

SAFETY DATA SHEET

Product: Graphene Nanoplatelets



(1) PRODUCT AND COMPANY IDENTIFICATION

Identification of the substance or preparation

TRADE/MATERIAL NAME: Graphene Nanoplatelets
CHEMICAL NAME: Graphene
SYNONYMS: Few-layer graphene

This SDS is valid for the following Graphene Grades:

PureWave Graphene, PureSheets MONO, PureSheets QUATTRO

Use of the substance/Preparation:

For laboratory research and commercial development purposes only.

Supplier:

Raymor Industries Inc.
3765 La Vérendrye
Boisbriand, Quebec, J7H 1R8
CANADA
Phone No.: +1 450.434.6266

Emergency Telephone:

1-888-CANUTEC (226-8832) (North American use)
and/or 1-613-996-6666 (International use)

(2) HAZARDS IDENTIFICATION (EC)

GHS Classification

Not available

GHS Label elements, including precautionary statements



Signal Word:

Warning

Hazard Statements:

May form combustible dust concentrations in air.

WHMIS Classification

Not available

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OSHA/HCS Status:

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture: COMBUSTIBLE DUSTS

Precautionary statement(s):

- P233: Keep container tightly closed.
 - P210: Keep away from heat, sparks, open flames and hot surfaces. - No smoking.
 - P280: Wear protective gloves/protective clothing/eye protection/face protection.
 - P261: Avoid breathing dust/fumes/gas/mist/vapors/spray.
- Prevent dust accumulation.

HMS Classification

Health hazard: 2
Flammability: 0
Physical hazards: 0
Potential Health Effects:

Inhalation May be harmful if inhaled.
Causes respiratory tract irritation.
Skin May be harmful if absorbed through skin.
Causes skin irritation.
Eyes Causes eye irritation.
Ingestion May be harmful if swallowed.

Hazard codes: Xi

Risk Statements: R36/37/38

(3) COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>PERCENT</u>	<u>EC NUMBER</u>	<u>EC CLASSIFICATION</u>
<u>Synthetic Graphite</u>	7782-42-5	90-100	231-955-3	Xi R36/37/38
<u>Trace impurities</u>	Not available	0-1	Not available	Not available

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(4) FIRST AID MEASURES

- Eye contact: Immediately flush eyes gently and thoroughly, including under the eyelids, with clean running water for 20 minutes.
- Skin contact: Wash thoroughly with soap and water. Seek medical attention.
- Inhalation: Remove victim to fresh air. Restore and/or support breathing as needed. Seek medical attention.
- Ingestion: Call poison control center. Never give anything by mouth to someone who is unconscious or convulsing. Seek medical attention.

(5) FIRE-FIGHTING MEASURES

- Suitable extinguishing media: Water fog, carbon dioxide, dry chemical, foam.
- Decomposition products: Carbon monoxide, carbon dioxide and metal oxide
- Special protective equipment for fire-fighters: Wear self-contained breathing apparatus if the fire is large.

(6) ACCIDENTAL RELEASE MEASURES

- Personal precautions: Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation. Keep away from ignition sources. Prevent the formation of dust-air mixture.
- Environmental precautions: Keep spilt material away from drains and runoff, ground-water and soil.
- Methods for clean-up: Collect spilled material using a vacuum with HEPA filter. Avoid formation of dust.

(7) HANDLING AND STORAGE

- Handling: Ensure good ventilation of the workplace. Avoid dust formation. Keep powder away from open flames and other sources of ignition. Keep work areas clean and free of waste. Avoid contact with skin and eyes. Observe good industrial hygiene practices.
- Storage: Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Store away from strong oxidizing and reducing agents.

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(8) EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values:

Occupational Safety and Health Administration Permissible Exposure Limit (OSHA PEL; United States).

Time Weighted Average (TWA): 5 mg/m³ Form: Respirable
TWA: 10 mg/m³

American Conference of Governmental Industrial Hygienists Threshold Limit Value (ACGIH TLV; United States, 4/2014).

TWA: 2 mg/m³ 8 hours. Form: Respirable fraction

OSHA PEL Z3 (United States, 2/2013) according to

OSHA 29CFR 1910.1200 Subpart Z - Toxic and Hazardous Substances

TWA: 15 mppcf 8 hours.

Occupational exposure controls:

Install and operate general and/or local exhaust ventilation systems of sufficient power to maintain airborne concentration below the defined or recommended limit. If possible, manipulate with glove box or under fume hood to avoid exposure.

Respiratory protection:

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard, such as NIOSH (US) or EN 143 (EU). Respirator selection must be based on known or anticipated exposure levels, the hazards of the material, and the safe working limits of the selected respirator. For little exposure, use type P95 (NIOSH) or type P1 (EN 143) respirators. For high exposure, use type P99 (NIOSH) or type P2 (EN 143) respirators. For further details, please consult the following ISO documents [ISO/TS 12901-1:2012: Occupational risk management applied to engineered nanomaterials -- Part 1: Principles and approaches](#), as well as [ISO/TS 12901-2:2014 : Occupational risk management applied to engineered nanomaterials -- Part 2: Use of the control banding approach](#).

Hand protection:

Handle with protecting gloves. Wash and dry hands after manipulation.

Eye protection:

Wear safety glasses conforming to an approved standard, such as NIOSH (US) or EN 166 (EU).

Skin protection:

Wear protective clothing to prevent contact with skin. The type of clothing must depend on the level of exposure to the product.

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(9) PHYSICAL AND CHEMICAL PROPERTIES

General Information: Appearance – black powder
Odour – None

Important health, safety and environmental information:

pH:	Not applicable.
Boiling point:	Not available.
Flash point:	Not available.
Explosive properties:	Not available.
Oxidising properties:	Not expected.
Vapour pressure:	Not applicable.
Relative density:	Not available.
Solubility:	Not available.
Water solubility:	Insoluble.
Partition coefficient:	Not applicable.
Viscosity:	Not applicable.
Vapour density:	Not applicable.
Evaporation rate:	Not applicable.

Other Information:

Melting point: 3652 – 3697 °C

(10) STABILITY AND REACTIVITY

This product is stable under normal storage conditions.

Conditions to avoid: Ignition source.

Materials to avoid: Oxidising and reducing agents.

Hazardous decomposition products: Under fire conditions: carbon monoxide and carbon dioxide.

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(11) TOXICOLOGICAL INFORMATION

This product contains engineered nanoparticles which have structural features with at least one dimension of 100 nanometers or less.

Acute toxicity:

Irritant effect on skin:	Skin contact with graphene powder may cause irritation.
Irritant effect on the eye:	Eye contact has shown irritation.
Respiratory or skin sensitization:	Graphene powder may cause skin sensitization.
Inhalation	Inhalation can cause irritation.
Ingestion	May be harmful if swallowed.

(12) ECOLOGICAL INFORMATION

No known significant effects or critical hazards.

(13) DISPOSAL CONSIDERATIONS

The generation of waste should be avoided or minimised whenever possible. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product, and any by-product should at all times comply with the requirements of environmental protection and waste disposal legislation and any national, regional and local authority requirements.

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(14) TRANSPORT INFORMATION

UN Number: Not applicable
Shipping Name: Not applicable
Class: Not applicable
Packing Group: Not applicable
Label: Not applicable

(15) REGULATORY INFORMATION

EU REGULATIONS

Hazard Symbol:



Xi Irritant

Risk phrases:

R36/37/38 Irritating to eyes, respiratory system and skin.

Safety phrases:

S7 Keep container tightly closed.

S22 Do not breathe dust.

S29 Do not empty into drains.

S36/37/39 Wear suitable protective clothing such as a Tyvek suit with a hood, nitrile gloves and eye/face protection such as goggles. Wearing a positive atmosphere personal respirator (PAPR) equipped with P100 air filters is recommended.

CANADIAN REGULATIONS

WHMIS Classification:

Class D2B Toxic material causing other toxic effects

Moderate eye irritant
Moderate respiratory irritant

WHMIS Symbol:



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(16) OTHER INFORMATION

NFPA Classification:

Not available.

Full Text of R-phrases in Section 2 & 3:

R36/37/38 Irritating to eyes, respiratory system and skin.

Full Text of classification in Section 2 & 3:

Xi Irritant

Date of Issue:

December 14, 2021

Version:

3

Date of previous issue:

November, 2017

Notice:

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