MSDS Number: **G8122** * * * * * *Effective Date:* *08/02/06* * * * *
** Supercedes:* *02/16/06*

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

J.T.Baker ®

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300
National Response in Canada
CANUTEC: 613-996-6666
Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

Graphite

1. Product Identification

Synonyms: Natural Graphite; Mineral Carbon; Black Lead
CAS No.: 7782-42-5
Molecular Weight: 12.01
Chemical Formula: C
Product Codes: M845

2. Composition / Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Graphite	7782-42-5	96 - 100%	Yes
Quartz	14808-60-7	0 - 4%	Yes

3. Hazards Identification

Emergency Overview

CAUTION! MAY BE HARMFUL IF INHALED. MAY CAUSE IRRITATION TO SKIN, EYES,

AND RESPIRATORY TRACT. AFFECTS RESPIRATORY AND CARDIOVASCULAR SYSTEMS. INHALATION CANCER HAZARD. CONTAINS QUARTZ WHICH CAN CAUSE CANCER. Risk of cancer depends upon duration and level of exposure.

J.T. Baker SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 4 - Extreme (Cancer Causing)
Flammability Rating: 0 - None
Reactivity Rating: 0 - None
Contact Rating: 1 - Slight
Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES
Storage Color Code: Blue (Health)

Potential Health Effects

Inhalation:
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.
Ingestion:
Not expected to be a health hazard via ingestion. May cause irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.
Skin Contact:
May cause mild irritation and redness.
Eye Contact:
May cause mild irritation, possible reddening.
Chronic Exposure:
Chronic inhalation exposure to natural graphite is associated with the development of pneumoconiosis, a disease of the lungs.
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.
Aggravation of Pre-existing Conditions:
Persons with pre-existing respiratory or cardiopulmonary problems may be more susceptible to the effects of this substance.

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4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion:
Not expected to require first aid measures. If large amounts were swallowed, give water to drink and get medical advice.
Skin Contact:
Immediately flush skin with 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.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention if irritation persists.

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5. Fire Fighting Measures

Fire:
Graphite does not burn or support combustion. If ground to sub-micron sizes, graphite may ignite spontaneously in air.
Explosion:
Not considered to be an explosion hazard.
Fire Extinguishing Media:
Use any means suitable for extinguishing surrounding fire.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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6. Accidental Release Measures

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.

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7. Handling and Storage

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.

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8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
For Graphite (Natural):
- ACGIH Threshold Limit Values (TLVs) -
2 mg/m3 (for all forms of graphite except graphite fibers)
- NIOSH Recommended Exposure Limit (REL) -
2.5 mg/m3 for up to a 10-hour workday during a 40-hour workweek.
- OSHA Permissible Exposure Limits (PELs) -
15 mppcf (TWA).

For Silica, Crystalline, Quartz (14808-60-7):
- ACGIH Threshold Limit Values (TLVs) -
0.025 mg/m3 (TWA), respirable fraction, A2 - Suspected Human Carcinogen.
- NIOSH Recommended Exposure Limit (REL) -
0.05 mg/m3 (TWA), potential occupational carcinogen.
- OSHA Permissible Exposure Limits (PELs) -
(30mg/m3)/(%SiO2 + 2), (TWA), total dust;
(10 mg/m3)/(%SiO2 + 2), (TWA), respirable fraction;
where "%SiO2" is the percentage of crystalline silica
determined by airborne samples, as defined by
29 CFR 1910.1000, Z-3.

Ventilation System:
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, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):
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. WARNING: 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.

Skin Protection:
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:
Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

Other Control Measures:
Graphite is a conductor of electricity. Exercise caution when handling graphite in areas where contact with electrical circuitry is possible.

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9. Physical and Chemical Properties

Appearance:
Gray to black solid.

Odor:
Odorless.

Solubility:
Insoluble in water.

Specific Gravity:
2.20 - 2.35

pH:
No information found.

% Volatiles by volume @ 21C (70F):
0

Boiling Point:
Sublimes.

Melting Point:
3650C (6602F)

Vapor Density (Air=1):
Not applicable.

Vapor Pressure (mm Hg):
Not applicable.

Evaporation Rate (BuAc=1):
No information found.

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10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products:
Carbon dioxide and carbon monoxide may form when heated to decomposition.
Hazardous Polymerization:
Will not occur.
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.

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11. Toxicological Information

Toxicological Data:
No LD50/LC50 information found relating to normal routes of occupational exposure.

Quartz: Investigated as a tumorigen and mutagen.

Carcinogenicity:
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.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Graphite (7782-42-5)	No	No	None
Quartz (14808-60-7)	Yes	No	1

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12. Ecological Information

Environmental Fate:
No information found.
Environmental Toxicity:
No information found.

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13. Disposal Considerations

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.

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14. Transport Information

Not regulated.

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15. Regulatory Information

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  --------\Chemical Inventory Status - Part 1\---------------------------------
  Ingredient                                    TSCA  EC   Japan  Australia
  --------------------------------------------  ----  ---  -----  ---------
  Graphite (7782-42-5)                           Yes  Yes
No       Yes
  Quartz (14808-60-7)                            Yes  Yes
Yes      Yes

  --------\Chemical Inventory Status - Part 2\---------------------------------
                                                          --Canada--
  Ingredient                                    Korea  DSL   NDSL  Phil.
  --------------------------------------------  -----  ---   ----  -----
  Graphite (7782-42-5)                           Yes   Yes   No     Yes
  Quartz (14808-60-7)                            Yes   Yes   No     Yes

  --------\Federal, State & International Regulations - Part 1\----------------
                                          -SARA 302-    ------SARA 313------
  Ingredient                              RQ    TPQ     List  Chemical Catg.
  --------------------------------------  ---   -----   ----  --------------
  Graphite (7782-42-5)                    No    No      No         No
  Quartz (14808-60-7)                     No    No      No         No

  --------\Federal, State & International Regulations - Part 2\----------------
                                                  -RCRA-    -TSCA-
  Ingredient                              CERCLA     261.33     8(d)
  --------------------------------------  ------     ------    ------
  Graphite (7782-42-5)                    No         No         No
  Quartz (14808-60-7)                     No
No         No


Chemical Weapons Convention:  No     TSCA 12(b):  No     CDTA:  No
SARA 311/312:  Acute: Yes      Chronic: Yes  Fire: No  Pressure: No
Reactivity: No          (Pure / Solid)
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WARNING:
THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Australian Hazchem Code: None allocated.
Poison Schedule: None allocated.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

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16. Other Information

NFPA Ratings: Health: **1** Flammability: **0** Reactivity: **0**

Label Hazard Warning:

CAUTION! MAY BE HARMFUL IF INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. AFFECTS RESPIRATORY AND CARDIOVASCULAR SYSTEMS. 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.

Product Use:

Laboratory Reagent.

Revision Information:

MSDS Section(s) changed since last revision of document include: 8.

Disclaimer:

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