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## MATERIAL SAFETY DATA SHEET

### EMERGENCY OVERVIEW

This dark gray/black slippery powder may be harmful if inhaled. May cause irritation to skin, eyes and respiratory tract. Affects respiratory and cardiovascular systems. Inhalation is a cancer hazard. Contains quartz, which can cause cancer (risk depends upon duration and level of exposure).

**NFPA RATING:** HEALTH: 1 **FLAMMABILITY:** 1 **REACTIVITY:** 0

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**GENERIC NAME:** GRAPHITE

**ISSUE DATE:**

April 19, 2007

**THIS LUBRICANTS USA PRODUCT IS:**

**GRAPHITE POWDER**

**CAS NUMBER:**

7782-42-5

**SYNONYMS / GENERAL NAMES:**

Natural graphite

**24 HOUR EMERGENCY TELEPHONE:**

(CHEMTREC) 1-800-424-9300

**TECHNICAL INFORMATION:**

1-800-442-5823

### 2. COMPOSITION / INFORMATION ON INGREDIENTS / HAZARDOUS INGREDIENTS

COMPONENTS	CAS NO.	%	HAZARD DATA
Graphite Powder	7782-42-5	85-98	OSHA PEL 2.0 mg/m <sup>3</sup> ; TWA 2 mg/m <sup>3</sup> , Limits for air contaminants (OSHA TWA 15 ml/m <sup>3</sup> )
Silicate or quartz impurities	14808-60-7	0-15	OSHA PEL 0.05 mg/m <sup>3</sup> ; TWA 0.05 mg/m <sup>3</sup>

### 3. HAZARDOUS IDENTIFICATION

<b>ROUTES OF ENTRY:</b>	Breathing
<b>TARGET ORGANS:</b>	Lungs
<b>IRRITANCY:</b>	This product can cause transient eye irritation
<b>REPRODUCTIVE EFFECTS:</b>	N/A
<b>CANCER INFORMATION:</b>	This product may contain impurities of 1-3% crystalline silica (quartz, CAS 14808-60-7) which is listed by IARC as Group 1 carcinogen and by ACGIH as A2 (suspected human carcinogen).

### 4. FIRST AID MEASURES

<b>EYES:</b>	Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention if irritation persists. <b>Symptoms.</b> May cause mild irritation, possible reddening.
<b>DERMAL:</b>	Immediately flush skin with soap and plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops. <b>Symptoms--</b> May cause mild irritation and redness.
<b>INGESTION:</b>	Not expected to require first aid measures. If large amounts were swallowed, give water to drink and get medical advice. Rinse mouth thoroughly with water. Seek medical advice immediately. <b>Symptoms.</b> Not expected to be a health hazard via ingestion. May cause irritation to the

	gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea
<b>INHALATION:</b>	<p><b>First Aid Measure</b> Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.</p> <p><b>Symptoms.</b> May cause irritation to the respiratory tract. Symptoms may include coughing and shortness of breath. May produce black sputum, decreased pulmonary function and lung fibrosis.</p> <p><b>Chronic Exposure</b> to natural graphite is associated with the development of pneumoconiosis, a disease of the lungs.</p> <p>For Quartz: Prolonged inhalation exposure may produce silicosis. Chronic symptoms include cough, dyspnea, wheezing, increased susceptibility to tuberculosis, decreased chest expansion, and repeated nonspecific chest illnesses. Progressive respiratory and cardiopulmonary impairment may be fatal. Chronic inhalation of crystalline silica is a lung cancer hazard.</p> <p><b>Aggravation of Pre-existing Conditions:</b> Persons with pre-existing respiratory or cardiopulmonary problems may be more susceptible to the effects of this substance.</p>

**5. FIRE FIGHTING MEASURES**

<b>FLASH POINT, °C( °F):</b>	N/A
<b>FLAMMABLE LIMITS (% BY VOLUME):</b>	<b>LOWER:</b> N/A <b>UPPER:</b> N/Z
<b>EXTINGUISHING MEDIA:</b>	Use any means suitable for extinguishing surrounding fire.
<b>SPECIAL FIRE FIGHTING PROCEDURES:</b>	In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.
<b>AUTOIGNITION TEMPERATURE:</b>	Graphite does not burn or support combustion. If ground to sub-micron sizes, graphite may ignite spontaneously in air.
<b>EXPLOSION DATA:</b>	Not considered to be an explosion hazard.
<b>NFPA RATING:</b>	<b>HEALTH:</b> <u>  1  </u> <b>FLAMMABILITY:</b> <u>  1  </u> <b>REACTIVITY</b> <u>  0  </u>

**6. ACCIDENTAL RELEASE MEASURES**

<b>SPILL PROCEDURES:</b>	Slipping hazard—do not walk through spilled material. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.
<b>Ecotoxicity</b>	Ecological effects testing has not been conducted on this material. Discharges are expected to cause only localized and non-persistent environmental damage.
<b>Environmental fate</b>	An environmental fate analysis has not been conducted on this specific product. However, plants and animals may experience harmful or fatal effects when coated with this material. This product is not considered readily biodegradable.

**7. HANDLING AND STORAGE**

<b>HANDLING &amp; STORAGE PROCEDURES:</b>	Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product. Take precautionary measures against static charges.
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**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

<b>EYE PROTECTION:</b>	<p><b>Eye Protection:</b></p> <p>Use chemical safety goggles and/or full face shield where dusting is possible as described by OSHA's eye and face protection regulations in 29 CFR 1910.133. Maintain eye wash fountain and quick-drench facilities in work area.</p>
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<p><b>ENGINEERING CONTROLS:</b></p>	<p><b>Ventilation System:</b> A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, <i>Industrial Ventilation, A Manual of Recommended Practices</i>, most recent edition, for details.</p>
<p><b>GLOVES AND CLOTHING PROTECTION:</b></p>	<p><b>Hand and Skin Protection:</b> Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Before use, the protective gloves should be tested for its specific work-station suitability (i.e. mechanical resistance, product compatibility and antistatic properties). Adhere to the manufacturer's instructions and information relating to the use, storage, care and replacement of protective gloves. Protective gloves shall be replaced immediately when physically damaged or worn. Design operations to avoid permanent use of protective gloves if possible. Use rubber gloves to provide protection against permeation.</p>
<p><b>RESPIRATORY PROTECTION:</b></p>	<p><b>Personal Respirators (NIOSH Approved):</b> A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.</p> <p>If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. <b>WARNING:</b> Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.</p>
<p><b>GENERAL HYGIENE</b></p>	<p>Do not eat, drink or smoke during work time. Keep away from foodstuffs and beverages. Avoid contact with eyes and skin. Remove soiled clothing immediately. Wash hands before breaks and after work. Do not inhale dust. Know where the eye wash fountain is available.</p>
<p><b>OTHER COMMENTS:</b></p>	<p><b>Other Control Measures:</b> Graphite is a conductor of electricity. Exercise caution when handling graphite in areas where contact with electrical circuitry is possible. Use good personal hygiene practices.</p>
<p><b>Occupational exposure guidelines</b></p>	<p><b>Airborne Exposure Limits (Applicable workplace exposure levels):</b> <u>For Graphite (Natural)—CAS 7782-42-5, EC no. 231-955-3:</u></p> <ul style="list-style-type: none"> <li>- ACGIH Threshold Limit Values (TLVs) - 2 mg/m<sup>3</sup> (for all forms of graphite except graphite fibers)</li> <li>- NIOSH Recommended Exposure Limit (REL) - 2.5 mg/m<sup>3</sup> for up to a 10-hour workday during a 40-hour workweek.</li> <li>- OSHA Permissible Exposure Limits (PELs) – TWA 15 ml/m<sup>3</sup></li> </ul> <p><u>For Silica, Crystalline, Quartz (CAS no 14808-60-7, EC no 231-955-3):</u></p> <ul style="list-style-type: none"> <li>- ACGIH Threshold Limit Values (TLVs) - 0.05 mg/m<sup>3</sup> (TWA), respirable fraction, A2 - Suspected Human Carcinogen.</li> <li>- NIOSH Recommended Exposure Limit (REL) - 0.05 mg/m<sup>3</sup> (TWA), potential occupational carcinogen.</li> <li>- OSHA Permissible Exposure Limits (PELs) - (30mg/m<sup>3</sup>)/(%SiO<sub>2</sub> + 2), (TWA), total dust; (10 mg/m<sup>3</sup>)/(%SiO<sub>2</sub> + 2), (TWA), respirable fraction; where "%SiO<sub>2</sub>" is the percentage of crystalline silica determined by airborne samples, as defined by 29 CFR 1910.1000, Z-3.</li> </ul>

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>APPEARANCE:</b>	Dark gray/black semi-solid to solid, smooth with slight fiber texture.
<b>ODOR:</b>	Mild petroleum odor
<b>pH:</b>	N/A
<b>VAPOR PRESSURE, mm Hg (25°C):</b>	<0.0001
<b>VAPOR DENSITY:</b>	>1 (Air =1)
<b>MELTING POINT:</b>	3650 C (6602 F)
<b>BOILING POINT, 760 mm Hg, °C:</b>	N/A—sublimes
<b>SOLUBILITY IN WATER:</b>	Insoluble in water.
<b>SPECIFIC GRAVITY:</b>	2.27 (Water = 1)
<b>EVAPORATION RATE:</b>	0
<b>VISCOSITY 40°C (100°C)</b>	N/A
<b>MOLECULAR WEIGHT:</b>	N/A
<b>PERCENT VOLATILE:</b>	Negligible volatility

**10. STABILITY AND REACTIVITY**

<b>STABILITY:</b>	Stable
<b>INCOMPATIBILITY:</b>	Strong oxidizers
<b>POLYMERIZATION:</b>	Will not occur
<b>THERMAL DECOMPOSITION:</b>	CO <sub>2</sub> , CO when heated to decomposition.

**Incompatibilities:**

Graphite reacts vigorously with liquid potassium, potassium peroxide and will ignite with chlorine trifluoride and fluorine. If graphite contacts liquid potassium, rubidium, or caesium at 300C, intercalation compounds may be formed. These compounds may explode on contact with water or ignite in air.

For Quartz: Reacts with hydrogen fluoride, fluorine, oxygen difluoride, chlorine trifluoride, strong acids, strong bases, and oxidizers.

**Conditions to Avoid:**

Incompatibles.

**11. TOXICOLOGICAL INFORMATION**

<b>EYE IRRITATION:</b>	Species: rabbit. Method OECD 405, graphite was found to be a slight irritant.
<b>DERMAL IRRITATION:</b>	
<b>INHALATION TOXICITY:</b>	No LD50/LC50 information found relating to normal routes of occupational exposure.
<b>INGESTION IRRITATION:</b>	
<b>INJECTION SENSITATION:</b>	
<b>CHRONIC EXPOSURE SYMPTOMS</b>	
<b>OTHER REMARKS</b>	Quartz: Investigated as a tumorigen and mutagen. <b>Carcinogenicity:</b> For Silica, Crystalline: - Cristobalite (14464-46-1), quartz (14808-60-7), and tridymite (15468-32-3) are listed by NTP as known to be a human carcinogen. - NIOSH considers cristobalite, tridymite, quartz, and tripoli (1317-95-9) to be potential occupational carcinogens.

**12. HEALTH INFORMATION**

**HMIS CODE:**      **HEALTH:**    1    **FIRE:**      1    **REACTIVITY:**    0

No	<b>HIGHLY TOXIC</b>	No	<b>SENSITIZER</b>
No	<b>TOXIC</b>	No	<b>REPRODUCTIVE EFFECTS</b>
No	<b>CORROSIVE</b>	No	<b>MUTAGEN</b>
No	<b>IRRITANT</b>		

**13. DISPOSAL CONSIDERATIONS**

**WASTE DISPOSAL:** Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

**14. TRANSPORT INFORMATION**

Not regulated.

**DOT (DEPARTMENT OF TRANSPORTATION)**

<b>PROPER SHIPPING NAME:</b>	
<b>HAZARD CLASS:</b>	
<b>HAZARD IDENTIFICATION NUMBER:</b>	N/A
<b>DOT PLACARD:</b>	N/A
<b>COMPATIBILITY CATEGORY:</b>	N/A

**15. REGULATORY INFORMATION**

**SARA SECTION 313 - TOXIC CHEMICALS:**

This product does not contain toxic chemicals under SARA Section 313 and 40 CFR Part 372.

**SARA SECTION 311 - HAZARD CATEGORIES:**

This product may meet one or more of the criteria for the hazard categories defined in 40 CFR Part 370 as established by Sections 311 and 312 of SARA as indicated below: CAS 14808-60-7

YES	<b>IMMEDIATE (ACUTE) HEALTH HAZARD</b>	NO	<b>SUDDEN RELEASE OF PRESSURE HAZARD</b>
YES	<b>DELAYED (CHRONIC) HEALTH HAZARD</b>	NO	<b>REACTIVE HAZARD</b>
NO	<b>FIRE HAZARD</b>		

**SARA SECTION 302 - EXTREMELY HAZARDOUS WASTE:**

This product is not known to contain any components in concentrations greater than one percent that are listed as Extremely Hazardous Substances in 40 CFR Part 355 pursuant to the requirements of Section 302(a) of SARA.

**CLEAN WATER ACT (CWA):**

Under the CWA, discharges of crude oil and petroleum products to surface water without proper Federal and State permits must be reported immediately to the National Response Center at (800) 424-8802.

**OSHA: Hazardous by definition (29 CFR 1910.1200, Appendix A)**

The following ingredients are hazardous by definition of hazard communication standard:

CAS 14808-60-7      Quartz

**HAZARDOUS AIR POLLUTION (HAPS):**

None of the ingredients are listed.

**CERCLA HAZARDOUS SUBSTANCES:**

Notification of the National Response Center concerning release of quantities of "hazardous substances" equal to or greater than the reportable quantities (RQ's) listed in 40 CFR 302.4. Chemical substances present in this product that may be subject to this statute are: None identified.

**U.S. TSCA INVENTORY**

All components (graphite and quartz) of this material are listed on the U.S. TSCA Inventory. CAS 7782-45-5 and 14808-60-7.

**CALIFORNIA PROPOSITION 65**

**WARNING:** THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

**NEW JERSEY RIGHT-TO-KNOW LABEL**

Product Code(s) 07125

Product Source T

Graphite powder

**ADDITIONAL REGULATORY REMARKS**

None

**16. OTHER INFORMATION**

Label Hazard Warning:

**CAUTION!**

- 1. MAY BE HARMFUL IF INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.**
- 2. AFFECTS RESPIRATORY AND CARDIOVASCULAR SYSTEMS.**
- 3. INHALATION CANCER HAZARD. CONTAINS QUARTZ WHICH CAN CAUSE CANCER. Risk of cancer depends upon duration and level of exposure.**

Label Precautions:

- Do not get in eyes, on skin, or on clothing.**
- Do not breathe dust.**
- Wash thoroughly after handling.**
- Keep container closed.**
- Use with adequate ventilation.**

Label First Aid:

**If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.**

The information in this Material Safety Data Sheet should be provided to all who will use, handle, store, transport, or otherwise be exposed to this product. This information was prepared for the guidance of plant engineering, operations and management and for persons working with or handling this product. Lubricants USA believes this information to be reliable and up to date as of the date of publication, but makes no warranty that it is.

<b>NFPA HAZARD RATING</b>	least - 0	slight - 1	moderate - 2	high - 3	extreme - 4
<b>HMIS HEALTH RATING</b>	least - 0	slight - 1	moderate - 2	high - 3	extreme - 4

AP = approximately    EQ = equal    > = greater than    < = less than    NA = not applicable    ND = no data    NE = not established

- ACGIH = American Conference of Governmental Industrial Hygienists
- AIHA = American Industrial Hygiene Association
- CERCLA = Comprehensive Environmental Response, Compensation and Liability Act (1980)
- EPA = Environmental Protection Agency
- HMIS = Hazardous Materials Information System
- IARC = International Agency for Research on Cancer
- NFPA = National Fire Protection Association
- NIOSH = National Institute of Occupational Safety and Health
- NLGI = National Lubricating Grease Institute
- NPCA = National Paint and Coating Manufacturers Association
- NTP = National Toxicology Program
- OSHA = Occupational Safety and Health Administration
- RQ = Reportable quantity
- SARA = Superfund Amendments and Reauthorization Act (1986)
- TSCA = Toxic Substance Control Act