Section 1 – Identification of the Substance / Preparation, and of the Company

1.1: Product Identifier
Product Name: Z-Seal Plus (Fine & Coarse)
Substance Name: Graphite, CAS 7782-42-5

1.2: Identified uses of the substance or mixtures
1.2.1 Uses: Inorganic source of carbon, filler, thermal additive, re-carburizer, casting powders, drilling fluids, plastic additive, rubber additive, tint/pigment, lubricant, chemically resistant additive, EMF absorber, general inert filler-additive.
1.2.2 Uses Advised Against: For industrial use only, not for food, drug, or cosmetic applications.

1.3: Supplier Information
Company: Horizon Mud Company
Address: 500 West Wall, Suite 280
Midland, Texas 79702
Telephone: (432) 687-1171
Emergency Telephone Number 1-800-424-9300

Section 2: Hazards Identification

2.1: Classification of substance
Natural Graphite is not a hazardous substance

2.2: Label Elements
Hazard Statement: H373 may cause damage to lung through prolonged or repeated inhalation.
Precautionary Statement: P260: do not breathe dust
P285: In case of inadequate ventilation wear respiratory protection.

2.3: Other hazards
None known

Section 3 – Composition/Information on Ingredients:

Chemical Composition:
Carbon variety Graphite 60-95% (balance is inert ash)
CAS # 7782-42-5, EC # 231-955-3
Molecular Weight: 12.0

Silica, Crystalline Silica, variety Quartz 0.5-4.5% (may or may not be in respirable form)
CAS # 14808-60-7, EC # 238-878-4
Molecular Weight: 60.0

Naturally occurring mineral (inert ash)
CAS # 999999-99-4
Molecular Weight: Undefined for mixture
### Section 4 – First Aid Measures

<table>
<thead>
<tr>
<th>4.1.1 Inhalation</th>
<th>Remove patient to particulate-free environment. Wear approved dust mask to avoid breathing dust. Seek medical attention if irritation persists.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.2 Skin Contact</td>
<td>Wash with mild soap and warm water: Graphite is non-staining to skin and is not a chemical irritant.</td>
</tr>
<tr>
<td>4.1.3 Eye Contact</td>
<td>Rinse with tepid water until eyes are clear of particulates. Seek medical attention if irritation persists.</td>
</tr>
<tr>
<td>4.1.4 Ingestion</td>
<td>Get immediate medical attention. Do not induce vomiting unless directed by medical personnel. Natural graphite is not known to be toxic by ingestion. However, ingestion may cause digestive system blockage.</td>
</tr>
</tbody>
</table>

#### 4.2 Most important symptoms and effects, both acute and delayed: No Data Available

#### 4.3 Indication of any immediate medical attention and special treatment needed: If patient exhibits shortness of breath, choking, powder inundated eyes or mouth; immediate medical attention may be required.

### Section 5 – Fire Fighting Measures

<table>
<thead>
<tr>
<th>5.1 Extinguishing Media</th>
<th>Dry chemical extinguisher, water, sand, limestone powder,</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2 Special Hazards</td>
<td>At temperatures above 1500 °C, graphite reacts with substances containing oxygen, including water and carbon dioxide. In case of intensely hot fire events, use sand to cover and isolate graphite.</td>
</tr>
<tr>
<td>Products of Combustion:</td>
<td>Carbon dioxide, CO₂, carbon monoxide, CO.</td>
</tr>
</tbody>
</table>

#### 5.3 Advice for Fire Fighters: Use self contained air pack, gloves, safety goggles

#### 5.4 Additional Information: USA NFP Rating 110

### Section 6 – Accidental Release Measures

#### Methods for Cleaning Up: Wear approved dust mask, safety goggles, and conventional work gloves. Conventional Sweep or vacuum. Avoid creating dusting conditions

#### 6.1 Personal precautions, protective equipment and emergency procedures

**6.1.1 For non-emergency personnel:** Wear approved dust mask, safety goggles, and conventional work gloves. Use conventional cleanup techniques and avoid creating dust. Vacuum is preferred over sweeping. Be cautious of slip hazard on wet or dry pedestrian surfaces. Wear a dust mask/respirator to reduce the change of inhaled dust. Graphite is electrically conductive and any cleanup methods should avoid contacting graphite with electrical circuitry.

**6.1.2 For emergency responders:** Wear approved dust mask, safety goggles, and conventional work gloves. Same methodology as for non-emergency personnel(sec 6.1.1)

#### 6.2 Environmental Precautions: Natural graphite is inert and insoluble and will not pose any soluble ion hazards to the environment. However, good housekeeping practices should be followed and spilled material should be cleaned up, and disposed of in an appropriate manner.

#### 6.3 Methods and material for containment and clean up: No special containment needed other than conventional vacuuming and waste containment. Avoid creating dust. Graphite is electrically conductive and any cleanup methods should avoid contacting graphite with electrical circuitry.

#### 6.4 Reference to other sections: Not needed

#### 6.5 Additional information: Not needed

### Section 7 – Handling and Storage

#### 7.1 Precautions for safe handling

**7.1.1 Handling** Use conventional methods, but avoid dusting conditions. Provide sufficient exhaust ventilation in areas where dust is created. Wear suitable respiratory protection. Keep powder from contacting eyes. Natural graphite is a good conductor of electricity. Avoid contact between natural graphite and electrical circuitry. Slip Hazard: Graphite is a highly lubricious material and may present a slip hazard if spilled on wet or dry pedestrian surfaces.

#### 7.2 Conditions for safe storage, including any incompatibilities.

**Storage:** Store all carbonaceous materials in a dry location. Keep packaging closed or covered

**Incompatibilities:** Graphite is incompatible with all oxidizing agents.

**Dust Explosibility Hazards:** Very finely divided graphite powder poses a very slight risk of dust explosion hazard: Dust class ST1, MIE greater that 10 J (very low hazard of spark ignition)
Section 8 – Exposure Controls/ Personal Protection
8.1 Control parameters: Follow workplace regulatory exposure limits for all types of airborne dust.
8.1.1 Occupational exposure limits: The occupational exposure limits posted here are from ACGIH. For equivalent values of other countries please consult a verified source for local regulatory exposure limit values.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>%</th>
<th>ACGIH TWA</th>
<th>Control Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Mineral Graphite</td>
<td>7782-42-5</td>
<td>60-95</td>
<td>2.0 mg/m³ Respirable dust</td>
<td>2014 ACGIH TLV Handbook</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>10.0 mg/m³ Inhalable dust</td>
<td></td>
</tr>
<tr>
<td>Silica (quartz)</td>
<td>14808-60-7</td>
<td>0.5-4.5</td>
<td>0.025 mg/m³ Respirable dust</td>
<td>2014 ACGIH TLV Handbook</td>
</tr>
<tr>
<td>Naturally occurring inert mineral</td>
<td>999999-99-4</td>
<td>5-40</td>
<td>2.0 mg/m³ Respirable dust</td>
<td>2014 ACGIH TLV Handbook</td>
</tr>
</tbody>
</table>

Engineering Measures
Use adequate dust collection to maintain dust levels below the control or recommended values.

Respiratory Protection
Approved dust mask, type N95 recommended.

Eye/Face Protection
Wear laboratory goggles, or full side shielded safety glasses.

Skin Protection
Conventional work gloves and clothing.

Additional
Graphite spilled on pedestrian surfaces may pose a significant slip hazard.

8.2 Exposure controls
8.2.1 Appropriate engineering controls: Use adequate dust collection to maintain dust levels below the control or recommended values.
8.2.2 Personal protective equipment
8.2.2.1 Eye/Face Protection: Wear laboratory goggles, or full side shielded safety glasses.
8.2.2.2 Skin Protection: Conventional work gloves and clothing.
8.2.2.3 Respiratory Protection: Approved dust mask, type N95 recommended.
8.2.3 Environmental exposure controls: Natural graphite is inert and insoluble. To the best of our knowledge, natural graphite should not present any environmental hazards. No special environmental exposure controls, other than standard practices for dust and spill control, are required.

Section 9 – Physical and Chemical Properties
9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Color:</th>
<th>Gray to Black</th>
<th>Material State</th>
<th>Solid, granular or powder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor</td>
<td>None</td>
<td>Melting Point</td>
<td>Sublimates at 3652C</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>NA</td>
<td>Vapor Density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>2.26</td>
<td>% Volatile (By Wt.)</td>
<td>0-1%</td>
</tr>
<tr>
<td>Vapor Pressure (mm Hg)</td>
<td>NA</td>
<td>pH</td>
<td>Auto Ignition</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Insoluble</td>
<td>Evaporation Rate:</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition Temp</td>
<td>Oxidizes above 450C</td>
<td>Dust Explosion class</td>
<td>ST1=KST&gt;0-200 bar m/s, MIE above 10 J.</td>
</tr>
<tr>
<td>Flash Point</td>
<td>NA</td>
<td>Solid substance with very high melting point.</td>
<td></td>
</tr>
</tbody>
</table>

Section 10 – Stability and Reactivity
10.1 Reactivity
Graphite is non-reactive under ambient conditions.
10.2 Stability
Stable. Will not polymerize or self react spontaneously.
10.3 Possibility of hazardous reactions
None known
10.4 Conditions to Avoid
Avoid contact with oxidizing agents. Graphite will begin to oxidize at temperatures above 450 C.
10.5 Incompatible materials
Oxidizing agents
10.6 Hazardous products of decomposition
Carbon Dioxide (CO₂), Carbon Monoxide (CO)

Flammable Limits (% by Vol.)
LEL and UEL values not available: Minimum Ignition Energy (MIE) greater than 10 joules. When exposed to extremely high energy ignition sources very finely divided graphite powder can form explosive mixtures with air. Avoid contact between graphite dust clouds and high energy ignition sources. Classified as combustible but not flammable.
Section 11 – Toxicological Information
11.1 Information on toxicological effects: Acute toxicity

<table>
<thead>
<tr>
<th>Effect dose</th>
<th>Species</th>
<th>Method</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>LD50 &gt; 2000 mg/kg bw</td>
<td>Rat</td>
<td>OECD 423</td>
</tr>
<tr>
<td>Acute inhalation toxicity</td>
<td>LC50 &gt; 2000 mg/m3</td>
<td>Rat</td>
<td>OECD 403 Limit dose acc. to CLP</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Rabbit</td>
<td>OECD 404</td>
<td>Not irritating</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Rabbit</td>
<td>OECD 405</td>
<td>Not irritating</td>
</tr>
<tr>
<td>Respiratory or skin sensitization</td>
<td>Mouse</td>
<td>OECD 429</td>
<td>Not sensitizing</td>
</tr>
</tbody>
</table>

| Genotoxicity                  | In vitro        | Negative | Bacterial reverse mutation assay.         |
| Genotoxicity                  | In vitro        | Negative | Mammalian chromosome aberration test.     |
| Genotoxicity                  | In vitro        | Negative | Mammalian cell gene mutation test (gene mutation). |
| Carcinogenicity               | Literature      | Not carcinogenic (DFG, 2002). Based on available data the classification criteria are not met. |
| Reproductive toxicity         | Rat             | OECD 422 | NOAEL > 1000 mg/kg bw                     |
|                              |                 |         | Dose as nominal food intake, corresponding to limit dose according to OECD 422. Based on available data the classification criteria are not met. |

STOT-single exposure

<table>
<thead>
<tr>
<th>Single exposure</th>
<th>Specific effect</th>
<th>Affected organs</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>No specific effects.</td>
<td>Not applicable.</td>
<td>Based on available data the classification criteria are not met.</td>
</tr>
<tr>
<td>OECD 423 (rat)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute inhalation toxicity</td>
<td>Only usual signs of discomfort after the end of exposure were observed.</td>
<td>Not applicable.</td>
<td>Based on available data the classification criteria are not met.</td>
</tr>
<tr>
<td>OECD 403 (rat)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11.1 Information on toxicological effects: continued

STOT-repeated exposure: This product contains quartz (respirable) as an impurity, and as a result is classified as STOT RE2 according to EC 1272/2008.

Prolonged and/or massive exposure to respirable crystalline silica-containing dust may cause silicosis, a nodular pulmonary fibrosis caused by deposition in the lungs of fine respirable particles of crystalline silica.

In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However it pointed out that not all industrial circumstances, nor all crystalline silica types, were to be incriminated. (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.)

In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. “There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore preventing the onset of silicosis will also reduce the cancer risk…” (SCOEL SUM Doc 94-final, June 2003).

Aspiration hazard: Solid substance. Based on available data the classification criteria are not met.
Symptoms related to the physical, chemical and toxicological characteristics:
In case of ingestion: No signs of systemic toxicity found in studies acc. to OECD 423 and OECD 422.
No human data on effects after ingestion. See section 4 for first aid measures.
In case of skin contact: No irritation or corrosion found in a study acc. to OECD 404. No human data on effects after skin contact. See section 4 for first aid measures.
In case of inhalation: No signs of systemic toxicity found in studies acc. to OECD 403 and OECD 412. Usual signs after inhalation of poorly soluble dusts with low toxicity were found in these studies. No symptoms are expected if relevant occupational exposure levels and derived no effect levels are complied with. In situations of repeated excessive lung overload due to a high airborne concentration of particles of respirable size for extended periods of time pneumoconiosis may develop. See section 4 for first aid measures.
In case of eye contact: No irritation or corrosion found in a study acc. to OECD 405. No human data on effects after eye contact. See section 4 for first aid measures.

Section 12 – Ecological Information
12.1 Toxicity:

<table>
<thead>
<tr>
<th>Aquatic toxicity</th>
<th>Effect dose</th>
<th>Exposure time</th>
<th>Method</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute fish toxicity</td>
<td>LC50 &gt; 100 mg/l</td>
<td>96 hour</td>
<td>OECD 203 (EU method C.1)</td>
<td>No adverse reaction up to the tested concentration could be observed.</td>
</tr>
<tr>
<td>Acute daphnia toxicity</td>
<td>EC50 &gt; 100 mg/l</td>
<td>48 hour</td>
<td>OECD 202 (EU method C.2)</td>
<td>No adverse reaction up to the tested concentration could be observed.</td>
</tr>
<tr>
<td>Acute algae toxicity</td>
<td>EC50 &gt; 100 mg/l</td>
<td>72 hour</td>
<td>OECD 201 (EU method C.3)</td>
<td>No adverse reaction up to the tested concentration could be observed.</td>
</tr>
</tbody>
</table>

Section 12 – Ecological Information: continued
12.1.2 Sediment toxicity: None known.
12.1.3 Terrestrial toxicity: None known.

12.2 Persistence and degradability: Graphite is a reduced form of carbon and will not degrade further under normal conditions. This form of carbon is stable, unreactive in water under ambient conditions, and is insoluble.
12.3 Bioaccumulation potential: There is no evidence indicating that graphite is bioaccumulative.
12.4 Soil Mobility: Graphite is not expected to have mobility in soil as it is an insoluble, inorganic substance.
12.5 PBT and vPvB assessment: Graphite is not a persistent bioaccumulative and toxic substance.
12.6 Other adverse effects: None known. Graphite has no ozone depleting potential.

Section 13 – Disposal Considerations
Dispose of in a manner which conforms to local, state and Federal regulations.

Graphite is a reduced form of carbon. Graphite is non-hazardous but disposal of graphite waste should be handled in a responsible matter.

Graphite is a form of elemental carbon so it is not biodegradable.

Provision of a European Waste Catalog, waste code number, should be handled in agreement with the regional waste disposal company.

Packaging should be completely emptied of contents and disposed of in a manner specified by the recycler/regional disposal contractor. Dust formation from packaging residues should be avoided. Store empty packaging in a suitable receptacle.
Section 14 – Transport Information

14.1 UN Number Not applicable
14.2 UN Proper shipping name Not applicable
14.3 Transport hazard class Not applicable
14.4 Packing Group Not applicable
14.5 Environmental hazards None known

Marine Transport Not classified as a hazardous material
Land Transport Not classified as a hazardous material
Air Transport Not classified as a hazardous material
Transport Label Required No label required

Section 15 – Regulatory Information

15.1 Regulatory Status and Inventories
Not Classified

Inventory Information:
EEC EINECS #231-955-3
US TSCA Yes
Canada DSL Yes
Canada NDSL No
Australian AICS Yes
Korean ECL Yes
Asia PAC Yes
Swiss Giftliste 1 Yes #G8422
IECSC Yes
PICCS Yes
New Zealand NZLoC Yes

REACH: Natural graphite is exempt from REACH registration per Annex V, Paragraph VII.
RoHS: Natural graphite is compliant with the EU RoHS directive
WEEE: Natural graphite is compliant with the EU waste electrical and electronic equipment directive

15.2 Chemical Safety Assessment: For this substance a chemical safety assessment is not required

Section 16 – Other Information

Abbreviations Used:
ACGIH TWA American Council of Government and Industrial Hygienists Time Weighted Average value.
CAS Chemical Abstracts Service
NA Not applicable
N.O.S. Not otherwise specified
BW Body weight