

Drilling Gilsonite – Fluid Loss Control (FLC)

What is Gilsonite: 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 and also known as uintaite or uintahite. Discovered in the 1860s, it was first marketed as a lacquer, electrical insulator, and waterproofing compound. This unique mineral is used in more than 160 products, primarily in dark-colored printing inks and paints, oil well drilling muds and cements, asphalt modifiers, foundry sand additives, and a wide variety of chemical products.

What are Asphaltenes: Asphaltenes are molecular substances that are found in crude oil, along with resins, aromatic hydrocarbons, and alkanes (i.e., saturated hydrocarbons). The word "asphaltene" was coined by Boussingault in 1837 when he noticed that the distillation residue of some bitumen had asphalt-like properties. Asphaltenes in the form of distillation products from oil refineries are used as "tar-mats" on roads. Asphaltenes consist primarily of carbon, hydrogen, nitrogen, oxygen, and sulfur, as well as trace amounts of vanadium and nickel. The C:H ratio is approximately 1:1.2, depending on the asphaltene source. Asphaltenes are defined operationally as the n-heptane (C₇H₁₆)-insoluble, toluene (C₆H₅CH₃)-soluble component of a carbonaceous material such as crude oil, bitumen or coal. Asphaltenes have been shown to have a distribution of molecular masses in the range of 400 u to 1500 u with a maximum around 750 u.

Gilsonite use in Drilling sector: Gilsonite is used in drilling mud fluids and oil well cementing. Gilsonite, in a range of softening points and particle sizes, is a standard ingredient in oil-based drilling muds used in shale and other difficult geological formations. The addition of specially-treated Gilsonite to water-based drilling fluids helps minimize hole washout by stabilizing troublesome shale, and seals off highly permeable sands while reducing torque and drag. The addition of Gilsonite to oil well cements reduces slurry weight without loss of compressive strength and acts as an effective bridging and plugging agent to seal fractures in weak formations while cementing. The maintenance of circulation of the drilling fluid is essential to successful drilling by the rotary method. The drilling fluid or mud is supplied at the surface of the well in large earthen pits or metal tanks and is pumped from these into the bore hole through the drill pipe and the drill bit to the bottom of the hole. The mud returns to the surface between the drill pipe and the bore hole wall, bringing with it the drill cuttings. The circulation of the mud serves not only to carry the cuttings to the surface but also to cool and lubricate the drill bit, thus making possible the further effective penetration of the bit into deeper geological strata. In conventional drilling operation a drilling mud based on bentonite or other materials such as cane fiber, ground walnut hulls, sawdust etc. is commonly used, but the solid organic materials used are difficult to keep suspended in the drilling fluid, being of a higher specific gravity than the fluid, while materials such as expanded perlite, though easily to suspend, become compressed to a specific gravity higher than that of the fluid under the bore hole. Furthermore, the commonly used materials lack adhesive power and are insoluble, and they have been known to become lodged in the wall of the bore hole so as to obstruct or seal off a producing oil or gas zone, thus causing a costly or even a complete loss of production. To prevent Lost Circulation is needed a material with following specifications:

- Incompressible material
- Specific gravity lower than the fluid
- Solubility
- Adhesive power

All the common varieties of Gilsonite are substantially incompressible and have a specific gravity sufficiently near to that of water that properly sized granules of the Gilsonite can be readily suspended in aqueous liquid carrier. Thus, Gilsonite is used for this purpose in powder. Particle size (mesh) is variable according to the characteristic of the well bore. Softening point is very important as Gilsonite must soften at a temperature above the temperature of well formation. The first patent, dated 1954, indicated the use of a Gilsonite with softening point from 150 to 180°C and mesh from 4 to 100. Actually, with more technological devices, the most commonly used is 200/200 (softening point/mesh) type; by the way, Groupeve can supply Gilsonite in a range of 40/400 mesh and 140/230°C softening point.

Drilling Gilsonite MSDS

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product trade name

Product identification	DRILLING GILSONITE
Synonyms	Natural Asphalt, Uintahite
Chemical Family	Asphalt
Application	Additive

Manufacturer/Supplier

To be announced at time of order
www.bitumexport.weebly.com

For further information, please contact

E-Mail	bitumexport@hotmail.com
Emergency phone number	TBA

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substances	CAS Number	PERCENT	ACGIH TLV-TWA	OSHA PEL-TWA
Natural asphalt	12002-43-6	100%	Not applicable	Not applicable

3. HAZARDS IDENTIFICATION

Hazard Overview May cause eye, skin, and respiratory irritation.

4. FIRST AID MEASURES

Inhalation If inhaled, remove from area to fresh air. Get medical attention if respiratory irritation develops or if breathing becomes difficult.

Skin Wash with soap and water. Get medical attention if irritation persists.

Eyes In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get medical attention if irritation persists.

Ingestion Do not induce vomiting. Slowly dilute with 1-2 glasses of water or milk and seek medical attention. Never give anything by mouth to an unconscious person.

Notes to Physician Not Applicable

5. FIRE FIGHTING MEASURES

Flash Point/Range (F)	599
Flash Point/Range (C)	315
Flash Point Method	Not Determined
Autoignition Temperature (F)	Not Determined
Autoignition Temperature (C)	Not Determined
Flammability Limits in Air - Lower (%)	Not Determined
Flammability Limits in Air - Lower (oz./ft3)	0.02
Flammability Limits in Air - Upper (%)	Not Determined

Fire Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Special Exposure Hazards

Decomposition in fire may produce toxic gases. Organic dust in the presence of an ignition source can be explosive in high concentrations. Good housekeeping practices are required to minimize this potential.

Special Protective Equipment for Fire-Fighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

NFPA Ratings

Health 1, Flammability 1, Reactivity 0

HMIS Ratings

Health 0, Flammability 1, Reactivity 1

6. ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures

Use appropriate protective equipment. Avoid creating and breathing dust.

Environmental Precautionary Measures

Prevent from entering sewers, waterways, or low areas.

Procedure for Cleaning/Absorption

Scoop up and remove.

7. HANDLING AND STORAGE

Handling Precautions

Avoid contact with eyes, skin, or clothing. Avoid creating or inhaling dust.

Storage Information

Store away from oxidizers. Store in a cool, dry location. Product has a shelf life of 24 months.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls	Use in a well ventilated area.
Respiratory Protection	Not normally needed. But if significant exposures are possible then the following respirator is recommended: Dust/mist respirator. (N95, P2/P3)
Hand Protection	Normal work gloves.
Skin Protection	Normal work coveralls.
Eye Protection	Wear safety glasses or goggles to protect against exposure.
Other Precautions	None known.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid
Color	Black/Dark brown
Odor	Asphalt
pH	5-7
Specific Gravity @ 20 C (Water=1)	1.05
Density @ 20 C (lbs./gallon)	Not Determined
Bulk Density @ 20 C (lbs/ft³)	65.55
Boiling Point/Range (F)	Not Determined
Boiling Point/Range (C)	Not Determined
Freezing Point/Range (F)	Not Determined
Freezing Point/Range (C)	Not Determined
Vapor Pressure @ 20 C (mmHg)	Not Determined
Vapor Density (Air=1)	Not Determined

Percent Volatiles	2
Evaporation Rate (Butyl Acetate=1)	Not Determined
Solubility in Water (g/100ml)	Insoluble
Solubility in Solvents (g/100ml)	Not Determined
VOCs (lbs./gallon)	Not Determined
Viscosity, Dynamic @ 20 C (centipoise)	Not Determined
Viscosity, Kinematic @ 20 C (centistokes)	Not Determined
Partition Coefficient/n-Octanol/Water	Not Determined
Molecular Weight (g/mole)	Not Determined

10. STABILITY AND REACTIVITY

Stability Data	Stable
Hazardous Polymerization	Will Not Occur
Conditions to Avoid	None anticipated
Incompatibility (Materials to Avoid)	Strong oxidizers.
Hazardous Decomposition Products	Carbon monoxide and carbon dioxide. Toxic fumes.
Additional Guidelines	Not Applicable

11. TOXICOLOGICAL INFORMATION

Principle Route of Exposure	Eye or skin contact, inhalation.
Inhalation	May cause respiratory irritation.
Skin Contact	May cause mild skin irritation.
Eye Contact	May cause mechanical irritation to eye.
Ingestion	None known
Aggravated Medical Conditions	None known.
Chronic Effects/Carcinogenicity	No data available to indicate product or components present at greater than 1% are chronic health hazards.
Other Information	None known.

Toxicity Tests

Oral Toxicity	Not determined
Dermal Toxicity	Not determined
Inhalation Toxicity	Not determined
Primary Irritation Effect	Not determined
Carcinogenicity	Not determined
Genotoxicity	Not determined
Reproductive/Developmental Toxicity	Not determined

12. ECOLOGICAL INFORMATION

Mobility (Water/Soil/Air)	Not determined
Persistence/Degradability	Slowly biodegradable
Bio-accumulation	Not determined

Ecotoxicological Information

Acute Fish Toxicity	Not determined
Acute Crustaceans Toxicity	TLM96: > 10000 mg/l (Crangon crangon)
Acute Algae Toxicity	Not determined

Chemical Fate Information

Not determined

Other Information

Not applicable

13. DISPOSAL CONSIDERATIONS**Disposal Method**

Bury in a licensed landfill according to federal, state, and local regulations.

Contaminated Packaging

Follow all applicable national or local regulations.

14. TRANSPORT INFORMATION**Land Transportation**

DOT	Not restricted
Canadian TDG	Not restricted
ADR	Not restricted

Air Transportation

ICAO/IATA	Not restricted
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Sea Transportation

IMDG	Not restricted
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Other Transportation Information

Labels	None
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15. REGULATORY INFORMATION**US Regulations**

US TSCA Inventory	All components listed on inventory or are exempt.
EPA SARA Title III Extremely Hazardous Substances	Not applicable
EPA SARA (311,312) HazardClass	Acute Health Hazard
EPA SARA (313) Chemicals	This product does not contain a toxic chemical for routine annual "Toxic Chemical Release Reporting" under Section 313 (40 CFR 372).
EPA CERCLA/Superfund Reportable Spill Quantity	Not applicable.
EPA RCRA Hazardous Waste Classification	If product becomes a waste, it does NOT meet the criteria of a hazardous waste as defined by the US EPA.
California Proposition 65	All components listed do not apply to the California Proposition 65 Regulation.
MA Right-to-Know Law	Does not apply.
NJ Right-to-Know Law	Does not apply.
PA Right-to-Know Law	Does not apply.

Canadian Regulations

Canadian DSL Inventory	All components listed on inventory or are exempt.
WHMIS Hazard Class	D2B Toxic Materials

16. OTHER INFORMATION



Makes life easier

The following sections have been revised since the last issue of this MSDS

Not applicable

Additional Information

For additional information on the use of this product, contact your local distributor or the Manufacturer, Groupeve Co., Ltd.

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 user.

Drilling Gilsonite 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 used in drilling mud fluids and oil well cementing. Gilsonite, in a range of softening points and particle sizes, is a standard ingredient in oil-based drilling muds used in shale and other difficult geological formations. The addition of specially-treated Gilsonite to water-based drilling fluids helps minimize hole washout by stabilizing troublesome shale, and seals off highly permeable sands while reducing torque and drag. Gilsonite is normally used in a range of 40/400 mesh and 160/230°C softening point.

3. Technical data

GRADE B			
No.	Test	Result	Method
1	Ash Content, wt%	9-14	ASTM-D174
2	Moisture Content, wt%	<1	ASTM-D173
3	Volatile Matter, wt%	63	ASTM-D175
4	Fixed Carbon, wt%	29	ASTM-D172
5	Solubility in CS ₂ , wt%	89	ASTM-D4
6	Specific Gravity @ 25 C°	1,11	ASTM-D3289
7	Color in mass	Black	-
8	Softening Point, C°	220	ASTM-D36
9	Flash Point	>420	Cleveland O.C.
10	Penetration @ 25 C°	0	ASTM-D5
11	Particle Size (mesh)	200	Tyler

GRADE A			
No.	Test	Result	Method
1	Ash Content, wt%	8-10,8	ASTM-D174
2	Moisture Content, wt%	<1	ASTM-D173
3	Volatile Matter, wt%	69	ASTM-D175
4	Fixed Carbon, wt%	25	ASTM-D172
5	Solubility in CS ₂ , wt%	91	ASTM-D4
6	Specific Gravity @ 25 C°	0.98	ASTM-D3289
7	Color in mass	Black	-
8	Softening Point, C°	200-220	ASTM-D36
9	Flash Point	>400	Cleveland O. C.
10	Penetration @ 25 C°	0	ASTM-D5
11	Particle Size (mesh)	>200	Tyler

4. Packaging

In **anonymous 25 kg or 21,5 kg craft paper bags, palletized and shrink wrapped**. Tolerance in weight: ±2%. Certificate of fumigation is provided.

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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