

Safety data sheet

(High Purity Graphene Oxide)

Article # 1004:

Date: 1.10.2019

SECTION 1 – PRODUCT AND COMPANY INFORMATION

Product identifier

Identification of the substance

Graphene oxide

Article number

1004

EC number

947-768-1

Relevant identified uses of the substance

Identified uses

Laboratory chemical, Industrial use

Details of the supplier

Grafren AB

Teknikringen 7

58330, Linköping, Sweden

Telephone

+46700895814

e-mail

ceo@grafren.se

websitewww.grafren.se**Emergency telephone number**

Emergency information service

Local poison centre

SECTION 2 – HAZARDS IDENTIFICATION

Classification of the substance or mixture

Not classified as a hazardous substance according to GHS (rev. 5).

Label elements

No label required.

Hazard statements:

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

Precautionary statements:

If medical advice is needed, have product container or label at hand

Keep out of reach of children

Read label before use

Keep away from heat / sparks / open flames / hot surfaces. No smoking

Avoid breathing dust
Wash skin thoroughly after handling
Use only in a well-ventilated area
Wear protective gloves / protective clothing / eye protection / face protection
Do not eat, drink or smoke when using this product

POTENTIAL HEALTH EFFECTS**Inhalation:**

No adverse effects expected. May cause mild irritation to the respiratory tract

Ingestion:

No adverse effects expected. May cause mild irritation to the gastrointestinal tract

Skin contact:

Not expected to be a health hazard from skin exposure. May cause mild irritation and redness

Eye contact:

No adverse effects expected. May cause mild irritation, possible reddening

Aggravation of pre-existing conditions:

No information found

SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS

PRODUCT NAME	EC NUMBER	PURITY
Graphene oxide	947-768-1	100 %

DESCRIPTION

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.

SECTION 4 – FIRST AID MEASURES**Inhalation:**

Remove to fresh air. Get medical attention for any breathing difficulty.

Ingestion:

Rinse nose, mouth and throat with water and then drink several glasses of water to dilute. Get medical advice.

Skin Contact:

Not expected to require first aid measures. Wash exposed area with soap and water for 15-20 minutes. Get medical advice if irritation develops.

Eye Contact:

Wash thoroughly with running water for 15-20 minutes. Get medical advice if irritation develops.

SECTION 5 – FIRE FIGHTING MEASURES**Fire:**

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source. Graphene oxide is difficult to ignite.

Special Information:

In the event of a fire this material may release carbon monoxide (CO) or carbon dioxide (CO₂) or other toxic gases. At temperatures over 180°C, this material may react with potassium, sodium, rubidium, or cesium to create intercalation compounds that may ignite and may react explosively with water.

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment.

Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

Warning! Spent product may have absorbed hazardous materials.

SECTION 7 – HANDLING AND STORAGE

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage.

Keep away from moisture and oxidizers. Avoid dust dispersal.

Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION



Airborne Exposure Limits:

- OSHA Permissible Exposure Limits (PELs):

graphite: total particulate = 15 mg/m³ (TWA), respirable fraction = 5 mg/m³ (TWA).

- ACGIH Threshold Limit Values (TLVs): graphite, all forms except graphite fibers: 2 mg/m³ (TWA).

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits.

Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.

Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

Personal Respirators (NIOSH Approved):

For conditions of use where exposure to the dust or mist is apparent, a half-face dust/mist respirator may be worn. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear protective gloves and clean body-covering clothing.

Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Dark brown gel
Odor:	Odorless
Solubility:	Dispersible in water
Bulk density:	1.8 - 2.0 g cm ⁻³
pH:	Not applicable
% Volatiles by volume @ 21C (70F):	Not applicable
Boiling Point:	Not applicable
Melting Point:	Not applicable

Vapor Density (Air=1):	Not applicable
Vapor Pressure (mm Hg):	Not applicable
Evaporation Rate (BuAc=1):	No information found

SECTION 10 – STABILITY AND REACTIVITY DATA

Stability: Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products: Involvement in a fire causes formation of carbon dioxide and carbon monoxide.

Hazardous Polymerization: Will not occur.

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

Conditions to Avoid: Moisture and incompatibles.

SECTION 11 – TOXICOLOGICAL INFORMATION

Acute toxicity: Shall not be classified as acutely toxic

Skin corrosion: Shall not be classified as corrosive to skin

Serious eye damage: Shall not be classified as seriously damaging to the eye

Respiratory or skin sensitization: Shall not be classified as respiratory or skin sensitizer

Summary of evaluation of the CMR properties	Shall not be classified as germ cell mutagenic, carcinogenic nor as a reproductive toxicant
Specific target organ toxicity – single exposure	Shall not be classified as a specific target organ toxicant (single exposure)
Specific target organ toxicity – repeated exposure	Shall not be classified as a specific target organ toxicant (repeated exposure)
Aspiration hazard	Shall not be classified as presenting an aspiration hazard

SECTION 12 – ECOLOGICAL INFORMATION

Environmental Fate:

No information found.

Environmental Toxicity:

No information found.

SECTION 13 – DISPOSAL CONSIDERATION

Storage and disposal should be in accordance with applicable local, state and federal laws and regulations.

SECTION 14 – TRANSPORT INFORMATION

Not regulated.

SECTION 15 – OTHER INFORMATION

Disclaimer

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.