

BITUMEN



WHAT IS BITUMEN ?

Bitumen is a black or dark-colored (solid, semi-solid, viscous), amorphous, cementitious material that can be found in different forms, such as rock asphalt, natural bitumen, tar and bitumen derived from oil, which is referred to as petroleum bitumen.. A mixture of hydrocarbons occurring as a residue from petroleum distillation. Soluble in carbon disulfide. Combustible.

Bitumen is a mixture of Hydro carbons and thermoplastic material having strong tarry odour. Its stiffness is dependent on temperature. The temperature-vs-stiffness relationship of bitumen is dependent on the source of crude oil and the method of refining. It is also known as Asphalt and Mineral Pitch.



WHAT'S THE DIFFERENCE BETWEEN BITUMEN AND ASPHALT?

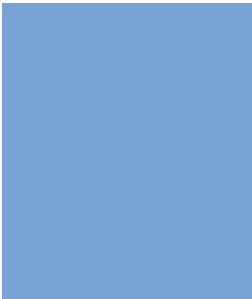
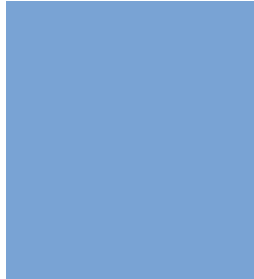
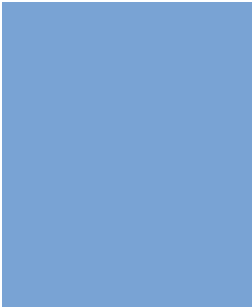


Bitumen is actually the liquid binder that holds asphalt together. The term bitumen is often mistakenly used to describe asphalt.

A bitumen-sealed road has a layer of bitumen sprayed and then covered with an aggregate. This is then repeated to give a two-coat seal. Asphalt is produced in a plant that heats, dries and mixes aggregate, bitumen and sand into a composite mix. It is then applied through a paving machine on site as a solid material at a nominated or required thickness, relative to the end use. Asphalt results in a smoother and more durable surface than a bitumen-sealed road.



BITUMEN IS APPLIED IN CONSTRUCTION AND MAINTENANCE OF



- ✓ Highways
- ✓ Airport runways
- ✓ Footways / Pedestrian Ways
- ✓ Car parks
- ✓ Racetracks
- ✓ Tennis courts
- ✓ Roofing
- ✓ Damp proofing
- ✓ Dams
- ✓ Reservoir and pool linings
- ✓ Soundproofing
- ✓ Pipe coatings
- ✓ Cable Coatings
- ✓ Paints
- ✓ Building Water Proofing
- ✓ Tile underlying waterproofing
- ✓ Newspaper Ink Production
- ✓ And many other applications

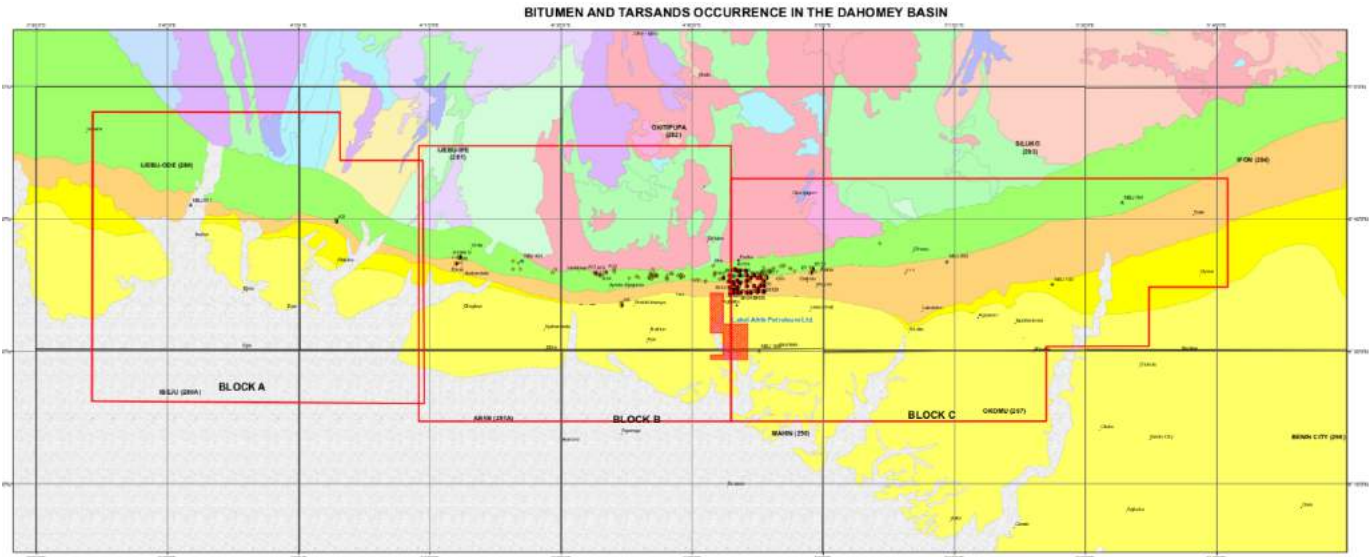
I MANUFACTURING PROCESS



The crude oil is pumped from storage tanks, where it is kept at about 60°C, through a heat exchanger system where its temperature is increased to typically 200°C by exchanging heat gained from the cooling of newly produced products in the refining process. The crude is then further heated in a furnace to typically 300° C where it is partly vaporised into an Atmospheric Distillation Column. Here the physical separation of the components occurs. The lighter components rise to the top and the heaviest components (the atmospheric residue) fall to the bottom of the column and pass through a second heat exchanger prior to treatment in a vacuum distillation column. Finally, Bitumen is obtained by vacuum distillation or vacuum flashing of atmospheric residue from the vacuum distillation column. This is "straight run bitumen". This process is called bitumen production by straight run vacuum distillation.



BITUMEN AND TARSANDS OCCURRENCE IN THE DAHOMEY BASIN



Legend

- Towns
- Bitumen locations (BPIC)
- ★ Tarsands location (BPIC)
- ☆ Seepages
- ★ National Bitumen Project, Akure Tarsands locations, Ondo State Projects (NBJS)
- Geological Consultancy Unit Bitumen Boreholes (Ondo State Project), University of Ife
- Bitumen locations (BPIC)

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Bitumen Blocks

Geology

- Alluvium
- Benin Formation (Pleistocene-Oligocene)
- Ilaro Formation (Upper-Middle Eocene)
- Ewekoro Formation (Lower Eocene-Paleocene)
- Abeokuta Formation (Turonian-Cenomanian)
- Lakel Afrik Petroleum Ltd Bitumen Title Block



SPECIFICATION OF PENETRATION GRADE BITUMEN

PROPERTY	RANGE			STANDRAD
	BITUMEN 80/100	BITUMEN 60/70	BITUMEN 40/50	ASTM / AASHTO
Specification Gravity @25/25 °C	1.01/1.06	1.00/1.05	1.00/1.05	D - 70
Penetration @ 25 ° C	80/100	60/70	40/50	D - 5
Softening Point ° C	45/52	49/56	52/60	D - 36
Ductility @ 25 ° C CMS	100 Min	100 Min	100 Min	D - 113
Loss on Heating (wt)%	0.5 Max	0.2 Max	0.2 Max	D - 6
Drop in Penetration After Heating %	20 Max	20 Max	20 Max	D - 5 & D - 6
Flash Point ° C	225 Min	250 Min	225 Min	D - 92
Solubility in CS@ (wt)%	99.5 Max	99.5 Max	99.5 Max	D - 4
Spot Test	Negative	Negative	Negative	-
Density @25° C	1.01/1.06	1.00/1.05	1.00/1.05	D70

