

## Bitumen Penetration



Penetration grade bitumen is a standard bitumen which is unique for road construction in various environmental conditions. These grades of bitumen are named due to their level of hardness and consistency of bituminous materials, which leads to the classification of bitumen in a range of grades from 30 to 120.

The main goal for grading bitumen based on penetration value is to determine their suitability for use in various construction methods and under different climatic conditions. Known also as paving grade bitumen, PEN grades are classified based on the depth into which a certain laboratory needle penetrates them.

The penetration grades offered by Infinity Galaxy have a thermoplastic property which causes bitumen to get soft at high temperature and hard at low temperature. Bitumen 40/50, 60/70, 80/100, 85/100 are black, semi-solid and heavy hydrocarbons which are the final output of extract tower.

On the next pages, you can find a detailed guide on various grades of bitumen and their specification, based on a penetration value test.



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## Bitumen 40/50

**What is 40/50 penetration grade?** This grade of bitumen is produced to meet the demands of road constructors in tropical areas.

**Uses:** 40/50 penetration grade bitumen is used as a binder for base courses and wearing courses in hot temperature.

**Properties:** 40/50 penetration grade bitumen is softened gradually once being heated and hardens as it is cooled. This special physical property

enhances the binder performance in higher temperatures.

**Packing:** 150/180/210 Kg New Steel Drums with 0.6, 0.7, 1 mm thickness.

CHARACTERISTICS	TEST METHOD	UNIT	MIN	MAX
Specific Gravity at 25°C	ASTM D70	°C	1.01	1.05
Penetration at 25°C, 100g, 5s	ASTM D5	mm	40	50
Softening Point	ASTM D36	°C	52	60
Ductility at 25°C	ASTM D113	Cm	100	
Loss on heating	ASTM D6	%		0.5
Drop in penetration after heating	ASTM D5	%		20
Flash point	ASTM D92	°C	250	
Solubility in Trichloroethylene	ASTM D2042	%	100	

## Bitumen 50/70

**What is 50/70 penetration grade?** This grade of bitumen is a semi hard type of bitumen which is mostly applied in construction and asphalt repair.

**Uses:** 50/70 penetration grade bitumen is similar to 60/70 grade, but the testing method is different. This grade of bitumen is tested according to European EN standard.

**Properties:** 50/70 penetration grade bitumen is softened gradually once being heated and hardens as it is cooled. This grade of bitumen is the only penetration grade that its viscosity is evaluated and reported to the buyers.

**Packing:** 150/180/210 Kg New Steel Drums with 0.6, 0.7, 1 mm thickness.

CHARACTERISTICS	TEST METHOD	UNIT	MIN	MAX
Penetration at 25°C, 100g, 5s	EN 1426	mm	50	70
Softening Point (Ring&Ball)	EN 1427	°C	46	54
Kinematic Viscosity@135 C	EN 12595	mm/S	295	
Penetration Index	EN 12591	_	- 1.5	0.7
Flash point (Cleveland Open)	EN ISO 2595	°C	230	
Solubility in Toluene or Xylene	EN 12592	%	99	



## Bitumen 60/70

**What is 60/70 penetration grade?** This grade of bitumen is produced to meet the demands of road constructors in tropical areas. As the hot weather of these regions can be a challenge for asphalt binders, bitumen 60/70 is offered due to its low penetration value.

**Uses:** 60/70 penetration grade bitumen is recommended for road construction and asphalt pavements repairs in hot temperature.

**Properties:** 60/70 penetration grade bitumen is softened gradually once being heated and hardens as it is cooled. This special physical property enhances the binder performance in higher temperature.

**Packing:** 150/180/210 Kg New Steel Drums with 0.6, 0.7, 1 mm thickness.

CHARACTERISTICS	TEST METHOD	UNIT	MIN	MAX
Specific Gravity at 25°C	ASTM D70	°C	1.01	1.05
Penetration at 25°C, 100g, 5s	ASTM D5	mm	60	70
Softening Point	ASTM D36	°C	49	56
Ductility at 25°C	ASTM D113	Cm	100	
Loss on heating	ASTM D6	%		0.2
Drop in penetration after heating	ASTM D5	%		20
Flash point	ASTM D92	°C	250	
Solubility in Trichloroethylene	ASTM D2042	%	99	



## Bitumen 80/100

**What is 80/100 penetration grade?** This grade of bitumen is semi-soft and suit the demands of road construction in cold regions.

**Uses:** 80/100 penetration grade bitumen is suitable for road construction and asphalt pavement in Northern African countries such as Kenya and Tanzania.

**Properties:** 80/100 penetration grade bitumen is specifically used in cold temperatures; As the penetration value of this grade is high, there are lower risks of cracking after the construction.

**Packing:** 150/180/210 Kg New Steel Drums with 0.6, 0.7, 1 mm thickness.

Note: Bitumen 85/100 penetration grade is similar to 80/100 grade and is suitable for African countries.

CHARACTERISTICS	TEST METHOD	UNIT	MIN	MAX
Specific Gravity at 25°C	ASTM D70	°C	1.01	1.05
Penetration at 25°C, 100g, 5s	ASTM D5	mm	80	100
Softening Point	ASTM D36	°C	42	52
Ductility at 25°C	ASTM D113	Cm	100	
Loss on heating	ASTM D6	%		0.5
Flash point	ASTM D92	°C	225	
Solubility in Trichloroethylene	ASTM D2042	%	99	



## Bitumen 100/120

**What is 100/120 penetration grade?** This grade of bitumen has a high flash point and adhesion properties to aggregates.

**Uses:** 100/120 penetration grade bitumen is suitable for road construction and asphalt pavement in cold temperature.

**Properties:** 100/120 penetration grade bitumen is specifically used in cold temperatures; According to ASTM standard, in a mean annual temperature of 7°C or lower, using this grade of bitumen guarantees the resistance of constructed road after 5-10 years.

**Packing:** 150/180/210 Kg New Steel Drums with 0.6, 0.7, 1 mm thickness.

CHARACTERISTICS	TEST METHOD	UNIT	MIN	MAX
Specific Gravity at 25°C	ASTM D70	°C	1.01	1.05
Penetration at 25°C, 100g, 5s	ASTM D5	mm	100	120
Softening Point	ASTM D36	°C	42	49
Ductility at 25°C	ASTM D113	Cm	100	
Loss on heating	ASTM D6	%		0.2
Flash point	ASTM D92	°C		250
Solubility in Trichloroethylene	ASTM D2042	%		99.5



## New Steel Drum Size & Capacity

### Long Drum Size

Net Weight:  $180 \pm 2$  KG

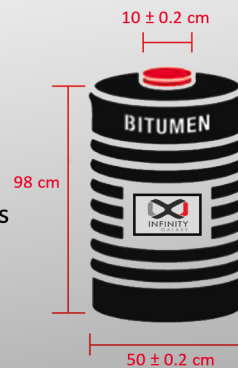
Gross Weight:  $190 \pm 2$  KG

Tare Weight:  $9.5 \pm 0.5$  KG

Number of Drums in 20 ft Containers: 110 Drums

Container Net Weight:  $20 \pm 2$  MT

Container Gross Weight:  $21 \pm 2$  MT



### Short Drum Size

Net Weight:  $160 \pm 2$  KG

Gross Weight:  $168 \pm 2$  KG

Tare Weight:  $8.5 \pm 0.5$  KG

Number of Drums in 20 ft Containers: 110 Drums

Container Net Weight:  $16 \pm 1$  MT

Container Gross Weight:  $17 \pm 1$  MT

