG 40

Air Blowing Bitumen

ASTM/AASHTO

40/50
60/70
85/100
120/150
200/300

EN

30/45
35/50
40/60
50/70
70/100
100/150
160/220

Bitumen Emulsion

Cationic

Slow set (55)
Medium set (M5)
Rapid set (RS)
Quick set (QS)

Anionic

Slow set (55)
Medium set (M5)
Rapid set (RS)
Quick set (QS)

Requirement for Asphalt cement ASTM D946

Product Specification Bitumen 40-50

Air Blowing Bitumen	
ASTM/AASHTO	EN
40/50	30/45

Analysis	Unit	Limit	Test Method
Density @ 25°C	Kg/m ³	1010-1060	ASTM D70 or D3289
Penetration @ 25°C	mm/10	40-50	ASTM D5
Softening point	°C	49 min	ASTM D36
Ductility @ 25°C	cm	100 min	ASTM D113
Loss on heating	wt%	0.2 max	ASTM D6
Drop in penetration after heating	%	20 max	ASTM D5
Flash point	°C	230 min	ASTM D92
Solubility in Trichloroethylene	wt%	99.0 min	ASTM D2042
Spot test	----	Negative	AASHTO T102
Dynamic Viscosity @ 60°C	Pa.S	400±80	ASTM D2171
Kinematic Viscosity @ 135°C	cSt	400 min	ASTM D2170
Wax Content	%	2 max	DIN EN 12606-1

Tests on residue from thin film oven Test (ASTM D1754)

Retained Penetration after (T.F.O.T), %	%	55 min	ASTM D5
Viscosity @ 60°C	Pa.S	2000 max	ASTM D2171

Requirement for Asphalt cement ASTM D946

Product Specification Bitumen 60-70

Air Blowing Bitumen

ASTM/AASHTO	EN
60/70	35/50

Analysis	Unit	Limit	Test Method
Density @ 25°C	Kg/m ³	1010-1060	ASTM D70 or D3289
Penetration @ 25°C	mm/10	60-70	ASTM D5
Softening point	°C	46 min	ASTM D36
Ductility @ 25°C	cm	100 min	ASTM D113
Loss on heating	wt%	0.2 max	ASTM D6
Drop in penetration after heating	%	20 max	ASTM D5
Flash point	°C	230 min	ASTM D92
Solubility in Trichloroethylene	wt%	99.0 min	ASTM D2042
Spot test	----	Negative	AASHTO T102
Dynamic Viscosity @ 60°C	Pa.S	200±40	ASTM D2171
Kinematic Viscosity @ 135°C	cSt	300 min	ASTM D2170
Wax Content	%	2 max	DIN EN 12606-1

Tests on residue from thin film oven Test (ASTM D1754)

Retained Penetration after (T.F.O.T), %	%	52 min	ASTM D5
Ductility, (25°C), 5cm/min, cm after TFOT	cm	50 min	ASTM D113
Viscosity @ 60°C	Pa.S	1000 max	ASTM D2171

Requirement for Asphalt cement ASTM D946

Product Specification Bitumen 85-100

Air Blowing Bitumen	
ASTM/AASHTO	EN
85/100	40/60

Analysis	Unit	Limit	Test Method
Density @ 25°C	Kg/m ³	1010-1050	ASTM D70 or D3289
Penetration @ 25°C	mm/10	85-100	ASTM D5
Softening point	°C	42 min	ASTM D36
Ductility @ 25°C	cm	100 min	ASTM D113
Loss on heating	wt%	0.5 max	ASTM D6
Drop in penetration after heating	%	20 max	ASTM D5
Flash point	°C	230 min	ASTM D92
Solubility in Trichloroethylene	wt%	99.0 min	ASTM D2042
Spot test	----	Negative	AASHTO T102
Dynamic Viscosity @ 60°C	Pa.S	100±20	ASTM D2171
Kinematic Viscosity @ 135°C	cSt	250 min	ASTM D2170
Wax Content	%	2 max	DIN EN 12606-1

Tests on residue from thin film oven Test (ASTM D1754)

Retained Penetration after (T.F.O.T), %	%	47 min	ASTM D5
Ductility, (25°C), 5cm/min, cm after TFOT	cm	75 min	ASTM D113
Viscosity @ 60°C	Pa.S	500 max	ASTM D2171

Requirement for Asphalt cement ASTM D946

Product Specification Bitumen 120-150

Air Blowing Bitumen	
ASTM/AASHTO	EN
120/150	50/70

Analysis	Unit	Limit	Test Method
Density @ 25°C	Kg/m ³	1000-1050	ASTM D70 or D3289
Penetration @ 25°C	mm/10	120-150	ASTM D5
Softening point	°C	37 min	ASTM D36
Ductility @ 25°C	cm	100 min	ASTM D113
Loss on heating	wt%	0.5 max	ASTM D6
Drop in penetration after heating	%	20 max	ASTM D5
Flash point	°C	220 min	ASTM D92
Solubility in Trichloroethylene	wt%	99.0 min	ASTM D2042
Spot test	----	Negative	AASHTO T102
Dynamic Viscosity @ 60°C	Pa.S	45±9	ASTM D2171
Kinematic Viscosity @ 135°C	cSt	170 min	ASTM D2170
Wax Content	%	2 max	DIN EN 12606-1

Tests on residue from thin film oven Test (ASTM D1754)

Retained Penetration after (T.F.O.T), %	%	42 min	ASTM D5
Ductility, (25°C), 5cm/min, cm after TFOT	cm	100 min	ASTM D113
Viscosity @ 60°C	Pa.S	225 max	ASTM D2171

Requirement for Paving Grade Bitumen EN 12591

Product Specifications

Characteristic	Unit	35-50	50-70	70-100	100-150	160-220	Test Method
Penetration @ 25°C	dmm	35-50	50-70	70-100	100-150	160-220	EN 1426
Softening Point	°C	50-58	46-54	43-51	39-47	35-43	EN 1427
Resistance to Hardening @163°C							
Retained Penetration	%	53 min	50 min	46 min	43 min	37 min	EN 12607-1
Change of Mass	%	0.5 max	0.5 max	0.8 max	0.8 max	1.0 max	
Flash Point	°C	240 min	230 min	230 min	230 min	220 min	EN ISO 2592
Solubility	%	99.0 min	99.0 min	99.0 min	99.0 min	99.0 min	EN 12592
Penetration Index	-	-1.5 to+0.7	-1.5 to+0.7	-1.5 to+0.7	-1.5 to+0.7	-1.5 to+0.7	EN 12591- Annex A
Dynamic Viscosity @ 60°C	Pa.S	225 min	145 min	90 min	55 min	30 min	EN 12596
Fraass Breaking Point	°C	-5 max	-8 max	-10 max	-12 max	-15 max	EN 12593
Kinematic Viscosity @ 135°C	cSt	370 min	295 min	230 min	175 min	135 min	EN 12595

Requirement for Asphalt cement SM GOST 22245-90

Product Specification Bitumen 60-90

Specifications	60-90	Test Method
Specific Gravity	1.00-1.25	ASTM D3289
Penetration (25°C, 100g,°C)	60-90	ASTM D5
Softening Point, °C	40-60	ASTM D36
Flash Point, °C	min 230	ASTM D92
Ducility (25°C, 5cm/min,cm)	min 100	ASTM D113
Solubility in TCE, wt%	min 99.5	ASTM D4
Spot Test	negative	AASHTO T102
Loss on heating, wt%	max 0.03	ASTM D6

Requirement for Paving Grade Bitumen EN 12591

Product Specifications

The purpose of producing functional classification bitumens is by considering their application based on environmental conditions, Climate effects, Construction, The load is applied during construction, and the amount of traffic.

Benefits

- Increase elasticity
- Increasing the service range in terms of temperature
- Increased stress resistance
- Increase user life
- Reduce thermal sensitivity
- Reduce road damage

Performance Grade (PG)

PG 52 - 28	PG 58 - 16	PG 70 - 22
PG 52 - 22	PG 58 - 10	PG 70 - 16
PG 52 - 16	PG 64 - 22	PG 70 - 10
PG 52 - 10	PG 64 - 16	PG 76 - 10
PG 58 - 22	PG 64 - 10	

Performance Grade	PG52			PG58			PG64			PG70		PG76	Test Method	
	10	16	22	10	16	22	10	16	22	10	16	10		
Average 7-dat maximum Pavement Design Temperature,*c	.52			.58			.64			<70		<76		
minimum Pavement Design Temperature, *c	>-10	>-16	>-22	>-10	>-16	>-22	>-10	>-16	>-22	>-10	>-16	>-10		
	Original Blinder													
Flash Point Temperature Minimum *c	230													AASHTO T48
Viscosity maximum 3 Pa.s, Test Temperature, *c	135													AASHTO T316
Dynamic shear G*/sin minimum 1 KPa Test Temperature, *c	52			58			64			70		76	AASHTO T315	
	Rolling Thin Film Oven Test												AASHTO T240	
Mass change maximum percent	1.00													
Dynamic Shear G*/sin Minimum 2.2 KPa Test Temperature @ 10 rad/s *c	52			58			64			70		76	AASHTO T315	
	Pressure Aging Vessel												AASHTO R28	
PAV aging Temperature, *c	90			100			100			100(110)		100(110)		
Dynamic Shear G*.sin maximum 5000KPa Test Temperature @10 rad/s *c	25	22	19	28	25	22	31	28	25	34	31	37	AASHTO T315	
Creep Stiffness S maximum 300 Mpa m-value minimum 0.300 Test Temperature @ 60s *c	0	-6	-12	0	-6	-12	0	-6	-12	0	-6	0	AASHTO T313	
Direct Tension Failure strain minimum 1% Test Temperature @ 1 mm/min, *c	0	-6	-12	0	-6	-12	0	-6	-12	0	-6	0	AASHTO T314	
Critical low cracking Temperature Critical cracking determined by PP42 Test Temperature	0	-6	-12	0	-6	-12	0	-6	-12	0	-6	0	AASHTO PP42	

Confirms to BIS (IS 73:2006) Specifications

Product Specification Viscosity Grade Bitumen

Viscosity Grade (VG)

VG 10
VG 20
VG 30
VG 40

Traditionally, paving bitumen have been specified in terms of their penetration, but the measurement of viscosity provides a more accurate method of specifying binder consistency and a more effective method of determining the temperature susceptibility of the bitumen. American Association of State Highway Officials (AASHTO) has two series of viscosity grade bitumen. One is denoted AC (asphalt cement), followed by a number indicating the viscosity in hundreds of poises at 60 C. The second series is denoted AR (aged residue) followed by a number indicating the viscosity in poises (not hundreds of poises) at 60 C after the bitumen has been aged

Specifications	VG 40	VG 30	VG 20	VG 10	Test Method
Absolute Viscosity at 60°C, Poises	Min. 3200	Min. 2400	Min. 1600	Min. 800	IS 1206 (Part 2)
Kinematic Viscosity at 135°C, cSt	Min. 400	Min. 350	Min. 300	Min. 250	IS 1206 (Part 3)
Flash Point (Cleveland Open Cup),°C	Min. 220	Min. 220	Min. 220	Min. 220	IS 1209
Solubility in trichloroethylene, %	Min. 99	Min. 99	Min. 99	Min. 99	IS 1206
Softening Point (R&B),°C	Min. 50	Min. 47	Min. 45	Min. 40	IS 1205
Penetration @ °C(100g, 5 sec.) 0.1mm	40-60	50-70	60-80	80-100	IS 1203

Tests on residue from thin film oven Tests/RTFOT

i)Viscosity ratio at 60°C	Max. 4.0	Max. 4.0	Max. 4.0	Max. 4.0	IS 1206 (Part 2)
ii) Ductility at 25 °C, cm, after thin film oven test	Min. 25	Min. 40	Min. 50	Min. 75	IS 1208
Specific Gravity @ 27/27°C	Min. 0.99	Min. 0.99	Min. 0.99	Min. 0.99	IS 1202

Requirement for Cationic Emulsified Asphalt ASTM D2397

Product Specification Bitumen Emulsions

Specification of Cationic Bitumen Emulsions	Quick Setting		Rapid Setting			
	CQS_1h		CRS_1		CRS_2	
	Min	Max	Min	Max	Min	Max
Test on emulsions :						
Viscosity, Saybolt Furol at 25°C SFs	20	100	-	-	-	-
Viscosity, Saybolt Furol at 50°C SFs	-	-	20	100	20	400
Storage Stability test, 24 - h, %A	-	1	-	1	-	1
Demulsibility, 35 mL, 0.8 % dioctyl sodium	-	-	40	-	40	-
Test on emulsions :	Positive		Positive		Positive	
Sieve test, %A	-	0.1	-	0.1	-	0.1
Cement mixing test, %	-	N/A	-	-	-	-
Coating ability and water resistance						
Coating, dry aggregate	-	-	-	-	-	-
Coating, after spraying	-	-	-	-	-	-
Coating, wet aggregate	-	-	-	-	-	-
Coating, after spraying	-	-	-	-	-	-
Distillation						
Oil distillate, by volume of emulsion, %	-	-	-	3	-	3
Residue, %	57	-	60	-	65	-
Tests on residue from distillation test:						
Penetration, 25°C, 100g, 5s	40	90	100	250	100	250
Ductility, 25°C, 5cm/min, cm	40	-	40	-	40	-
Solubility in trichloroethylene, %	97.5	-	97.5	-	97.5	-

Requirement for Cationic Emulsified Asphalt ASTM D2397

Product Specification Bitumen Emulsions

Specification of Cationic Bitumen Emulsions	Medium-Setting				Slow Setting			
	CMS-2		CMS-2h		CSS_1		CSS_1h	
	Min	Max	Min	Max	Min	Max	Min	Max
Test on emulsions :								
Viscosity, Saybolt Furol at 25°C SFs	-	-	-	-	20	100	20	100
Viscosity, Saybolt Furol at 50°C SFs	50	450	50	450	-	-	-	-
Storage Stability test, 24 - h, %A	-	1	-	1	-	1	-	1
Demulsibility, 35 mL, 0.8 % dioctyl sodium	-	-	-	-	-	-	-	-
Test on emulsions :	Positive		Positive		Positive		Positive	
Sieve test, %A	-	0.1	-	0.1	-	0.1	-	0.1
Cement mixing test, %	-	-	-	-	-	2	-	2
Coating ability and water resistance								
Coating, dry aggregate	good	-	good	-	-	-	-	-
Coating, after spraying	fair	-	fair	-	-	-	-	-
Coating, wet aggregate	fair	-	fair	-	-	-	-	-
Coating, after spraying	fair	-	fair	-	-	-	-	-
Distillation								
Oil distillate, by volume of emulsion, %	-	12	-	12	-	-	-	-
Residue, %	65	-	65	-	57	-	57	-
Tests on residue from distillation test:								
Penetration, 25°C, 100g, 5s	100	250	40	90	100	250	40	90
Ductility, 25°C, 5cm/min, cm	40	-	40	-	40	-	40	-
Solubility in trichloroethylene, %	97.5	-	97.5	-	97.5	-	97.5	-

Requirement for Cutback Asphalt (Medium-Curing Type) ASTM D2027

Product Specification Cutback Bitumen MC

Cutback Bitumen

MC- 30
MC - 70
MC - 250
MC - 800
MC - 3000

Cutback bitumen is a range of binders that are produced by blending (mixing) penetration grade bitumen and a hydrocarbon solvent, such as paraffin or mineral turpentine.

When the solvent has evaporated, the binder returns to its original penetration grade to tie the particles together. Cutback bitumen gets its name from the solvent that is involved in the process, because the solvent "cuts back" or evaporates, leaving behind the binder to "get on with the job".

Specifications	MC-30		MC-70		MC-250		MC-800		MC- 3000	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Kinematic Viscosity at 60°C[140°F],mm ² /s	30	60	70	140	250	500	800	1600	3000	6000
Flash point (Tag oprn-cup), °C[°F]	38[100]	.....	38[100]	.....	66[150]	.....	66[150]	.....	66[150]	.....
Distillate test:										
Distillate, volume percent of total distillate to 360°C[680°F]										
to 225°C[437°F]	.....	35	.....	25	.....	20	.....	.....	.....	.....
to 260°C[500°F]	30	75	10	70	5	55	.....	40	.....	15
to 316°C[600°F]	75	95	65	93	60	90	45	85	15	75
Residue from distillation to 360°C [680°F], percent volume by differences	50	.....	55	.....	67	.....	75	.....	80	.....
Tests on residue from distillation:										
Viscosity at 60°C[140°F], Pa.s ^A	30	120	30	120	30	120	30	120	30	120
Ductility at 25°C[77°F], cm	100	.....	100	.....	100	.....	100	.....	100	.....
Solubility in trichloroethylene,	99.0%	.....	99.0%	.....	99.0%	.....	99.0%	.....	99.0%	.....
Water, %	.....	0.2	.....	0.2	.....	0.2	.....	0.2	.....	0.2

Instead of viscosity of the residue, the specifying agency, at its option, can specify penetration 100g: 5s at 25°C [77°F] of 120 to 300 for Grades MC-30, MC70, and MC-250, and 120 to 250 for MC-800 and MC-3000. However, in no case will oth be required.

Note 1- If the ductility at 25°C [77°F] is less than 100, the material will be acceptable if its ductility at 25°C [59°F] is more than 100.



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VALUES

- Applying ethics, discipline, honesty, trust, creativity, team work, surety, speed, and accuracy in achieving performance.
- Building quality, efficiency and competitiveness in the future.
- Satisfying customers, shareholders, employees, principals, partners, and public.



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