

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1. Product identifier**

Product name:	Graphene oxide powder
Trade Names:	Graphenea-Graphene Oxide powder
EC #	947-768-1
Index N°	Not indexed
CLP C&L inventory	02-2120093081-63-0000

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

Industrial use. Research use

**1.3. Details of the supplier of the safety data sheet**

Graphenea SA.  
Mikeletegi 83  
20009 Donostia-San Sebastián  
Email for SDS: info@graphenea.com  
Phone: (+34) 943 359937

**1.4. Emergency telephone number**

(+34) 943 359937

**SECTION 2: Hazards identification****2.1. Classification of the substance or mixture**

Not classified as a hazardous substance according to GHS (rev. 9).

***Please notice that substance properties used for the hazard assessment come from graphite (bulk substance).  
The properties of the nanoform are under evaluation and to some extent not known.***

**2.2. Label elements**

No label required

**2.3. Other hazards**

Physical Hazards: Care should be taken to avoid accumulations of graphene oxide dusts or powders in places where these accumulations could cause shorting of electrical switches, circuits or components.

**SECTION 3: Composition/information on ingredients****3.1. Substances**

<b>Substance name</b>	Graphene oxide
<b>Description</b>	Graphene oxide is a thin layer of oxidized carbon; it is a single, tightly packed layer of carbon atoms that are bonded together in a hexagonal honeycomb lattice.
<b>EC</b>	947-768-1

**SECTION 4: First aid measures****4.1. Description of first aid measures**

<b>Inhalation</b>	In case of discomfort provide fresh air, warmth and rest, preferably in a comfortable upright sitting position. Rinse nose and mouth with water. Get medical attention if any discomfort continues. If breathing stops, provide artificial respiration.
<b>Ingestion</b>	NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Rinse nose, mouth and throat with water, and then drink plenty of water. Get medical attention.
<b>Skin contact</b>	Wash skin with soap and water. Continue to rinse for at least 15 minutes. Get medical attention if irritation appears after washing.
<b>Eye contact</b>	Do not rub eye. Immediately flush with plenty of water for up to 15-20 minutes. Remove any contact lenses after 5 minutes, maintain open eyes wide apart. Get medical attention promptly if symptoms occur after washing.

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

<b>Inhalation</b>	It may cause irritation to respiratory tract/inhalation
<b>Ingestion</b>	No effects recorded
<b>Skin contact</b>	It may cause skin irritation.
<b>Eye contact</b>	It may cause eye irritation.
<b>Delayed effects</b>	No delayed effects known.

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

Treat symptomatically. Contact a medical centre immediately in case of ingestion or inhalation of a large amount of product. Specific treatment: No specific treatment.

**SECTION 5: Firefighting measures****5.1. Extinguishing media**

Suitable extinguishing media: The substance is not combustible, use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**5.2. Special hazards arising from the substance or mixture**

In the event of combustion or thermal decomposition, this material may release carbon monoxide (CO) or carbon dioxide (CO<sub>2</sub>) or other toxic gases. **IN CASE OF THERMAL TREATMENT PLEASE DO IT CAREFULLY AT SLOW HEATING RAMPS. ENERGY REALISE AT TEMPERATURES AROUND 180°C.** At temperatures over 180-300°C, this material may react with potassium, sodium, rubidium, or cesium to create intercalation compounds that may ignite and may react explosively with water.

**5.3. Advice for firefighters**

In general, graphene oxide is difficult to combust. Normal care should be taken to avoid dust explosion risk caused by high concentrations of dust or finely suspended airborne particles. Use respiratory protective equipment.

**SECTION 6: Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

Emergency responders should wear suitable protective equipment to prevent inhalation or skin contact. In case of spills, beware of slippery floors and surfaces.

**6.2. Environmental precautions**

Do not allow to enter drains, sewers or watercourses. The product should not be dumped in nature but collected and delivered according to local regulations.

**6.3. Methods and material for containment and cleaning up**

Spilled or released material should be collected mechanically and disposed of in suitable containers. Prevent dust generation.

**6.4. Reference to other sections**

For personal protection, see section 8.  
For waste disposal, see section 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Avoid contact with skin and eyes. Wear personal protective equipment to prevent skin and eye contact. Do not wear contact lenses when using this product. Prevent dust generation. Avoid dust inhalation using local ventilation or appropriate filters.

### 7.2. Conditions for safe storage, including any incompatibilities

This material should be stored in labelled closed containers away from sources of ignition or heat. Care should be taken to avoid creating accumulations or concentrations of dust.

### 7.3. Specific end use(s)

Industrial and research use.

## SECTION 8: Exposure controls/personal protection


### 8.1. Control parameters

Substance: Graphite (CAS 7782-42-5)				
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m <sup>3</sup>	ppm	mg/m <sup>3</sup>
Australia		3 (1)(2)(3)(4)		
Belgium		2		
Canada - Ontario		2 (1)		
Canada - Québec		2		
Denmark		2,5 respirable aerosol		5 respirable aerosol
Finland		2		
France		2 respirable aerosol		
Germany (DFG)		4 inhalable aerosol		
		1,5 respirable aerosol		
Ireland		10 (1)		
		4 (2)		
Latvia		2 (1)		
New Zealand		3 (1)(2)		
People's Republic of China		4 (1)		
		2 (2)		
Singapore		2 respirable aerosol		
South Korea		2 (1)(2)		
Spain		2 inhalable aerosol		

Sweden	5 inhalable aerosol		
Switzerland	5 inhalable aerosol		
	2,5 respirable aerosol		
USA - NIOSH	2,5 (1)		
USA - OSHA	15 total dust 5 respirable dust		
United Kingdom	10 inhalable aerosol 4 respirable aerosol		

Remarks	
Australia	(1) all forms except fibres (2) respirable aerosol (3) natural and synthetic (4) containing no asbestos and<="" td="">
Canada - Ontario	(1) Respirable aerosol
Ireland	(1) Inhalable fraction (2) Respirable fraction
Latvia	(1) natural and industrial diamond, graphite
New Zealand	(1) Respirable dust containing <1 % free silica (2) all form except graphite fibres
People's Republic of China	(1) Inhalable fraction (2) Respirable fraction
South Korea	(1) Natural & synthetic except graphite fibers (2) Respirable fraction
USA - NIOSH	(1) natural graphite

## 8.2. Exposure controls

Protective equipment	
 <b>P3</b>	
Engineering measures	
Provide adequate ventilation. Observe Occupational Exposure Limits and minimise the risk of inhalation of dust. Local exhaust ventilation should be employed if dust is generated when handling. Provide eyewash station.	
Personal Protective Equipment	
<b>Respiratory equipment</b>	Respiratory protection must be used if the general level exceeds the recommended occupational exposure limit. A respiratory protection program that meets applicable OSHA (USA) or CEN (UE) requirements should be maintained in the workplace. When manipulating the powder out of a fume hood P3 dust mask should be used.
<b>Hand protection</b>	Wear protective gloves.
<b>Eye protection</b>	Wear approved safety goggles. Use face shield in case of splash risk.
<b>Body protection</b>	Wear full body industrial type work clothing.
Environmental exposure controls	

All ventilation systems should be filtered before discharge to atmosphere. Avoid releasing to the environment. Avoid uncontrolled releases. Inform competent authorities in case large spillage into water courses.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	Solid
Colour	Brown
Odour	Odourless
Initial boiling point and boiling range (°C)	Not applicable.
Melting point (°C)	No data available
Vapour density (air=1)	Not applicable.
Vapour pressure	Not applicable.
Evaporation rate	Not applicable.
pH-Value, Conc. Solution	Not applicable.
Viscosity 40°C	Not applicable.
Bulk density	1.0 – 2.0 g/cm <sup>3</sup>
Solubility Value	Dispersible in water and polar solvents
Decomposition temperature (°C)	-
Flash point (°C)	Not applicable.
Auto Ignition Temperature (°C)	Not applicable
Oxidising properties	Not applicable
Particle characteristics	Platelet. D50: 13-15µm

### 9.2. Other information

No information required.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

There are no known reactivity hazards associated with this product.

### 10.2. Chemical stability

Stable under normal temperature conditions.

### 10.3. Possibility of hazardous reactions

At temperatures over 180°C, this material may release energy and may react with potassium, sodium, rubidium, or cesium to create intercalation compounds that may ignite and may react explosively with water.

## 10.4. Conditions to avoid

Not known

## 10.5. Incompatible materials

Avoid contact with strong oxidizing agents, fluorine, or chlorine trifluoride.

## 10.6. Hazardous decomposition products

Under fire conditions, this material may release carbon monoxide (CO) or carbon dioxide (CO<sub>2</sub>) or other toxic gases.

## SECTION 11: Information on the hazard classes defined in regulation (EC) no. 1272/2008

### 11.1. Information on toxicological effects

Absorption, distribution, metabolism	
<b>Absorption</b>	No data available
<b>Distribution</b>	No data available
<b>Potential for accumulation</b>	No data available
<b>Toxicologically significant metabolite</b>	No data available
Acute toxicity	
<b>Rat LD50 oral</b>	No data available
<b>Rat LD50 dermal</b>	No data available
<b>Rat LC50 inhalation</b>	No data available
<b>Skin irritation</b>	No data available
<b>Eye irritation</b>	No data available
<b>Skin sensitization</b>	No data available
Genotoxicity	
OECD 476: In vitro mammalian cell gene mutation test <b>Negative</b>	
OECD 487: In vitro mammalian cell micronucleus test <b>Negative</b>	
Long term toxicity and Carcinogenicity	
No data available	
Reproductive toxicity	
No data available	

### 11.2. Information regarding other hazards

No data available

**SECTION 12: Ecological information****12.1. Toxicity**

No data available

**12.2. Persistence and degradability**

No data available

**12.3. Bioaccumulative potential**

No data available

**12.4. Mobility in soil**

No data available

**12.5. Results of PBT and vPvB assessment**

No information required.

**12.6. Endocrine disrupting properties**

No data available

**12.7. Other adverse effects**

No data available

**SECTION 13: Disposal considerations****13.1. Waste treatment methods****General information**

When handling waste, consideration should be made to the safety precautions applying to handling of the product. Waste should not be disposed of by release to sewers. Uncleaned packagings: Disposal must be made according to official regulations.



**SECTION 14: Transport information****14.1. UN number or ID number**

Not classified as a dangerous good for transport under DOT, IMDG, ADR, RID, or ICAO/IATA

**14.2. UN proper shipping name**

No information required.

**14.3. Transport hazard class(es)**

No information required.

**14.4. Packing group**

No information required.

**14.5. Environmental hazards**

No information required.

**14.6. Special precautions for user**

No information required.

**14.7. Maritime transport in bulk according to IMO instruments**

No information required.

**SECTION 15: Regulatory information****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

**SECTION 16: Other information**

<b>Advice on any training appropriate for workers</b>	To ensure protection of human health and environment, workers must be provided with proper training about how to handle and store chemicals used at work.
<b>Revision Date</b>	14 February 2022
<b>Substituted version</b>	7.0

<b>Changes to the previous version</b>	Complete revision to adapt the SDS to Regulations 453/2010 and 878/2020
<b>Abbreviations and acronyms</b>	European Chemicals Agency (ECHA) glossary: <a href="http://echa.cdt.europa.eu/">http://echa.cdt.europa.eu/</a>
<b>Key literature references</b>	Guidance on compilation of Safety Data Sheet (V. 4.0 December 2020). IFA - Databases on hazardous substance (GESTIS): <a href="http://limitvalue.ifa.dguv.de/">http://limitvalue.ifa.dguv.de/</a>
<b>Note to the reader</b>	In accordance with Article 31 of the REACH Regulation, this product <b>DOES NOT</b> require a Safety Data Sheet. For this reason and in accordance with the criteria established by ECHA (Guidance on compilation of Safety Data Sheet), it cannot be considered that this document must strictly comply with the provisions of Regulation 2020/878.

*This information is based on our present state of knowledge and our research into available scientific literature as well as information obtained from our vendors. Graphenea S.A. makes no responsibility regarding the accuracy of the scientific literature or any third-party information. Use of this information shall not establish a legally binding relationship. The information provided in this SDS must be considered as a starting point for a comprehensive program of health and safety in your company. If further data on the product is required to perform your risk assessment, contact us and we will try to assist as much as possible.*