



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

1.1 Product Details

Name Graphene oxide. C:93-95%/O:5-7%

Product Code GCNO

Identification of the substance

Reach No. A registration number is not available for this substance as the substance or its uses are exempted from registration or the annual tonnage does not require a registration.

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

Identified Uses: Additive material for energy, coating, electronics, composites, etc. For professional use only. For R&D and industrial use only.

Uses advised against: The following uses are advised against unless thoroughly evaluated:

Medical or pharmaceutical applications involving direct human exposure without full preclinical and toxicological validation;
Use in food-contact materials or dietary supplements, due to the lack of ingestion safety data;
Aerosol or spray forms that could pose respiratory hazards, especially in unventilated spaces;
Consumer products for children or prolonged skin contact items without certified toxicological assessments.

It is recommended to follow standard nanomaterial safety practices, including using protective equipment and preventing inhalation or skin contact during handling, processing, or disposal.

1.3 Supplier Details

VSB Group SA, Switzerland
FMS Manufacturing Equipment FZCO
Swiss Tower, JTL, Dubai, UAE
e-mail: info@fmsmanufacturing.com / info@vsbgroup.ch
Website: www.nanographene.ch
Competent person responsible for the safety data sheet: Department Health, Safety and Environment
e-mail (competent person): info@vsbgroup.ch



SECTION 2: Hazards Identification

21 Classification of the substance or mixture

According to Regulation (EC) No 1272/2008 (CLP) and GHS:

- This substance is not classified as hazardous based on currently available data.
- However, dust may cause mechanical irritation to eyes, skin and respiratory tract.
- Fine powder may form combustible dust clouds in air.

22 Label elements

No label required.

23 Other hazards

Material is electrically conductive; dust deposits may cause short-circuits in electrical equipment if not properly controlled.

Does not meet the criteria for PBT/vPvB according to REACH Annex XIII (based on available data).

Nanostructured carbon materials are subject of ongoing toxicological research; apply precautionary principles and minimize exposure.

SECTION 3: Composition/Information on Ingredients

31 Substances

Name	Product Identifier	%	GHS-US Classification
Carbon	(CAS-No.) 7440-44-0	>95.0-97.0	Comb. Dust
Oxygen	(CAS-No.) 7782-44-7	>3-5	Not classified
Residual inorganic salts and process-related impurities	-	<0.2 wt% (typical)	Not classified

Synonyms:	GO, Graphene Oxide
Formula:	C _x H _y O _z
Molecular Weight:	N/A

SECTION 4: First Aid Measures

41 Description of first aid measures:

- **Inhalation:** Remove person to fresh air. Keep at rest in a position comfortable for breathing. Rinse mouth with water. If symptoms (cough, irritation, difficulty breathing) persist, seek medical attention.
- **Skin contact:** Remove contaminated clothing. Wash skin thoroughly with soap and water. If irritation or redness develops and persists, obtain medical advice.
- **Eye contact:** Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. If irritation persists, seek medical attention.
- **Ingestion:** Rinse mouth with water. Do **not** induce vomiting unless directed by medical personnel.



Never give anything by mouth to an unconscious person. Get medical advice if large quantities are swallowed or if discomfort occurs.

4.2 Most important symptoms and effects, both acute and delayed

- Temporary mechanical irritation to eyes, skin or respiratory tract (redness, cough, dryness).
- No specific acute or chronic effects are known for this material at typical occupational exposure levels; however, data for nanostructured carbon materials remain limited.

4.3 Indication of any immediate medical attention and special treatment needed

- Treat symptomatically.
- No specific antidote known.
- In case of significant exposure or pre-existing respiratory conditions, medical observation may be advisable.

SECTION 5: Firefighting measures

51 Extinguishing media



Suitable extinguishing media: co-ordinate firefighting measures to the fire surroundings! water, foam, dry extinguishing powder, ABC-powder

Unsuitable extinguishing media: water jet

52 Special hazards arising from the substance or mixture

Combustible.

Hazardous combustion products In case of fire may be liberated: Carbon monoxide (CO), Carbon dioxide (CO₂)

53 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.

SECTION 6: Accidental Release Measures

61 Personal precautions, protective equipment and emergency procedures



For non-emergency personnel: Avoid contact with skin, eyes and clothes. Do not breathe dust.

62 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

63 Methods and material for containment and cleaning up

Advice on how to contain a spill: Covering of drains. Take up mechanically.

Advice on how to clean up a spill: Take up mechanically. Control of dust.

Other information relating to spills and releases: Place in appropriate containers for disposal. Ventilate affected area.



6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

71 Precautions for safe handling

- Handle in well-ventilated areas or under local exhaust
- Avoid formation and inhalation of dust
- Use closed systems or local exhaust ventilation where practicable
- Prevent electrostatic charge build-up; ground equipment
- Keep away from heat, sparks, open flames and hot surfaces
- Do not eat, drink or smoke in areas where the product is handled
- Wash hands and exposed skin thoroughly after handling.

72 Conditions for safe storage, including any incompatibilities

- Store in a cool, dry, well-ventilated place
- Keep containers tightly closed when not in use
- Avoid moisture, strong oxidizing agents and strong acids/bases
- Protect from direct sunlight and sources of ignition
- Store away from foodstuffs and incompatible chemicals.

73 Specific end use(s)

- Additive for industrial applications (e.g., coatings, composites, electronics, R&D)
- Use only as directed and in accordance with good industrial hygiene and safety practice.

SECTION 8: Exposure controls/personal protection

8.1 Exposure controls

Individual protection measures (personal protective equipment)

Eye/face protection



Use safety goggle with side protection.

Skin protection



Hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves. The times are approximate values from measurements at 22 °



C and permanent contact. Increased temperatures due to heated substances, body heat etc. and a reduction of the effective layer thickness by stretching can lead to a considerable reduction of the breakthrough time. If in doubt, contact manufacturer. At an approx. 1.5 times larger / smaller layer thickness, the respective breakthrough time is doubled / halved. The data apply only to the pure substance. When transferred to substance mixtures, they may only be considered as a guide.

type of material

NBR (Nitrile rubber)

material thickness

>0,11 mm

breakthrough times of the glove material

>480 minutes (permeation: level 6)

other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

Respiratory protection



Respiratory protection necessary at: Dust formation. Particulate filter device (EN 143). P2 (filters at least 94 % of airborne particles, colour code: White).

Environmental exposure controls

Keep away from drains, surface and ground water

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	Solid
Particle size	50-80 nm
Form	Powder
Colour	Black
Odour	Not determined
Boiling point or initial boiling point and boiling range	Not determined
Lower and upper explosion limit	Not relevant (solid)
Auto-ignition temperature	Not determined
Decomposition temperature	Not relevant
pH (value)	typically neutral to slightly acidic (depending of the concentration of GO in water)
Kinematic viscosity	Not relevant

SECTION 10: Stability and reactivity



101 Reactivity: No hazardous reactivity expected under recommended storage and handling conditions.

102 Chemical stability

- Stable under normal ambient conditions
- Avoid extreme temperatures and moisture.

103 Possibility of hazardous reactions: No dangerous polymerisation known.

104 Conditions to avoid

- Heat, sparks, open flames and other ignition sources
- Formation of airborne dust
- Strong mechanical impact that could generate dust clouds.

105 Incompatible materials

- Strong oxidising agents
- Strong acids and bases
- Strong reducing agents and materials that may react with finely divided carbon.

106 Hazardous decomposition products: Carbon oxides (CO, CO₂) and other irritating gases may form during thermal decomposition or fire.

SECTION 11: Toxicological information

111 Information on toxicological effects

- **Acute toxicity (oral, dermal, inhalation):** No specific data available for this product. Based on information for similar carbon materials, acute toxicity is expected to be low
- **Skin corrosion/irritation:** Not classified. Prolonged or repeated contact may cause **mechanical irritation** (dryness, redness)
- **Serious eye damage/irritation:** Not classified. Dust may cause **mechanical irritation**, redness and tearing
- **Respiratory or skin sensitisation:** No data indicating sensitisation. Sensitisation is not expected based on structure and available information, but cannot be completely excluded
- **Germ cell mutagenicity / Carcinogenicity / Reproductive toxicity:** No specific data available for graphene oxide. Nanostructured carbon materials are under active investigation; no conclusive evidence of carcinogenicity or reprotoxicity is available for this grade
- **STOT – single and repeated exposure:** High dust levels may cause transient respiratory irritation (cough, discomfort). No data indicating specific organ toxicity at occupational exposure levels
- **Aspiration hazard:** Not applicable (solid, not an oil or liquid hydrocarbon).

Additional information:

- Exposure to high concentrations of fine particulates should be avoided as a general occupational hygiene practice
- Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: Ecological information

121 Toxicity

- No specific ecotoxicity data available
- Based on structure and insolubility, acute toxicity to aquatic organisms is not expected at low



concentrations, but data are limited.

12.2 Persistence and degradability

- Graphene oxide is a carbonaceous, largely insoluble material
- Biodegradation is expected to be slow; persistence in the environment is possible.

12.3 Bioaccumulative potential: Due to high molecular structure and low solubility, significant bioaccumulation via classic mechanisms is unlikely; data are limited.

12.4 Mobility in soil: Insoluble solid; tends to bind to soils and sediments. Mobility is expected to be low.

12.5 Results of PBT and vPvB assessment: This substance is not considered to meet PBT/vPvB criteria based on available information.

12.6 Endocrine-disrupting properties: No data available; no indication of endocrine-disrupting properties.

12.7 Other adverse effects: Avoid uncontrolled release of nanoscale materials to the environment as a precautionary measure.

SECTION 13: Disposal considerations

131 Waste treatment methods

- Dispose of contents/container in accordance with local / regional / national / international regulations
- Do not discharge into drains or the environment
- Incineration in a suitable facility is generally recommended for carbonaceous wastes
- Contaminated packaging: Empty container completely. Dispose of as industrial waste according to official regulations.

SECTION 14: Transport information

141 UN number: not subject to transport regulations

142 UN proper shipping name: not assigned

143 Transport hazard class(es): not assigned

144 Packing group: not assigned

145 Environmental hazards: non-environmentally hazardous acc. to the dangerous goods regulations

146 Special precautions for user:

There is no additional information.

147 Transport in bulk according to IMO instruments: The cargo is not intended to be carried in bulk.

148 Information for each of the UN Model Regulations

Transport information National regulations Additional information(UN RTDG): Not subject to transport regulations. UN RTDG.

International Maritime Dangerous Goods Code (IMDG) - Additional information: Not subject to IMDG.

International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information: Not subject to ICAO-IATA.

SECTION 15: Regulatory information

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

- REACH: Graphene oxide may be exempt or not yet registered depending on supplied tonnage and specific use; the registrant is responsible for REACH compliance
- CLP (EC No 1272/2008): Not classified as hazardous based on available data
- National regulations: Ensure compliance with all applicable local and national regulations for handling



and use of powders and nanomaterials.

15.2 Chemical safety assessment: No chemical safety report/assessment was carried out for this product.

SECTION 16: Other information

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
DGR	Dangerous Goods Regulations (see IATA/DGR)
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
PBT	Persistent, Bioaccumulative and Toxic
UN RTDG	UN Recommendations on the Transport of Dangerous Good
vPvB	Very Persistent and very Bioaccumulative

!!! Disclaimer

This Safety Data Sheet is based on current knowledge of graphene oxide and similar carbon materials, and on information from product specifications. It does not constitute a guarantee of specific product properties and does not establish a legally valid contractual relationship.

Users are responsible for ensuring that their working practices comply with applicable laws and for conducting their own risk assessment for specific uses.