

xGnP® Graphene Nanoplatelets Grade C

Safety Data Sheet

according to the Hazard Communication Standard (CFR29 1910.1200) HazCom 2012 and the Hazardous Products Regulations (HPR) WHMIS 2015

Date of issue: 11/26/2015

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Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance
Substance name : xGnP® Graphene Nanoplatelets Grade C
Product code : Not available

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Additive

1.3. Details of the supplier of the safety data sheet

XG Sciences, Inc.
3101 Grand Oak Dr.
Lansing, MI 48911 - USA
T 517-703-1110

1.4. Emergency telephone number

Emergency number : CHEMTREC (800) 424-9300
CHEMTREC International +1 (703) 527-3887 24 hr

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US and GHS-CA classification

Combustible Dust

2.2. Label elements

GHS-US and GHS-CA labelling

Signal word (GHS-US, GHS-CA) : Warning
Hazard statements (GHS-US, GHS-CA) : May form combustible dust concentrations in air

2.3. Other hazards

No additional information available.

2.4. Unknown acute toxicity (GHS-US and GHS-CA)

Not applicable.

SECTION 3: Composition/information on ingredients

3.1. Substance

Name	Product identifier	%
Graphite	(CAS No) 7782-42-5	100

3.2. Mixture

Not applicable.

4.1. Description of first aid measures

First-aid measures after inhalation : If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical advice/attention if you feel unwell.
First-aid measures after skin contact : If irritation occurs, flush skin with plenty of water. Get medical attention if irritation persists.
First-aid measures after eye contact : In case of contact, immediately flush eyes with plenty of water. Remove contact lenses, if worn. If irritation persists, get medical attention.
First-aid measures after ingestion : If swallowed, rinse mouth with water. Get medical advice/attention if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : May cause respiratory irritation. May cause inflammation and possibly other adverse lung effects. Avoid breathing dust. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. Inhalation of high concentrations of graphite dust over prolonged periods of time may cause pneumoconiosis.
Symptoms/injuries after skin contact : May cause skin irritation. Symptoms may include redness, drying, defatting and cracking of the skin.
Symptoms/injuries after eye contact : May cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.
Symptoms/injuries after ingestion : May be harmful if swallowed. May cause stomach distress, nausea or vomiting.

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4.3. Indication of any immediate medical attention and special treatment needed

Symptoms may not appear immediately. In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Powder, water spray, foam, carbon dioxide
Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Products of combustion may include, and are not limited to: oxides of carbon.

5.3. Advice for firefighters

Protection during firefighting : Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA). Avoid generating dust. Dust may form flammable mixture with air.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Use personal protection recommended in Section 8. Keep unnecessary personnel away from the release. Eliminate sources of ignition.
Emergency procedures : Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (ie, clearing dust surfaces with compressed air).

6.2. Methods and material for containment and cleaning up

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 cleaning up : Spills of this material are a slipping hazard. Vacuum or sweep material and place in a disposal container. The use of a HEPA vacuum may be acceptable. Sweeping, the use of compressed air, or the use of a non-HEPA vacuum are therefore to be AVOIDED. Provide ventilation.

6.3. Reference to other sections

See section 8 for further information on protective clothing and equipment and section 13 for advice on waste disposal.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Keep away from sources of ignition. - No smoking. Avoid contact with skin and eyes. Avoid generating and breathing dust. Material should not be used in applications which will generate a vapour, mist, or aerosol. Good housekeeping is important to prevent accumulation of dust. The use of compressed air for cleaning clothing, equipment, etc, is not recommended. Do not swallow. Handle and open container with care. Use only outdoors or in a well-ventilated area.
Hygiene measures : Launder contaminated clothing before reuse. Wash hands before eating, drinking, or smoking.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep out of the reach of children. Keep container tightly closed and dry. Store locked up. Keep only in the original container in a cool, well-ventilated place.

7.3. Specific end use(s)

Not available.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Graphite (7782-42-5)		
ACGIH	ACGIH TWA (mg/m ³)	2 mg/m ³ (all forms except graphite fibers-respirable fraction)
OSHA	OSHA PEL (TWA) (mg/m ³)	15 mg/m ³ (synthetic-total dust) 5 mg/m ³ (synthetic-respirable fraction)
OSHA	OSHA PEL (mineral dusts) (mppcf)	15 mppcf (natural)
IDLH	US IDLH (mg/m ³)	1250 mg/m ³
NIOSH	NIOSH REL (TWA) (mg/m ³)	2.5 mg/m ³ (natural-respirable dust)

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8.2. Exposure controls

Appropriate engineering controls	: Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, etc.) below recommended exposure limits.
Personal protective equipment	: Avoid all unnecessary exposure. When exposed to the material PPE should include protective clothing to prevent dermal exposure, gloves, and a NIOSH-certified respirator if an inhalation risk exists.
Hand protection	: Wear suitable gloves.
Eye protection	: Wear eye/face protection
Skin and body protection	: Wear suitable protective clothing.
Respiratory protection	: A NIOSH approved dust mask or filtering facepiece is recommended in poorly ventilated areas or when permissible exposure limits may be exceeded. Respirators should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respiratory protection (Z88.2).
Environmental exposure controls	: Maintain levels below Community environmental protection thresholds.
Other information	: Do not eat, smoke or drink where material is handled, processed or stored. Wash hands carefully before eating or smoking. Handle according to established industrial hygiene and safety practices.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Powder
Colour	: Black
Odour	: Odourless
Odour threshold	: Not applicable
pH	: No data available
Melting point	: Not applicable
Freezing point	: Not applicable
Boiling point	: Not applicable
Flash point	: Not applicable
Relative evaporation rate (butylacetate=1)	: Not applicable
Flammability (solid, gas)	: Combustible Dust
Explosive limits	: $\geq 75 \text{ g/m}^3$
Explosive properties	: No data available
Oxidising properties	: Not applicable
Vapour pressure	: Not applicable
Relative density	: 2.2
Relative vapour density at 20 °C	: Not applicable
Density	: $0.03 - 1.0 \text{ g/cm}^3$
Solubility	: Insoluble
Partition coefficient: n-octanol/water	: Not applicable
Auto-ignition temperature	: $> 600 \text{ °C}$ ($> 1112 \text{ °F}$) (ASTM E1491)
Decomposition temperature	: No data available
Viscosity	: Not applicable.
Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.

9.2. Other information

Moisture Content (wt.%)	: 1.7
Particle size	: 100%: $< 75 \mu\text{m}$
Minimum Explosible Concentration	: $\geq 75 \text{ g/m}^3$ but $\leq 100 \text{ g/m}^3$ (ASTM E1515)
Minimum ignition energy	: $> 1000 \text{ mJ}$ (ASTM E2019)
Layer ignition test	: 330 °C (626 °F) (ASTM E2021)

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SECTION 10: Stability and reactivity

10.1. Reactivity

No dangerous reaction known under conditions of normal use.

10.2. Chemical stability

Stable under normal storage conditions. Keep dry in storage. Combustible Dust.

10.3. Possibility of hazardous reactions

No dangerous reaction known under conditions of normal use.

10.4. Conditions to avoid

Heat. Incompatible materials. Ignition sources.

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

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

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified.

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LD50 oral rat	> 2000 mg/kg
LD50 dermal rabbit	No data available
LC50 inhalation rat	No data available

Skin corrosion/irritation	: Based on available data, the classification criteria are not met.
Serious eye damage/irritation	: Based on available data, the classification criteria are not met.
Respiratory or skin sensitisation	: Based on available data, the classification criteria are not met.
Germ cell mutagenicity	: Based on available data, the classification criteria are not met.
Carcinogenicity	: Based on available data, the classification criteria are not met.
Reproductive toxicity	: Based on available data, the classification criteria are not met.
Specific target organ toxicity (single exposure)	: May cause respiratory irritation.
Specific target organ toxicity (repeated exposure)	: Based on available data, the classification criteria are not met.
Aspiration hazard	: Based on available data, the classification criteria are not met.
Symptoms/injuries after inhalation	: May cause respiratory irritation. May cause inflammation and possibly other adverse lung effects. Avoid breathing dust. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. Inhalation of high concentrations of graphite dust over prolonged periods of time may cause pneumoconiosis.
Symptoms/injuries after skin contact	: May cause skin irritation. Symptoms may include redness, drying, defatting and cracking of the skin.
Symptoms/injuries after eye contact	: May cause eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with possible redness and swelling.
Symptoms/injuries after ingestion	: May be harmful if swallowed. May cause stomach distress, nausea or vomiting.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Natural graphite is inert and insoluble. To the best of our knowledge graphite does not present any significant environmental hazards.

12.2. Persistence and degradability

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Persistence and degradability	Not established.

12.3. Bioaccumulative potential

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Bioaccumulative potential	Not established.

12.4. Mobility in soil

No additional information available.

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12.5. Other adverse effects

Effect on the global warming : No known ecological damage caused by this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

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

SECTION 14: Transport information

In accordance with DOT/TDG

Not regulated for transport

Additional information

Other information : No supplementary information available.

Special transport precautions : Do not handle until all safety precautions have been read and understood.

SECTION 15: Regulatory information

15.1. Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

Graphite (7782-42-5)

Listed on the Canadian DSL (Domestic Substances List)

15.2. US State regulations

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State or local regulations

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

SECTION 16: Other information

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Other information : None.

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