



SAFETY DATA SHEET

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Revision Number 3.1

1. Identification

Product Name	Carboxyl Functionalized Graphene
CAS Number	1034343-98-0
Recommended Use	Building Material, Electronics, Water Filtration
Uses Advised Against	Food

Research and Development ONLY

Company

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2. Hazard(s) Identification

Classification

Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

-This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Label Elements

None required

Hazards not otherwise classified (HNOC)

None identified



3. Composition/Information on Ingredients

Component	CAS Number	Weight %
Graphene, Pristine	1034343-98-0	88.6
Carbon Dioxide	124-38-9	11.4

No components need to be disclosed according to the applicable regulations

4. First-aid Measures

General Advice	Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of the dangerous area.
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
Skin Contact	Immediately wash off with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.
Inhalation	If breathed in, move person(s) into fresh air. If not breathing, give artificial respiration. Get medical attention immediately if symptoms occur.
Ingestion	Never give anything by mouth to an unconscious person. Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur. Most important symptoms and effects None reasonably foreseeable.
Notes to Physician	Treat symptomatically

5. Fire-fighting Measures

Suitable Extinguishing Media	Water spray, carbon dioxide (CO ₂), dry chemical, alcohol-resistant foam.
Unsuitable Extinguishing Media	No information available
Special Hazards Arising from the Substance or Mixture	Carbon oxides, carbon monoxide.
Advice for firefighters	Wear self-contained breathing apparatus for firefighting if necessary.
Flash Point	No information available



Method –	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available
Specific Hazards Arising from the Chemical	Keep product and empty container away from heat and sources of ignition.
Hazardous Combustion Products	None known.
Protective Equipment and Precautions for Firefighters	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
	No information available
	No information available
	No information available
Further Information	No information available

NFPA

Health: 0

Flammability: 0

Instability: 0

Physical Hazards: N/A

6. Accidental Release Measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation.
Environmental Precautions	Should not be released into the environment.
Methods for Containment and Clean Up	Spray down with water and sweep up and shovel into suitable containers for disposal. Avoid dust formation.
Reference to Other Sections	For disposal see section 13.

7. Handling and Storage



Handling	Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Avoid ingestion and inhalation. Avoid dust formation.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place. Containers which are open must be carefully resealed and kept upright to prevent leakage.

8. Exposure Controls/ Personal Protection

Exposure Guidelines	This product does not contain any hazardous materials with occupational exposure limits established by the region-specific regulatory bodies.
Engineering Measures	Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.
Personal Protective Equipment	
Eye/Face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and Body Protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirators if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

Physical State	Solid, Powder
Appearance	Black
Odor	Odorless



Odor Threshold	No information available
pH	No information available
Melting Point/Range	No data available
Boiling Point/Range	No information available
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid, gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	No data available
Specific Gravity	No information available
Solubility	Soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	Cx (-COOH) 70% C, 20%O, 10%H

10. Stability and Reactivity

Reactive Hazard	None known, based on information available.
Stability	Stable under normal conditions.
Conditions to Avoid	Incompatible products. Excess heat. Avoid dust formation.
Incompatible Materials	Strong oxidizing agents.
Hazardous Decomposition Products	None under normal use conditions.
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological Information

Acute Toxicity	
Product Information	LD50 Oral - Rat - female - > 2.000 mg/kg (OECD Test Guideline 423) LC50 Inhalation – Rat: not available
Component Information Toxicologically Synergistic Products	No information available
Delayed and immediate effects as well as chronic effects from short and long-term exposure.	
Irritation	Skin - Rabbit



	Result: No skin irritation (OECD Test Guideline 404)
Sensitization	No information available
Serious eye damage/eye irritation	Eyes - Rabbit Result: No eye irritation (OECD Test Guideline 405)
Carcinogenicity	The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS Number	IARC	NTP	ACGIH	OSHA	Mexico
Graphene, Pristine	1034343-98-0	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects	No information available.
Mutagenic Effects	No information available.
Reproductive Effects	No information available.
Developmental Effects	No information available.
Teratogenicity	No information available.
STOT - single exposure	None known.
STOT - repeated exposure	None known.
Aspiration hazard	No information available.
Symptoms / Effects, both acute and delayed	No information available.
Endocrine Disruptor Information	No information available.
Other Adverse Effects	To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. Ecological Information

Ecotoxicity	No known significant effects or critical hazards.
Persistence and Degradability	No information available.
Bioaccumulation/ Accumulation	No information available.
Mobility	No information available.
Results of PBT and vPvB Assessment	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.
Other Adverse Effects	No data available





13. Disposal Considerations	
Waste Disposal Methods	Chemical waste generators must determine whether a discarded chemical is classified as hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport Information

DOT	Not regulated
TDG	Not regulated
IATA	Not regulated
IMDG/IMO	Not regulated

15. Regulatory Information

United States of America Inventory

Component	CAS Number	TSCA	TSCA Inventory notification Active-Inactive	TSCA - EPA Regulatory Flags
Graphene, Pristine	1034343-98-0	-	-	-

Legend:

TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories

Canada (DSL/NDL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS Number	DSL	NDL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Graphene, Pristine	1034343-98-0	-	-	-	-	-	-	-	-	-

U.S. Federal Regulations



SARA 313	Not applicable
SARA 311/312 Hazard Categories	See section 2 for more information.
CWA (Clean Water Act)	Not applicable
Clean Air Act	Not applicable
OSHA - Occupational Safety and Health Administration	Not applicable
CERCLA	Not applicable
California Proposition 65	This product does not contain any Proposition 65 chemicals.
U.S. State Right-to-Know Regulations	Not applicable
U.S. Department of Transportation Reportable Quantity (RQ)	No
DOT Marine Pollutant	No
DOT Severe Marine Pollutant	No
U.S. Department of Homeland Security	This product does not contain any DHS chemicals.

Other International Regulations

Mexico – Grade	No information available
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Authorization/Restrictions according to EU REACH

Safety, health and environmental regulations/legislation specific for the substance or mixture.

Component	CAS Number	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Graphene, Pristine	1034343-98-0	Not applicable	Not applicable	Not applicable	Not applicable

Component	CAS Number	Seveso III Directive (2012/18/EC) Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Graphene, Pristine	1034343-98-0	Not applicable	Not applicable	Not applicable	Not applicable



Safety, health and environmental regulations/legislation specific for the substance or Mixture

This safety datasheet complies with the requirements of Regulation (EC) No. 453/2010.

Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

16. Other Information

Prepared By

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END OF SDS