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ASPHALT GILSONITE TECHNICAL DATA SHEET

1. Product description

Gilsonite is mined in underground shafts and resembles shiny, black substance similar in appearance as the mineral Obsidian. It is brittle and usually micronized into dark brown powder. It is mainly composed of asphaltenes; thus, Gilsonite Is classified as a Natural Asphalt.

2. Application and usage

Gilsonite is the best material to be used in bitumen and asphalt production, given to its high content in asphaltenes.

It is widely used in China to make bitumen from fuel oil, and to give asphalt a harder resistance. In Northern Europe and North America we can find a wide literature on tests and concrete applications.

Product can be added to pure bitumen or added during the hot mix manufacturing.We can provide all the technical support on request. Product is normally used in powder, in mesh 100. It can be supplied in jumbo bags easy to use.

3. Data Sheet

ASPHALT GRADE			
No.	**Test**	**Result**	**Method**
1	Ash Content, wt%	17-22	ASTM-D174
2	Moisture Content,	<2	ASTM-D173
3	Volatile Matter, wt%	63	ASTM-D175
4	Fixed Carbon, wt%	29	ASTM-D172
5	Solubility in CS2,wt%	89	ASTM-D4
6	Specific Gravity @ 25	1,05	ASTM-D3289
7	Color in mass	Black	-
8	Softening Point, C°	<190	ASTM-D36
9	Flash Point	>420	Cleveland O.C.
10	Penetration @ 25 C°	0	ASTM-D5
11	Particle Size (mesh)	100	Tyler

4. Packaging

POWDER 100 MESH: In **anonymous 900 kg (or one ton) laminated jumbo bags.** Tolerance in weight: ±5%.

LUMPS: In **anonymous 1,2 tons jumbo bags.** Tolerance in weight: ±10%.

5. Miscellaneous

For any further information please refer to MSDS

Disclaimer Statement

This information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this material is used in combination with other materials or in any process. Final determination of suitability of any material is the sole responsibility of the use

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GILSONITE IN ASPHALT APPLICATION
Technical notes

ON MOLECULAR STRUCTURE

A variety of sophisticated analytical tests have been run on Gilsonite to characterize its unique properties. For reference, the test methods include vacuum thermal gravimetric analysis (TGA), nuclear magnetic resonance (NMR), Fourier transform infrared spectrometry (FTIR), vapor pressure osometry (VPO), high performance liquid chromatography (HPLC), rapid capillary gas chromatography (RCAP), and several fractionation techniques. H/C ratios and NMR analysis indicate the presence of a significant aromatic fraction. Most of the aromatics exist in stable, conjugated systems, probably porphyrin-like structures that relate to the geologic source of the product. The remainder of the product consists of long, paraffinic chains.

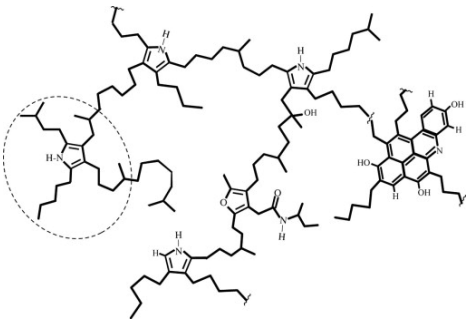
A very unique feature of Gilsonite is its high nitrogen content, which is present mainly as pyrrole, pyridine, and amide functional groups. Phenolic and carbonyl groups are also present. The law oxygen content relative to nitrogen suggests that much of the nitrogen has basic functionality. This probably accounts for Gilsonite's special surface wetting properties and resistance to free radical oxidation. The average molecular weight of Gilsonite is about 3000. This is very high relative to other asphalt products and to most synthetic resins. This may relate to Gilsonite's "semi-polymeric" behavior when used as a modifying resin in polymeric and elastomeric systems. There is some reactive potential in Gilsonite. Crosslinking and addition type reactions have been observed. Gilsonite is known to react with formaldehyde compounds under certain conditions.

ON ASHES AND VOLATILES

GILSONITE is an Organic matter; a hydrocarbon consisting of Carbon and volatile gases like Methane. With very special characteristics defining it as Bituminous matter. These characteristics are very similar to those, which are synthetically produced in the refineries.

This chemistry, which defines this bitumen without its volatile gases, is nothing but something similar to a Coal. Then “the higher the volatile matter Ratio to Carbone the closer it is to synthetic Bitumen”.

In the laboratory the test procedure is defined to quantify these matters. We slowly apply heat to GILSONITE to initially reach to its softening points 170-220 degrees C . The heat is applied further at a constant rate in order to reach the temperature of 350 degrees C at which the volatile gases are fully evaporated. At this stage we reach a point referred to as FIXED CARBONE.



The Temperature is still increased beyond 350 degrees C at a constant rate until all Fixed Carbone is disintegrated fully at temperatures above 800 degrees C. The specimen is kept at this temperature for a while and then cooled off. The remaining balance is then analyzed and measured.

The balance is collectively referred to “ASH” which, are basically Ferrous Silicide: $FeSi_2$, Calcium Carbonate: $CaCo_3$, SO_2, MgO, Al_2O_3 and SIO_2

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