

# MATERIAL SAFETY DATA SHEET

xGnP® Graphene Nanoplatelets – Aqueous Dispersions

## Section 1: PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** xGnP® Graphene Dispersions - Aqueous  
**Product Use:** Additive.  
**Manufacturer/Supplier:** XG Sciences, Inc.  
3101 Grand Oak Drive  
Lansing, MI  
48911  
**Phone Number:** 517-703-1110  
**Emergency Phone:** ChemTrec USA: (800) 424-9300  
ChemTrec International: (+)1 (703) 527-3877  
**Date of Preparation:** February 6, 2013

## Section 2: HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

CAUTION

MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION.

**Potential Health Effects:** See Section 11 for more information.

**Likely Routes of Exposure:** Skin contact, eye contact, and inhalation.

**Eye:** May cause eye irritation.

**Skin:** May cause skin irritation.

**Ingestion:** Not applicable under normal conditions of use.

**Inhalation:** May cause respiratory tract irritation.

**Chronic Effects:** Prolonged or repeated contact may dry skin and cause irritation.

**Signs and Symptoms:** Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva. Symptoms may include redness, edema, drying, defatting and cracking of the skin.

**Medical Conditions Aggravated By Exposure:** Asthma. Allergies.

**Target Organs:** Skin, eyes, respiratory system.

**Potential Environmental Effects:** May cause long-term adverse effects in the aquatic environment. See Section 12 for more information.

## Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	CAS #	Wt. %
Water	7732-18-5	75-85
Graphite	7782-42-5	15-25

## Section 4: FIRST AID MEASURES

**Eye Contact:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if worn. If irritation persists, get medical attention.

**Skin Contact:** In case of contact, immediately flush skin with plenty of soap and water. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician if irritation develops and persists.

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**General Advice:** In case of accident or if you feel unwell, seek medical advice immediately (show the label or MSDS where possible).

**Note to Physicians:** Symptoms may not appear immediately.

### Section 5: FIRE FIGHTING MEASURES

**Flammability:** Not flammable by WHMIS/OSHA criteria. Avoid generating dust as the product may form explosive dust / air mixtures.

**Means of Extinction:**

**Suitable Extinguishing Media:** Treat for surrounding material.

**Unsuitable Extinguishing Media:** Not available.

**Products of Combustion:** May include, and are not limited to: oxides of carbon.

**Explosion Data:**

**Sensitivity to Mechanical Impact:** Not available.

**Sensitivity to Static Discharge:** Not available.

**Protection of Firefighters:** Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

### Section 6: ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

**Environmental Precautions:** Avoid discharge to drains, sewers, ditches, and waterways. Minimize use of water to prevent environmental contamination.

**Methods for Containment:** Contain spill, then place in a suitable container. Minimize dust generation. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).

**Methods for Clean-Up:** Vacuum or sweep material and place in a disposal container. Avoid generating dust. Spills of this material are a slipping hazard.

**Other Information:** Not available.

### Section 7: HANDLING AND STORAGE

**Handling:**

Avoid contact with skin and eyes. Keep away from sources of ignition. Avoid drying and generating dust as the product may form explosive dust/air mixtures. Good housekeeping is important to prevent accumulation of dust. Graphite is electrically conductive; care should be taken to avoid accumulation of dust / powder where it may cause electrical shorting. Use only in well-ventilated areas. Launder contaminated clothing before reuse. When using do not eat or drink. Wash hands before eating, drinking, or smoking.

**Storage:**

Keep out of the reach of children. Keep container tightly closed and dry. Do not store at temperatures above 49 °C / 120 °F.

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## Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

### Exposure Guidelines

Ingredient	Exposure Limits	
	OSHA-PEL	ACGIH-TLV
Graphite	15 mg/m <sup>3</sup> (synthetic, total dust);	2 mg/m <sup>3</sup>
Sulfur, elemental	5 mg/m <sup>3</sup> (synthetic, respirable fraction)	Not available.
	Not available.	Not available.

**Engineering Controls:** Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, etc.) below recommended exposure limits.

### Personal Protective Equipment:

**Eye/Face Protection:** Wear eye/face protection.

**Hand Protection:** Wear suitable gloves.

**Skin and Body Protection:** Wear suitable protective clothing.

**Respiratory Protection:** Wear appropriate NIOSH approved dust mask or filtering facepiece if materials is dried dust is generated.

**General Hygiene Considerations:** Handle according to established industrial hygiene and safety practices.

## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance:</b>	Mud or Paste
<b>Color:</b>	Gray or black.
<b>Odour:</b>	Odorless.
<b>Odour Threshold:</b>	Not available.
<b>Physical State:</b>	Paste.
<b>pH:</b>	6-8
<b>Viscosity:</b>	Not applicable.
<b>Freezing Point:</b>	Not applicable.
<b>Boiling Point:</b>	Not applicable.
<b>Flash Point:</b>	Not available.
<b>Evaporation Rate:</b>	Not applicable.
<b>Lower Flammability Limit:</b>	Not available.
<b>Upper Flammability Limit:</b>	Not available.
<b>Vapor Pressure:</b>	Not available.
<b>Vapor Density:</b>	Not applicable.
<b>Bulk Density:</b>	1.1 – 1.3 g/cm <sup>3</sup>
<b>Specific Gravity:</b>	Not available.
<b>Solubility in Water:</b>	Negligible.
<b>Coefficient of Water/Oil Distribution:</b>	Not available.

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**Auto-ignition Temperature:** Not available.  
**Percent Volatile, wt. %:** Not available.  
**VOC content, wt. %:** Not available.

### Section 10: STABILITY AND REACTIVITY

**Stability:** Stable under normal storage conditions.  
**Conditions of Reactivity:** Heat. Incompatible materials.  
**Incompatible Materials:** Strong oxidizers. Chlorine trifluoride. Fluorine.  
**Hazardous Decomposition Products:** May include, and are not limited to: oxides of carbon.  
**Possibility of Hazardous Reactions:** No dangerous reaction known under conditions of normal use.

### Section 11: TOXICOLOGY INFORMATION

#### EFFECTS OF ACUTE EXPOSURE

##### Component Analysis

Ingredient	LD <sub>50</sub> (oral)	LC <sub>50</sub>
Graphite	> 2000mg/kg, rat	Not available.
Sulfur, elemental	> 3000 mg/kg, rat	> 9.23 mg/L 4hr, rat

**Eye:** May cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

**Skin:** May cause skin irritation. Symptoms may include redness, edema, drying, defatting and cracking of the skin.

**Ingestion:** Not applicable under normal conditions of use.

**Inhalation:** Not applicable under normal conditions of use.

#### EFFECTS OF CHRONIC EXPOSURE

**Target Organs:** Not available.

**Chronic Effects:** Not hazardous by WHMIS/OSHA criteria.

**Carcinogenicity:** Not hazardous by WHMIS/OSHA criteria.

Ingredient	Chemical Listed as Carcinogen or Potential Carcinogen *
Water	Not listed.
Graphite	Not listed.

\* See Section 15 for more information.

**Mutagenicity:** Not hazardous by WHMIS/OSHA criteria.

**Reproductive Effects:** Not hazardous by WHMIS/OSHA criteria.

##### Developmental Effects:

**Teratogenicity:** Not hazardous by WHMIS/OSHA criteria.

**Embryotoxicity:** Not hazardous by WHMIS/OSHA criteria.

**Respiratory Sensitization:** Not hazardous by WHMIS/OSHA criteria.

**Skin Sensitization:** Not hazardous by WHMIS/OSHA criteria.

**Toxicologically Synergistic Materials:** Not available.

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## Section 12: ECOLOGICAL INFORMATION

**Ecotoxicity:** Product not expected to pose any toxicity hazards to aquatic or terrestrial life.

**Persistence / Degradability:** Not readily biodegradable.

**Bioaccumulation / Accumulation:** Not available.

**Mobility in Environment:** Not available.

## Section 13: DISPOSAL CONSIDERATIONS

### Disposal Instructions:

This material must be disposed of in accordance with all local, state, provincial, and federal regulations.

## Section 14: TRANSPORTATION INFORMATION

### DOT Classification

Not regulated

### TDG Classification

Not regulated

## Section 15: REGULATORY INFORMATION

### Federal Regulations

**Canadian:** This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

**US:** MSDS prepared pursuant to the Hazard Communication Standard (CFR29 1910.1200).

### SARA Title III

#### Ingredient

	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313
Water	Not listed.	Not listed.	Not listed.	Not listed.
Graphite	Not listed.	Not listed.	Not listed.	Not listed.

### State Regulations

#### California Proposition 65:

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

### Global Inventories

#### Ingredient

	Canada DSL/NDL DSL	USA TSCA Yes.
Graphite		

### HMIS - Hazardous Materials Identification System

Health - 1

Flammability - 0

Physical Hazard - 0

PPE – B

### NFPA - National Fire Protection Association:

Health - 1

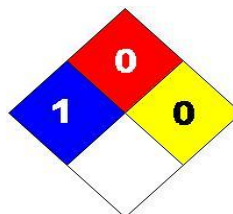
Fire - 0

Reactivity - 0

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HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARD	0
PERSONAL PROTECTION	B



**Hazard Rating:** 0 = minimal, 1 = slight, 2 = moderate, 3 = severe, 4 = extreme

**WHMIS Classification(s):**

Not controlled.

**SOURCE AGENCY CARCINOGEN CLASSIFICATIONS:**

**OSHA (O)** Occupational Safety and Health Administration.

**ACGIH (G)** American Conference of Governmental Industrial Hygienists.

A1 - Confirmed human carcinogen.

A2 - Suspected human carcinogen.

A3 - Animal carcinogen.

A4 - Not classifiable as a human carcinogen.

A5 - Not suspected as a human carcinogen.

**IARC (I)** International Agency for Research on Cancer.

1 - The agent (mixture) is carcinogenic to humans.

2A - The agent (mixture) is probably carcinogenic to humans; there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals.

2B - The agent (mixture) is possibly carcinogenic to humans; there is limited evidence of carcinogenicity in humans in the absence of sufficient evidence of carcinogenicity in experimental animals.

3 - The agent (mixture, exposure circumstance) is not classifiable as to its carcinogenicity to humans.

4 - The agent (mixture, exposure circumstance) is probably not carcinogenic to humans.

**NTP (N)** National Toxicology Program.

1 - Known to be carcinogens.

2 - Reasonably anticipated to be carcinogens.

## Section 16: OTHER INFORMATION

**Disclaimer:**

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for the user's own particular use.

**Expiry Date:** January 30, 2015

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