

# Material Safety Data Sheet

ANGSTRON MATERIALS, INC.

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Version: 2.2.5  
Revision Date: 12/14/2010

PRODUCT NAME: N008-100-P-40

## 1. PRODUCT AND COMPANY IDENTIFICATION

MANUFACTURER:  
Angstrom Materials, Inc.  
1240 McCook Avenue  
Dayton, Ohio 45404

Inquiries: <http://www.angstrommaterials.com>  
Fax Number: (937) 558.0606  
Telephone Number: (937) 331-9884

Print Date:

Date of Origin: 03/03/2010

Generic Description: Nano Graphene Platelet  
Physical Form: Powder  
Color: Greyish-Black  
Odor: Characteristic

NFPA Profile: Health 1 Flammability 0 Instability/Reactivity 0

Note: NFPA = National Fire Protection Association

## 2. HAZARDS IDENTIFICATION

### POTENTIAL HEALTH EFFECTS

#### Acute Effects

Eye: Direct contact may cause mild irritation.

Skin: No significant irritation expected from a single short-term exposure.

Inhalation: Not likely to be a relevant route of exposure; however, under conditions where exposure to dust or mists is possible, could cause irritation of respiratory tract.

Ingestion: Not likely to be a relevant route of exposure, but very low toxicity in normal industrial use.

#### Prolonged/Repeated Exposure Effects

Skin: Repeated or prolonged exposure may cause irritation.

Inhalation: No known applicable information.

Ingestion: Repeated ingestion or swallowing large amounts may cause internal injuries.

#### Signs and Symptoms of Overexposure

No known applicable information.

#### Medical Conditions Aggravated by Exposure

No known applicable information.

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## 3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>CAS Number</u>	<u>Wt %</u>	<u>Component Name</u>
7782-42-5	</=99.02	Graphene Platelets
7732-18-5	</=0.78	Water (Moisture)
7803-57-8	</=0.20	Ash Content

## 4. FIRST AID MEASURES

Eye:	Flush with large amounts of water for at least 15 minutes, lifting the eyelids to separate them. Do not rub eyes or keep them closed. Seek medical assistance immediately.
Skin:	Immediately wash with soap and water, remove contaminated clothing, and seek medical assistance if needed.
Inhalation:	Remove to fresh air immediately and give oxygen if breathing is difficult. Seek medical assistance if needed.
Ingestion:	Do not induce vomiting. Have victim rinse out mouth with water, and then drink sips of water to remove taste from mouth. In general, no treatment is necessary unless large quantities of product are ingested. However, seek medical advice immediately.
Notes to Physician:	Treat according to person's condition and specifics of exposure.

## 5. FIRE FIGHTING MEASURES

Flash Point:	Not Applicable
Flammability Limits in Air:	Lower Limit: N/A Upper Limit: N/A
Extinguishing Media:	Use water fog, alcohol foam, dry chemical, or carbon dioxide
Fire Fighting Measures:	Do not enter fire area without full bunker gear, including positive pressure MSHA/NIOSH self-contained breathing apparatus. Container areas exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure.
Unusual Fire Hazards:	None.

## 6. ACCIDENTAL RELEASE MEASURES

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**Containment/Clean up:** Treat as normal non-toxic product. Clean up any spilled product with suitable floor detergent/soap cleaner and properly rinse and dry. This precaution will prevent a slip hazard. Dispose of saturated absorbent or cleaning materials appropriately. Local, state and federal laws and regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which federal, state and local laws and regulations are applicable. Sections 13 and 15 of this MSDS provide information regarding certain federal and state requirements.

## 7. HANDLING AND STORAGE

Use with adequate ventilation. Provide ventilation to control exposure within inhalation guidelines when handling at elevated temperatures. Avoid eye contact.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION FOR ROUTINE HANDLING AND/OR SPILLS

### Component Exposure Limits

<u>CAS Number</u>	<u>Component Name</u>	<u>Exposure Limits</u>
7782-42-5	Graphene Platelets	TWA 2 mg/m <sup>3</sup>

### Engineering Controls

Local Ventilation: As needed.  
General Ventilation: As recommended.

**Respirator Protection:** Under normal conditions, a 3M 8211 NIOSH – N95 Respirator is applicable for use.

**Eyes:** Use proper protection – safety glasses as a minimum.

**Skin:** Use suitable Gloves.

**Inhalation:** Under normal use, wear a 3M 8211 NIOSH – N95 Respirator for protection

Note: These precautions are for handling this product at room temperature. Use at elevated temperature or aerosol/spray applications may require added precautions.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form: Powder  
Color: Greyish-Black  
Odor: Characteristic  
Density:  $\leq 2.20 \text{ gm/cm}^3$   
Viscosity: Not determined  
Freezing/Melting Point: Not determined  
Boiling Point: Not determined  
Solubility in Water: Immiscible  
pH: N/A  
Volatile Content: N/A  
Flash Point: N/A

Note: The above information is not intended for use in preparing product specifications.

## 10. STABILITY AND REACTIVITY

Chemical Stability: Stable.  
Hazardous Polymerization: Hazardous polymerization should not occur  
Conditions to Avoid: None.  
Materials to Avoid: None

### Hazardous Decomposition Products

Unknown.

## 11. TOXICOLOGICAL INFORMATION

### Component Toxicology Information

To Be Determined.

### Special Hazard Information on Components

None

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## 12. Ecological Information

### Environmental Fate and Distribution

To be determined, but dispose in accordance with applicable laws.

### Environmental Effects

To be determined, but avoid runoff into waterway and ground penetration.

### Fate and Effects in Waste Water Treatment Plants

To be determined, but dispose in accordance with applicable laws.

## 13. DISPOSAL CONSIDERATIONS

### RCRA Hazard Class (40 CFR 261)

This product is not specifically listed as hazardous waste under RCRA (40 CFR 261).

Characteristic Waste:

Ignitable: N/A

Corrosive: N/A

Reactive: N/A

State or local laws may impose additional regulatory requirements regarding disposal.

## 14. TRANSPORT INFORMATION

### DOT Road Shipment Information (49 CFR 172.101)

Not regulated for transport.

### Ocean Shipment (IMDG)

Not regulated for transport.

### Air Shipment (IATA)

Not regulated for transport.

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## 15. REGULATORY INFORMATION

Contents of this MSDS comply with the OSHA Hazard Communication Standard 29 CFR 1910.1200.

All chemical substances in this material are included, listed and conforms to the following inventory status:

- Canada-DSL
- Japan-MITI and ENCS
- European Union-EINECS
- Australia-AICS
- Korea-KECI
- Philippines-PICCS
- China-IECSC
- New Zealand-NZIOC

TSCA Status: All chemical substances in this material are included on or exempted from listing on the TSCA Inventory of Chemical Substances.

Additionally, this product does not contain any chemical(s) that are subject to Section 12(b) export notification.

### EPA SARA Title III Chemical Listings

**Section 302 Extremely Hazardous Substances (40 CFR 355): None**

**Section 304 CERCLA Hazardous Substances (40 CFR 302): None**

**Section 311/312 Hazard Class (40 CFR 370):**

- Acute: N/A
- Chronic: N/A
- Fire: N/A
- Pressure: N/A
- Reactive: N/A

**Section 313 Toxic Chemicals (40 CFR 372): None**

Note: Chemicals are listed under the 313 Toxic Chemicals section only if they meet or exceed a reporting threshold.

### Supplemental State Compliance

**This product contains no known components to cause cancer or birth defect or other reproductive harm in accordance with the State of California under the Safe Drinking Water and Toxic Act of 1986 (Proposition 65).**

**The above information indicates this product also meets the Regulatory Standards for the States of Massachusetts - RTK, New Jersey – RTK (EHS Survey), and Pennsylvania – RTK (HSL).**

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## 16. OTHER INFORMATION

Revision(s): On 9/24/2010 the MSDS was revised to reflect updated information regarding the Product's True Density data and the deletion of pH specification reference. On 12/14/2010 MSDS was revised to reflect Product's Name change (N008-100-P-40) and editorial and/or format changes.

Prepared by: Angstrom Materials, Inc.

The data offered above, is in good faith, as typical values and not as product specifications. No warranty, either expressed or implied, is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate.