EN eBooks

Updated Oct. - 2024

IRANIAN BITUMEN INDUSTRY AND TRADE MANUFACTURING COMPANY

IRAN
BITUMEN SUPPLY

REFINERY-DIRECT IRANIAN

BITUMEN

BITUMEN REDESIGNED
SUSTAINABLE

www.iranbitumensupply.com

EN eBooks

About Us

CRMB
CRUMB RUBBER MODIFIED BITUMEN

PMB
POLYMER MODIFIED BITUMEN

PG Bitumen
PERFORMANCE GRADE BITUMEN

PEN
PENETRATION GRADE BITUMEN

VG
VICOSITY GRADE BITUMEN

MC
CUTBACK BITUMEN

Packing

Sustainibility

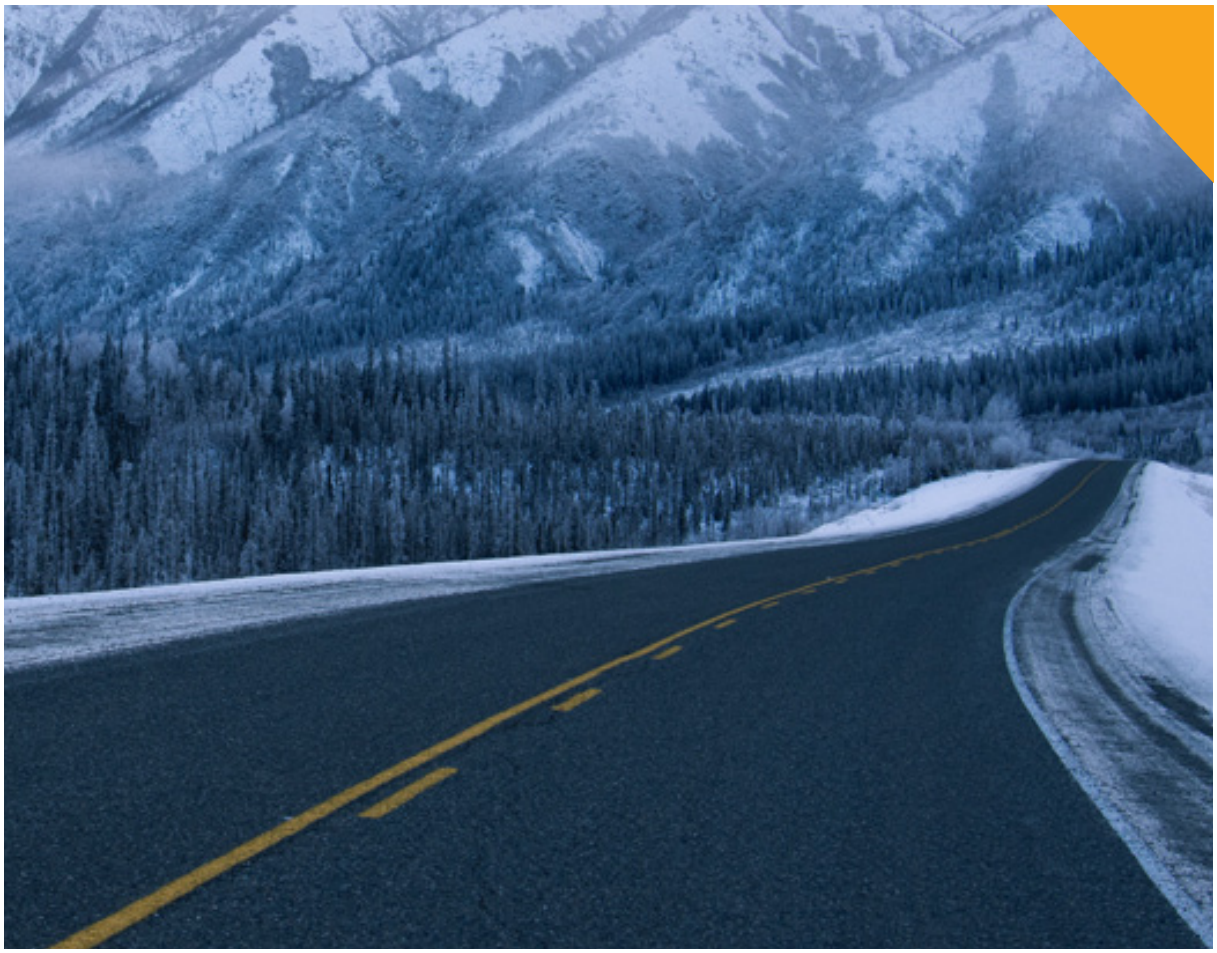
IRAN BITUMEN SUPPLY

ABOUT US

Our company specializes in technical use and has far passed the traditional methods of bitumen production. We ensure consistent product quality by use of approved feedstock, tight control of manufacturing conditions, and extensive product testing. We are a research based company with great chemical and bitumen Knowledge. We have successfully engineered a 13 acer plant exclusive to produce modified bitumen using Crumb Rubber and Polymers. A wide range of base bitumen binders meeting industry specifications are available through our far-reaching manufacturing and supply network. After extensive research and development, our highly facilitated refinery mass produces various types of conventional, modified and cutback bitumen.

ADVANTAGES OF USING MODIFIED BITUMEN (CRMB, PMB, PG) OVER CONVENTIONAL BITUMEN

CONVENTIONAL BITUMEN	MODIFIED BITUMEN
6 To 8 cm Topcoat Asphalt Thickness	5 To 7 Topcoat Asphalt Thickness
1 To 5 Years Road Lifetime	5 To 15 Years Road Lifetime
High Maintenance Cost	Extremely Low Maintenance Cost
Low Stability Under High Loads	Very High Stability Under High Loads
Extremely Low Flexibility	Extremely High Flexibility
Moderate Skid Resistance	High Skid Resistance
Low Fatigue Resistance	High Fatigue Resistance
Low Elastic Recovery Causes Asphalt Deformation	High Elastic Recovery Resists Asphalt Deformation
Moderate Resistance to High and Low Temperature	Resistant to Extreme High and Low Temperature
Low UV Protection Causes Early Aging	High UV Protection I ncreases Lifetime
Moderate Car Cabin Noise Penetration	Low Car Cabin Noise Penetration (Up to 4dB)
NON ECONOMICAL	HIGHLY ECONOMICAL



CRMB

CRUMB RUBBER MODIFIED BITUMEN

Crumb Rubber Modified Bitumen (CRMB) is a worldwide newly developed economic solution enhancing the quality of bitumen used in asphalt mixers for road developments. In this product bitumen is modified using recycled tires and additives. Modification can increase road lifetime built using such bitumen up to 5 times.

We offer 3 grades of CRMB for different road networks:

Warm Climate	CRMB 60
General Climate	CRMB 55
Cold Climate	CRMB 50

What is CRMB ?

**CRMB Is Based On A Unique Technology That Enables Homogeneity, Stability And Consistency In Properties Of Binder Throughout The Supply Chain.
To Achieve This, Special Stabilizing Additives Are Used And A Special Manufacturing Process Is Adopted. The Result Is A High Performance Bituminous Binder With Unique Properties That Are Consistent.**

Crumb Rubber Modified Bitumen is designed to maximize resistance to permanent deformation and to reduce fatigue of asphalt mixtures that are used in most locations.
The careful selection of additives greatly enhances binder performance, improves elasticity, reduces temperature susceptibility and improves adhesion. Our product range is particularly suited to heavy traffic locations such as highways, main roads, airfields, roundabouts and bus lanes.
Superior Elastic Modulus of CRMB helps control deformation under high pavement temperature and heavy loading conditions, Increases the fatigue life of pavement under repeated heavy loading conditions, Helps in reduction of maintenance cost and is more cost effective on a life cycle cost basis, Is used for use in thin surfacing and stone mastic asphalt (SMA) mixes; drainage (porous) asphalt applications and asphalt mixtures designed for high resistance to permanent deformation and high flexibility.
According to RPA (Rubber Pavement Association) Arizona, USA best bitumen choice for more than 80% of road construction projects are CRMB. RPA's in depth research and analysis reports the cost of CRMB and conventional bitumen to be estimated at $10 PSY vs. $45 PSY respectively over four years. Using CRMB commits to a sustainable future, creates safer and less consumable smooth roads.

CRMB

CRUMB RUBBER MODIFIED BITUMEN

TECHNICAL DATASHEET

S.NO	PROPERTIES	CRMB 50	CRMB 55	CRMB 60	ASTM STANDARDS
1	Penetration at 25 C, 1/10mm, 100g, 5 sec	< 70	< 60	< 50	D5
2	Softening Point, (R&B), C, Min	50	55	60	D36
3	Elastic Recovery at 15 C ,%, Min	50	50	50	D6084
4	Flash point , COC, C , Min	250	250	250	D92
5	Separation, Difference in Softening Point, (R&B), C, Max	4	4	4	-
6	Viscosity at 150 C, Poises	1-3	2-6	3-9	D2170/D4402
7a	Loss in Mass, %, Max	1.0	1.0	1.0	D6
7b	Reduction in Penetration of residue at 25 C , 100g, 5s, %,Max	40	40	40	D5
7c	Increase in Softening Point, C, Max	7	6	5	D36
7d	Elastic Recovery at 25 C, %, Min	35	35	35	D6085

PMB

POLYMER MODIFIED BITUMEN

Polymer Modified Bitumen (PMB) is used across a range of challenging situations requiring high performance products or custom formulated to overcome specific challenges;

Which includes but not limited to the following :

• Roads Maintenance	• Bridges
• Airfields	• Roofing
• Tunnels	• Race Track

PMB

POLYMER MODIFIED BITUMEN

TECHNICAL DATASHEET

S.NO	DESIGNATION	PMB 120	PMB 70	PMB 40	Test Method
1	Penetration at 25 ôC, 1/10mm, 100g, 5 sec	90-150	50-90	30-50	ASTM D5
2	Softening Point, (R&B), ôC, Min	50	55	60	ASTM D36
3	Elastic Recovery at 15 ôC ,%, Min	60	60	60	ASTM D6084
4	Flash point , COC, ôC , Min	220	220	220	ASTM D92
5	Separation, Difference in Softening Point,(R&B), ôC, Max	3	3	3	-
THIN FILM OVEN TEST & TEST ON RESIDUE					
6	Loss in Mass, %, Max	1.0	1.0	1.0	ASTM D1754
7	Reduction in Penetration of residue at 25 ôC , 100g, 5s, %,Max	35	35	35	ASTM D5
8	Increase in Softening Point, ôC, Max	7	6	5	ASTM D36
9	Elastic Recovery at 25 ôC, %, Min	50	50	50	ASTM D6085

PG Bitumen

PERFORMANCE GRADE BITUMEN.

Due to the inadequacy of penetration and viscosity based grading systems, the Strategic Highway Research Program (SHRP) in the US conducted a Project between 1987 and 1993 in order to overcome the shortcomings of empirical systems. One consequence of this Project was a performance-based binder specification with a new set of tests. The final product of the SHRP bitumen research program is a new system referred to as SUPER-PAVE, which stands for Superior Performing Asphalt Pavements and called as binder specification because it is intended to function equally well for modified and unmodified bitumen.

IRAN BITUMEN SUPPLY

Performance Grade (PG) Bitumen Is Bitumen Which Is Graded Based On Its Performance At Different Temperatures. In Super-Pave Grading System, Binders Are Classified According To Their Performance In Extreme Hot And Cold Temperatures.

The main purpose of grading and selecting asphalt binder using the PG system is to make certain that the binder has the appropriate properties for environmental conditions in the field. PG asphalt binders are selected to meet expected climatic conditions as well as traffic speed and volume adjustments.

Therefore, the PG system uses a common set of tests to measure physical properties of the binder that can be directly related to field performance of the pavement at its service temperatures by engineering principles. It is one of the most important changes introduced in Super pave that acceptance limits are the same but have to be met at specific pavement temperature and traffic conditions.

The Long-Term Pavement Performance (LTPP) has given a certain algorithm to calculate the temperature of the pavement based on the temperature of the air above. From this, the highest and the lowest temperatures of the pavement are calculated and the bitumen that performs well in that temperature range is selected. Penetration grading and viscosity grading are somewhat limited in their ability to fully characterize asphalt binder for use in Hot Mix Asphalt (HMA) pavement.

Therefore, as part of the Super-pave research effort, new binder tests and specifications were developed to more accurately and fully characterize asphalt binders for use in HMA pavements. These tests and specifications are specifically designed to address HMA pavement performance parameters such as rutting, fatigue cracking, and thermal cracking. Super-pave performance Grade (PG) Bitumen is based on the idea that an HMA asphalt binder's properties should be related to the conditions under which it is used. For asphalt binders, this involves expected climatic conditions as well as aging considerations. Therefore, the PG system uses a common battery of tests (as the older penetration and viscosity grading systems do) but specifies that a particular asphalt binder must pass these tests at specific temperatures that are dependent upon the specific climatic conditions in the area of use. This concept is not new – selection of penetration or viscosity graded asphalt binders follows the same logic – but the relationships between asphalt binder properties and conditions of use are more complete and more precise with the Super-pave PG system. Information on how to select a PG asphalt binder for a specific condition is contained in Super-pave mix design method.

Performance Grade (PG) Bitumen Nomenclature

Performance Grade (PG) bitumen cement based on two factors: traffic and pavement temperature. Adjustments are made to the PG grade of asphalt cement based on traffic conditions and traffic volumes which are intended to enhance the design life of the pavement. The PG grading system is defined by two numbers, which represent pavement temperatures. The first number PG 64-XX represents the high pavement temperature in degrees Celsius, while the second number PG XX-22 represents the low pavement temperature. Notice that these numbers are pavement temperatures and not air temperatures (these pavement temperatures are estimated from air temperatures using an algorithm contained in the LTPP Bind program). All adjustments to the PG grading system are made in six (6) degree increments. The high temperature relates to the effects of rutting and the low temperature relates to cold temperature and fatigue cracking.

PG Bitumen

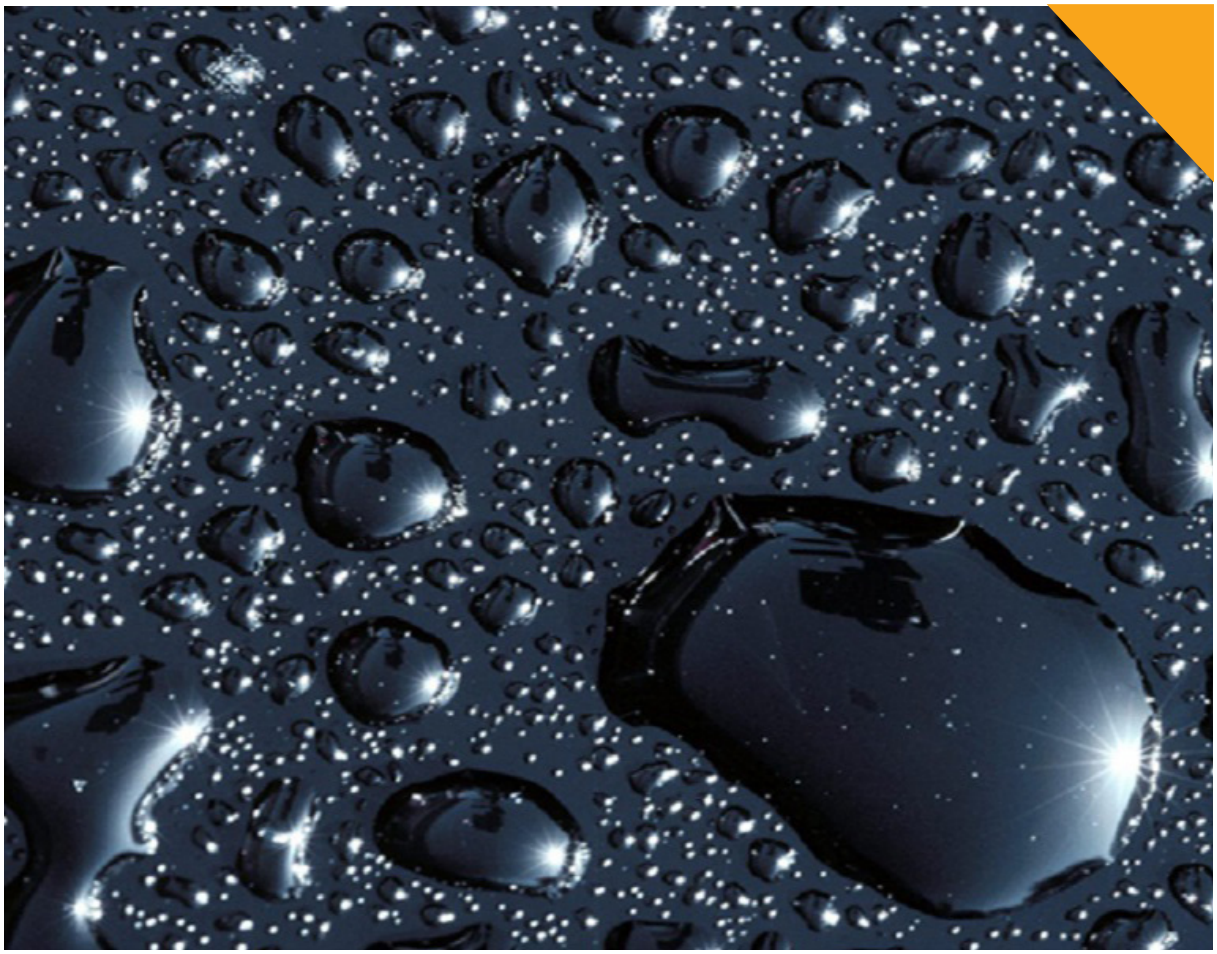
PERFORMANCE GRADE BITUMEN.

TECHNICAL DATASHEET

PERFORMANCE GRADED ASPHALT BINDER SPECIFICATION - AASHTO MP1

BINDER PROPERTY	PG 46			PG 52							PG 58					PG 64						PG 70						PG 76					PG 82					TEST METHOD
	-34	-40	-46	-10	-16	-22	-28	-34	-40	-46	-16	-22	-28	-34	-40	-10	-16	-22	-28	-34	-40	-10	-16	-22	-28	-34	-40	-10	-16	-22	-28	-34	-10	-16	-22	-28	-34	
Average 7- Day Maximum Pavement Design Temperature, °C	< 46			< 52							< 58					< 64						< 70						< 76					< 82					
Minimum pavement Design Temperature, °C	-34	-40	-46	-10	-16	-22	-28	-34	-40	-46	-16	-22	-28	-34	-40	-10	-16	-22	-28	-34	-40	-10	-16	-22	-28	-34	-40	-10	-16	-22	-28	-34	-10	-16	-22	-28	-34	
Original Binder																																						
Flash Point Temperature Minimum °C	230																																					AASHTO T48
Viscosity Maximum 3 Pa.s, Test Temperature,°C	135																																					AASHTO T316
Dynamic Shear G*/sin Minimum 2.2 KPa Test Temperature,°C	46			52							58					64						70						76					82					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	46			52							58					64						70						76					82					AASHTO T315
Pressure Aging Vessel																																						AASHTO R28
PAV Aging Temperature, °C	90			90							100					100						100 (110)						100 (110)					100 (110)					
Dynamic Shear G*/sin Maximum 5000 KPa Test Temperature, @ 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	34	31	28	25	22	19	37	34	31	28	25	40	37	34	31	28	AASHTO T315
Creep Stuffiness S Maximum 300 Mpa m-value Minimum0.300 Test Temperature,@ 60s °C	-24	-30	-36	0	-6	-12	-18	-24	-30	-36	-6	-12	-18	-24	-30	0	-6	-12	-18	-24	-30	0	-6	-12	-18	-24	-30	0	-6	-12	-18	-24	0	-6	-12	-18	-24	AASHTO T313
Direct Tension Failure Strain Minimum 1 % Test Temperature @ 1mm/min, °C	-24	-30	-36	0	-6	-12	-18	-24	-30	-36	-6	-12	-18	-24	-30	0	-6	-12	-18	-24	-30	0	-6	-12	-18	-24	-30	0	-6	-12	-18	-24	0	-6	-12	-18	-24	AASHTO T314
Critical low Cracking Temperature Critical Cracking Determined by PP42 Test Temperature	-24	-30	-36	0	-6	-12	-18	-24	-30	-36	-6	-12	-18	-24	-30	0	-6	-12	-18	-24	-30	0	-6	-12	-18	-24	-30	0	-6	-12	-18	-24	0	-6	-12	-18	-24	AASHTO PP42

www.iranbitumensupply.com



PEN – VG

Penetration Grade Bitumen | Viscosity Grade Bitumen

Bernet refinary is engineered to produce bitumen from vacuum bottom and addetives. We understand valued customers not yet ready to enter the new era of economical and safer roads ; therefore, our facilitated production site can hold a competitive position and manufacture penetration and viscosity grade bitumen that is not oxidized and is enhanced to best suit pavement construction projects. Better technicality of penetration and viscosity graded bitumen and competitive pricing is our goal in this line of products.

PEN

PENETRATION GRADE BITUMEN

TECHNICAL DATASHEET

PROPERTIES	UNIT	85/100	60/70	40/50	TEST METHOD
Specific Gravity @ 25°c	Kg/cm3	1.01/1.06	1.01/1.06	1.01/1.06	ASTM D70
Penetration @ 25°c	mm/10	85/100	60/70	40/50	ASTM D5
Softening Point °c	°C	45/52	49/56	52/60	ASTM D36
Ductility @25 °c	cm	100 Min	100 Min	100 Min	ASTM D113
Loss On Heating(wt) %	wt %	0.2 Max	0.2 Max	0.2 Max	ASTM D6
Drop In Penetration After Heating %	%	20 Max	20 Max	20 Max	ASTM D5-D6
Flash Point °c	°C	250 Min	250 Min	250 Min	ASTM D92
Solubility Is CS2(wt) %	wt %	99.0 Min	99.0 Min	99.0 Min	ASTM D4
Spot Test		Negative	Negative	Negative	A.A.S.H.O.T102

VG

VISCOSITY GRADE BITUMEN

TECHNICAL DATASHEET

PROPERTY	UNITS	AC-2.5	AC-5	AC-10	AC-20	AC-30	AC -40	TEST METHOD
Viscosity, 140°F (60°C)	P	250±50	500±100	1000±200	2000±400	3000±600	4000±800	ASTM D-2171
Viscosity, 275°F (135°C), Min	cSt	80	110	150	210	250	300	ASTM D-2171
Penetration, 77°F (25°C), 100g, 5sec, Min	0.1 mm	200	120	70	40	30	20	ASTM D-5
Flash point, Cleveland open Cup, Min	°C	163	177	219	232	232	232	ASTM D-92
Solubility in Trichloroethylene, Min	%wt.	99	99	99	99	99	99	ASTM D-2042
Tests On Residue From Thin-Film Oven Test :								
Viscosity, 140°F (60°C), Max	P	1250	2500	5000	10000	15000	20000	ASTM D-2171
Ductility, 77°F (25°C), 5cm/min, Min	CM	(1)100	100	50	20	15	10	ASTM D-113

www.iranbitumensupply.com

MC

Cutback Bitumen

Medium Curing (MC) or Cutback bitumen is produced in the form of liquid at room temperature. It is manufactured by diluting bitumen in petroleum hydrocarbons (Kerosene). The purpose is to be able to spray the product without the need of melting units or any heating equipments. Once the application of product is over, the solvent evaporates and bitumen remains as solid form.

TECHNICAL DATASHEET

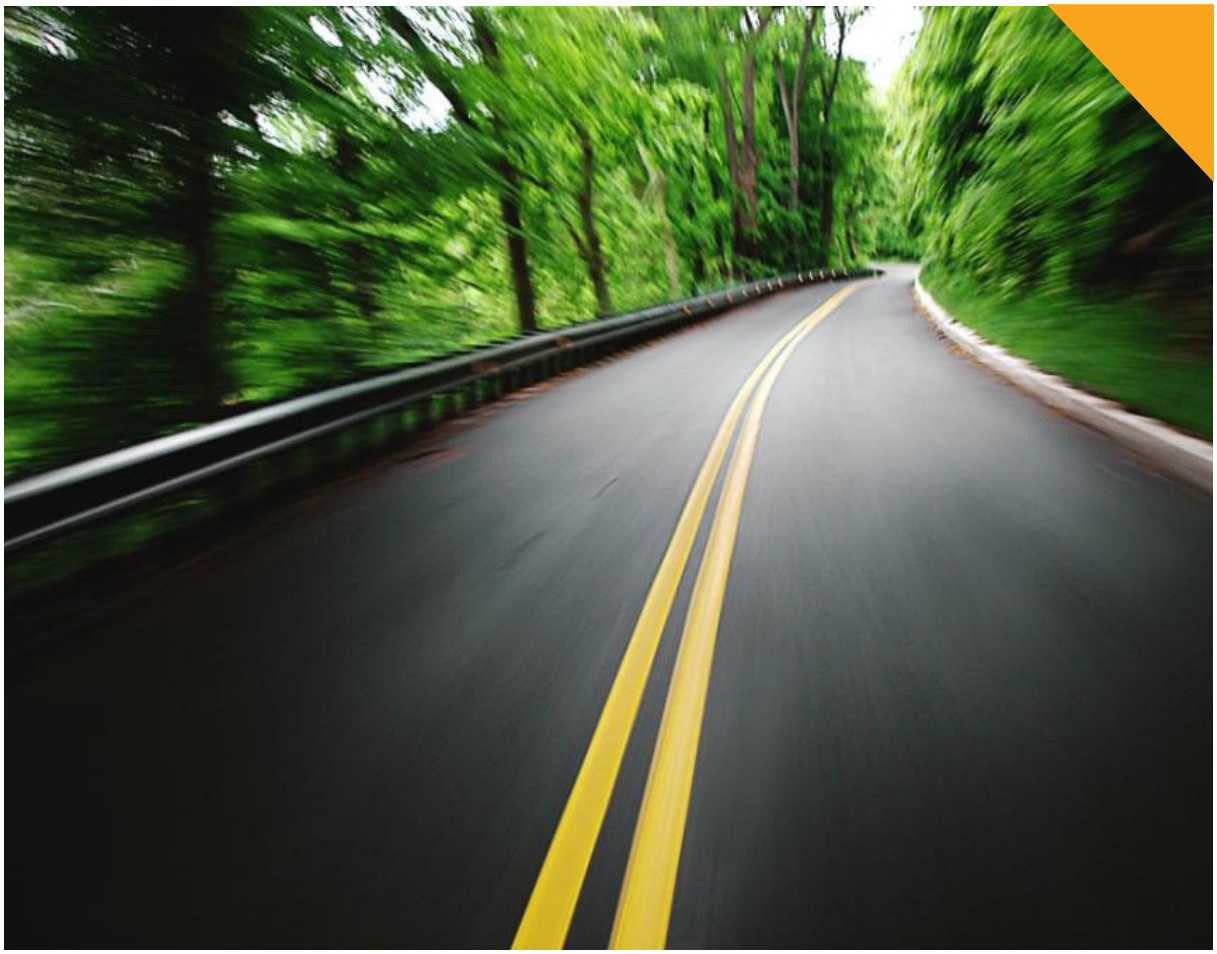
PROPERTY	MC-30		MC-70		MC-250		MC-800		MC-3000	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Kinematic Viscosity at 60 °C [140 °F], mm2/s	30	60	70	140	250	500	800	1600	3000	6000
Flash point (Tag open-cup), °C [°F]	38 [100]	-	38 [100]	-	66 [150]	-	66 [150]	-	66 [150]	-
DISTILLATE TEST VOLUME PERCENT OF TOTAL 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],	50	-	55	-	67	-	75	-	80	-
PERCENT VOLUME BY DIFFERENCE TEST ON RESIDUE FROM DISTILATION										
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, %	99	-	99	-	99	-	99	-	99	-
Water, %	-	0.2	-	0.2	-	0.2	-	0.2	-	0.2

PACKING

Types of Packaging

Packing bitumen is a considerable factor in logistics. It highly affects the final price covering packing material and the effort of packing. Different methods have been executed and depending on the transportation vessel, end user's facilities and destination, the best method is adopted.

• BOXES	• JUMBO BAGS
• STEEL DRUMS	• BITUTAINERS
• POLY BAGS	• BULK



SUSTAINIBILITY

Sustainability Is the Key Factor for Every Industry

Using a high percentage recycled material in a high volume bitumen production line is a massive contribution to this matter.
Moreover, Bernet has shown its commitment by changing a polluting production into a fully green production by eliminating emission through extensive design protocols. Investing into a very high efficient production plant decreases the use of energy which would further commit to a sustainable future.

IRAN
BITUMEN SUPPLY

PARTNERSHIPS

Warm Welcome To Potential Domestic And International Corporates In The Sector.
We Can Work Together To Promote These Amazing Technologies, Co-Operate In Sales And Export And Expand To Have All Around Better Roads Quicker.
We Can Help Consult Or Establish Production Plants Either Solid Or Mobile For These Unique Technologies.

IRAN
BITUMEN SUPPLY

Global Refinery-Direct Bitumen Supply for Road Construction and Infrastructure

CONTACT US

info@iranbitumensupply.com

sales@iranbitumensupply.com

Whatsapp: 0933 608 5737

TEHRAN OFFICE: AZADI ST., BETWEEN NAWAB AND ESKANDARI, PANAMAL BUILDING.

www.iranbitumensupply.com