



GRAFPRI3D

Material Safety Data Sheet

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Identifiers

Product name: Graphene ink for inkjet printing

Manufacturer: GRAFPRI3D Inc.

Address: 945 Princess St., Kingston, ON. K7L 0E9

Brand: M-JET

Telephone: 1 613 900 4619

1.2 Emergency Contact Number

Emergency phone number: 1 613 558 1012

SECTION 2. HAZARDS IDENTIFICATION

2.1 Emergency Overview

WHIMIS Classification: D2B - Toxic Material Causing Other Toxic Effects - Moderate respiratory irritant - Moderate eye irritant

2.2 GHS Label Elements, Including Precautionary Statements

GHS Classification: **Skin Corrosion/Irritation:** Category 2 **Serious Eye Damage/Irritation:** Category 2A **Skin Sensitisation:** Category 1
Specific Target Organ Toxicity - Single Exposure: Category 3 **Respiratory System Acute Aquatic Toxicity:** Category 2
Chronic Aquatic Toxicity: Category 2

Potential Health Effects: **Inhalation:** H335 May cause respiratory irritation. **Skin:** H315 Causes skin irritation. H317 May cause an allergic skin reaction. **Eyes:** H319 Causes serious eye irritation. **Other:** H411 Toxic to aquatic life with long lasting effects.

Precautionary Measures: P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray. P264 Wash skin thoroughly after handling. P271 Use only outdoors or in a well-ventilated area. P272 Contaminated work clothing should not be allowed out of the workplace. P273 Avoid release to the environment. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P302 + P352 **IF ON SKIN:** Wash with plenty of water. P304 + P340 + P312 **IF INHALED:** Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/ physician if you feel unwell. P305 + P351 + P338 **IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention. P337 + P313 If eye irritation persists: Get medical advice/ attention. P391 Collect spillage. P403 + P233 Store in a well-ventilated place. Keep container tightly closed. P405 Store locked up. P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 HMIS Classification

HMIS Classification: **Health Hazard:** 2 **Flammability:** 1 **Physical Hazards:** 0

2.4 Potential health effects

Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.

Skin: May be harmful if absorbed through skin. May cause skin irritation.

Eyes: May cause eye irritation.

Ingestion: May be harmful if swallowed.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Mixtures

Synonyms: graphene ink, conductive ink

Component	Classification	Concentration (weight%)
Tri(propylene glycol) diacrylate, mixture of isomers		
CAS - No. 42978-66-5 EC - No. 256-032-2	Skin Irrit. 2; Eye Irrit. 2A; STOT SE 3; Aquatic Acute 2; H315, H317, H319, H335, H411	40 - 100%

SECTION 4. FIRST AID MEASURES

4.1 Description of First Aid Measures/General Advice

General Advice: Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact: Wash off with soap and plenty of water. Consult a physician.

In case of eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available

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SECTION 5. FIRE FIGHTING MEASURES

5.1 Conditions of Flammability

Not flammable or combustible. **Suitable Extinguish Media:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special Hazards Arising from the Substance or Mixture

Carbon dioxide, sulphur oxides.

5.3 Advice for Firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further Information

Use water spray to cool unopened containers.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. For personal protection see section 8.

6.2 Environmental Precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and Materials for Containment and Cleaning Up

Soak up with inert absorbent material, swipe up, and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

6.4 Reference to Other Sections

For disposal see section 13

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for Safe Handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. **For precautions see section 2.2.**

7.2 Conditions for Safe Storage, Including Any Incompatibilities

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not breathe dust. Keep away from incompatibles such as oxidizing agents. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Light sensitive. Heat sensitive.

7.3 Specific End Uses

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure & Appropriate Engineer Controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal Protective Equipment

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

Eye/Face Protection: Safety glasses with side shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin Protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection: Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory Protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of Environmental Exposure: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge to the environment must be avoided.



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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**9.1 Information on Basic Physical and Chemical Properties**

- a) Appearance: *Form*: liquid *Colour*: black
- b) Odor: No Data Available
- c) Odor Threshold: No Data Available
- d) pH: No Data Available
- e) Melting/Freezing Point: Melting point/range: <-19 °C
- f) Initial Boiling Point & Boiling Range: No Data Available
- g) Flash Point: No Data Available
- h) Evaporation Rate: No Data Available
- i) Flammability(solid/gas): Not flammable or combustible
- j) Upper/Lower Flammability or Explosive Limits: No Data Available
- k) Vapour Pressure: No Data Available
- l) Vapour Density: No Data Available
- m) Relative Density: 1.04 g/cm³ at 25 °C (77 °F)
- n) Water Solubility: No Data Available
- o) Partition Coefficient: n-octanol/water: No Data Available
- p) Auto-Ignition Temperature: No Data Available
- q) Decomposition Temperature: No Data Available
- r) Viscosity: No Data Available
- s) Explosive Properties : No Data Available
- t) Oxidizing Properties : No Data Available

9.2 Other Safety Information

No Data Available

SECTION 11: TOXICOLOGICAL INFORMATION**11.1 Information on Toxicological Effects**

Acute Toxicity: No Data Available
Skin Corrosion: No Data Available
Serious Eye Damage/Eye Irritation: No Data Available
Respiratory or Skin Sensitisation: No Data Available
Germ Cell Mutagenicity: No Data Available

11.2 Carcinogenicity

No Data Available

Reproductive Toxicity

Specific Target Organ Toxicity - Single Exposure
Specific Target Organ Toxicity - Repeated Exposure
Aspiration Hazard: No Data Available
Additional Information: No Data Available

SECTION 10: STABILITY AND REACTIVITY**10.1 Reactivity**

No Data Available

10.2 Chemical Stability

Stable under recommended storage conditions.

10.3 Possibility of Hazardous Reactions

No Data Available

10.4 Conditions to Avoid

May polymerize on exposure to light and heat. Avoid moisture.

10.5 Incompatible Materials

Oxidizing agents

10.6 Hazardous Decomposition Products

Hazardous decomposition products formed under fire conditions.
Carbon oxides, hydrogen chloride gas
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 12: ECOLOGICAL INFORMATION**12.1 Toxicity**

Toxicity to fish LC50 - Pimephales promelas (fathead minnow) –
10,000 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates (static test EC50)
- Daphnia magna (Water flea) - >500 mg/l - 48 h
Toxicity to algae static test EC50 - Desmodesmus subspicatus
(Scenedesmus subspicatus) - > 500 mg/l - 72 h

12.2 Persistence and Degradability

Biodegradability aerobic. Result: 48 % - Partially biodegradable.

12.3 Bioaccumulative Potential

Does not bioaccumulate.

12.4 Mobility in Soil

No Data Available

12.5 Results of PBT and vPvB Assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6 Other Adverse Effects

Harmful to aquatic life. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13: DISPOSAL CONSIDERATIONS**Waste Treatment Methods**

Product: Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging: Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

DOT (US): Not Dangerous Goods

IMDG: UN number: 3082 Class: 9 Packing group: III EMS-No: F-A, S-F

Proper shipping name: GRAPHENE INK – containing environmentally hazardous substance, liquid n.o.s (Tri(propylene glycol) diacrylate, mixture of isomers).

Marine pollutant.

IATA: UN number: 3082 Class: 9 Packing group: III

Proper shipping name: GRAPHENE INK – containing environmentally hazardous substance, liquid n.o.s (Tri(propylene glycol) diacrylate, mixture of isomers).

FURTHER INFORMATION: EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

SECTION 15: REGULATORY INFORMATION**WHMIS Classification**

D2B Toxic Material Causing Other Toxic Effects

Moderate respiratory irritant

Moderate eye irritant

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.