BITUMEN SUPPLIES & SERVICES

THE BITUMEN PROFESSIONALS

MOWAMI CONSULTING

BITUMEN

PRODUCT SPECIFIATIONS

35/50 PENETRATION GRADE BITUMEN

Penetration Grade Bitumen

DESCRIPTION

35/50 Penetration Grade Bitumen is produced from the vacuum distillation of crude oil and is classified according to its penetration range.

USES

35/50 Penetration Grade Bitumen is used in the manufacture of the hotmix asphalt for base courses and wearing courses.

PROPERTIES

35/50 Penetration Grade Bitumen is a thermoplastic material which softens gradually as it is heated and hardens as it is cooked. This unique temperature/viscosity relationship is important when determining its performance parameters and tion temperatures. Unlike modified binders, penetration grade bitumen acts as a Newtonian fluid at high in-service temperatures, which allows one to establish a temperature/viscosity relationship.

SPECIFICATIONS

35/50 Penetration Grade Bitumen conforms to the AASHTO standards specification for penetration grade bitumen:

PROPERTY	UNITS	REQUIREMENT		TEST METHOD
		MIN	MAX	
Penetration @ 25°C/100g/5sec	0.1mm	35	50	ASTM D5
Softening point	°C	49	59	ASTM D36
Ductility @ 10°C	Cm	100	-	ASTM D113
RT Duct 15	Cm	10	-	ASTM D 113
RTFOT LOH	%	-	0.30	ASTM D 2572
Viscosity @ 60°C	Pa.s	220	-	ASTM D4402+
Viscosity @ 135°C	Pa.s	0.27	0.65	ASTM D4402+
RTFOT Softening point	°C	52	-	ASTM D36*
RTFOTD mass change	%	-	0.3	ASTM D2872
Xylene	%	-	30	AASHTO-T102

DIRECTIONS FOR USE

Recommended storage and handling criteria for **35/50 Penetration Grade Bitumen**

40/50 PENETRATION GRADE BITUMEN

Penetration Grade Bitumen

DESCRIPTION

40/50 Penetration Grade Bitumen is produced from the vacuum distillation of crude oil and is classified according to its penetration range.

USES

40/50 Penetration Grade Bitumen is used in the manufacture of the hotmix asphalt for base courses and wearing courses.

PROPERTIES

40/50 Penetration Grade Bitumen is a thermoplastic material which softens gradually as it is heated and hardens as it is cooked. This unique temperature/viscosity relationship is important when determining its performance parameters and application
Unlike modified binders, penetration grade bitumen acts as a Newtonian fluid at high in-service temperatures, which allows one to establish a temperature/viscosity relationship.

SPECIFICATIONS

40/50 Penetration Grade Bitumen conforms to the AASHTO standards specification for penetration grade bitumen:

PROPERTY	UNITS	REQUIREMENT		TEST METHOD
		MIN	MAX	
Penetration @ 25°C/100g/5sec	0.1mm	40	50	ASTM D5
Softening point	°C	52	60	ASTM D36
Ductility @ 25°C	Cm	100	-	ASTM D113
Loss on heating	Wt%	-	0.2	ASTM D6
Flash point	°C	232	-	ASTM D92
Viscosity @ 60°C	Pa.s	3200	4800	ASTM D2171
Viscosity @ 135°C	cSt	400	-	ASTM D2170
RTFOTD mass change	%	-	±0.8	ASTM D2872

DIRECTIONS FOR USE

Recommended storage and handling criteria for **40/50 Penetration Grade Bitumen**

40/60 PENETRATION GRADE BITUMEN

Penetration Grade Bitumen

DESCRIPTION

40/60 Penetration Grade Bitumen is produced from the vacuum distillation of crude oil and is classified according to its penetration range.

USES

40/60 Penetration Grade Bitumen is used in the manufacture of the hotmix asphalt for base courses and wearing

PROPERTIES

40/60 Penetration Grade Bitumen is a thermoplastic material which softens gradually as it is heated and hardens as it is cooked. This unique temperature/viscosity relationship is important when determining its performance parameters and application temperatures. Unlike modified binders, penetration grade bitumen acts as a Newtonian fluid at high in-temperatures, which allows one to establish a temperature/viscosity relationship.

SPECIFICATIONS

40/60 Penetration Grade Bitumen conforms to the AASHTO standards specification for penetration grade bitumen:

PROPERTY	UNITS	REQUIREMENT		TEST METHOD
		MIN	MAX	
Penetration @ 25°C/100g/5sec	0.1mm	40	60	ASTM D5
Softening point	°C	49		ASTM D36
Ductility @ 25°C,	Cm	100	-	ASTM D113
Penetration index PI	-	-1.5	+1.0	T0604
Wax content,	%	-	2.2	T0615
Flash Point,	°C	240	-	T0611
Solubility (15°C)	%	99.5%	-	T0607
Density (15°C)	g/cm3	Spot test	-	T0603
RTFOTD Mass Change	%	-	+/-0.8	T0609
Ductility@25°C	Cm	80	-	T0605

DIRECTIONS FOR USE

Recommended storage and handling criteria for **40/60 Penetration Grade Bitumen**

50/70 PENETRATION GRADE BITUMEN

Penetration Grade Bitumen

DESCRIPTION

50/70 Penetration Grade Bitumen is produced from the vacuum distillation of crude oil and is classified according to its penetration range.

USES

50/70 Penetration Grade Bitumen is used in the manufacture of the hotmix asphalt for base courses and wearing courses.

PROPERTIES

50/70 Penetration Grade Bitumen is a thermoplastic material which softens gradually as it is heated and hardens as it is cooked. This unique temperature/viscosity relationship is important when determining its performance parameters and application
Unlike modified binders, penetration grade bitumen acts as a Newtonian fluid at high in-service temperatures, which allows one to establish a temperature/viscosity relationship.

SPECIFICATIONS

50/70 Penetration Grade Bitumen conforms to the SANS 4001-BTI1:2012 specification for penetration grade bitumen:

BINDER PROPERTIES	50/70 REQUIREMENTS		TEST METHOD
	MIN	MAX	
Before Ageing			
Penetration @ 25°C?100g/5s, 1/10mm	50	70	EN 1426
Softening point, °C	46	56	ASTM D 36
Dynamic Viscosity @ 60°C, Pa.s	46	56	ASTM D 4402
Dynamic Viscosity @150°C, Pa.s	46	56	ASTM D 4402
After ageing (RTFO)			
Mass change % m/m	-	0.3	ASTM D 2872
Dynamic viscosity @ 60°C, % of original, Pa.s	-	300	ASTM D 4402
Softening point, °C	48	-	ASTM D 36
Increase in softening point, °C	-	7	ASTM D 36
Retained penetration, % of original	55	-	EN 1426
Spot test, % xylene	-	30	AASHTO T102

DIRECTIONS FOR USE

Recommended storage and handling criteria for **50/70 Penetration Grade Bitumen**

60/70 PENETRATION GRADE BITUMEN

Penetration Grade Bitumen

DESCRIPTION

60/70 Penetration Grade Bitumen is produced from the vacuum distillation of crude oil and is classified according to its penetration range.

USES

60/70 Penetration Grade Bitumen is used in the manufacture of the hotmix asphalt for base courses and wearing

PROPERTIES

60/70 Penetration Grade Bitumen is a thermoplastic material which softens gradually as it is heated and hardens as it is cooked. This unique temperature/viscosity relationship is important when determining its performance parameters and application temperatures. Unlike modified binders, penetration grade bitumen acts as a Newtonian fluid at high in-temperatures, which allows one to establish a temperature/viscosity
relationship.

SPECIFICATIONS

60/70 Penetration Grade Bitumen conforms to the AASHTO standards specification for penetration grade bitumen:

PROPERTY	UNITS	REQUIREMENT		TEST METHOD	OTHER
		MIN	MAX		
Penetration @ 25°C/100g/5sec	0.1mm	60	70	ASTM D5	
Softening point	°C	49	56	ASTM D36	
Ductility @ 10°C	Cm	100	-	ASTM D113	
RT Duct 15	Cm	10	-	ASTM D 113	
RTFOT LOH	%	-	0.30	ASTM D 2572	
Viscosity @ 60°C	Pa.s	140	250	ASTM D4402+	
Viscosity @ 135°C	Pa.s	0.22	0.45	ASTM D4402+	
RTFOT Softening point	°C	48	-	ASTM D36*	
RTFOTD Softening point	°C	-	7	CALC	
Xylene	%	-	30	AASHTO-T102	

DIRECTIONS FOR USE

Recommended storage and handling criteria for **60/70 Penetration Grade Bitumen**

60/70
Penetration Grade 60/70

PRODUCT DATA SHEET:

PROPERTY	UNITS	REQUIREMENT		TEST METHOD	OTHER	RESULTS
		MIN	MAX			
Penetration @ 25°C/100g/5sec	0.1mm	60	70	ASTM D5		65.3
Softening point	°C	49	56	ASTM D36		49.3
Ductility @ 10°C	Cm	100	-	ASTM D113		>100
RT Duct 15	Cm	10	-	ASTM D 113		100
RTFOT LOH	%	-	0.30	ASTM D 2572		0.08
Viscosity @ 60°C	Pa.s	140	250	ASTM D4402+		201
Viscosity @ 135°C	Pa.s	0.22	0.45	ASTM D4402+		0.38
RTFOT Softening point	°C	48	-	ASTM D36*		54
RTFOTD Softening point	°C	-	7	CALC		4
Xylene	%	-	30	AASHTO-T102		25

70/100

Penetration Grade 70/100

PRODUCT DATA SHEET

PROPERTY	UNITS	REQUIREMENT		TEST METHOD	OTHER	RESULTS
		MIN	MAX			
Penetration @ 25°C/100g/5sec	0.1mm	70	100	ASTM D5	IP 49	
Softening point (Ring & ball)	°C	42	51	ASTM D36		
Ductility @ 10°C	Cm	100	-		DIN 52013	
Spot Test	% Xylene	-	30		AASHO-T102	1
Viscosity @ 60°C	Pa.s	75	150	D4402		
Viscosity @ 135°C	Pa.s	0.15	0.40	D4402		
AFTER RTFOT						
Mass Change	Mass%	-	0.3	D2872		
Viscosity @ 60°C	% Original	-	300	D4402		
Ductility @ 10°C	Cm	5	-			
Softening point (Ring & Ball)	°C	44	-	ASTM D36		
Increase in Softening point	°C	-	7	ASTM D36		
Retained penetration	% original	50	-	ASTM D5	IP49	

Notes:

To be reported in units of five (5)

The maximum and minimum loading temperatures are 165 and 140°C, respectively

The implementation date for the new specifications is 05 May 1997

80/100

Penetration Grade 80/100

PRODUCT DATA SHEET

PROPERTY	UNITS	REQUIREMENT		TEST METHOD	OTHER
		MIN	MAX		
Penetration @ 25°C/100g/5sec	0.1mm	80	100	ASTM D5	IP 49
Softening point (Ring & ball)	°C	42	51	ASTM D36	
Ductility @ 10°C	Cm	100	-		DIN 52013
Spot Test	% Xylene	-	30		AASHO-T102
Viscosity @ 60°C	Pa.s	75	150	D4402	
Viscosity @ 135°C	Pa.s	0.15	0.40	D4402	
AFTER RTFOT					
Mass Change	Mass%	-	0.5	D2872	
Viscosity @ 60°C	% Original	-	300	D4402	
Ductility @ 10°C	Cm	5	-		DIN52013
Softening point (Ring & Ball)	°C	44	-	ASTM D36	
Increase in Softening point	°C	-	9	ASTM D36	
Retained penetration	% original	50	-	ASTM D5	IP49

Notes:

To be reported in units of five (5)

The maximum and minimum loading temperatures are 165 and 140°C, respectively

The implementation date for the new specifications is 05 May 1997