

Safety data sheet  
(Graphene oxide paste)

Article # 1003:

Date: 1.10.2019

**SECTION 1 – PRODUCT AND COMPANY INFORMATION****1.1. Product identifier**

Identification of the substance	<b>Graphene oxide</b>
Article number	1003
EC number	947-768-1

**1.2. Relevant identified uses of the substance**

Identified uses	Laboratory chemical, Industrial use
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**1.3. Details of the supplier**

Grafren AB

Teknikringen 7

58330, Linköping, Sweden

**Telephone**

+46700895814

**e-mail**

ceo@grafren.se

**website**[www.grafren.se](http://www.grafren.se)**1.4. Emergency telephone number**

Emergency information service	Local poison centre
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**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

**PRODUCT NAME**

Graphene oxide

**EC NUMBER**

947-768-1

**PURITY**

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 (CO<sub>2</sub>) 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/m<sup>3</sup> (TWA), respirable fraction = 5 mg/m<sup>3</sup> (TWA).
- ACGIH Threshold Limit Values (TLVs): graphite, all forms except graphite fibers: 2 mg/m<sup>3</sup> (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**

<b>Appearance:</b>	Dark brown paste
<b>Odor:</b>	Odorless
<b>Solubility:</b>	Dispersible in water
<b>Bulk density:</b>	1.8 - 2.0 g cm <sup>-3</sup>
<b>pH:</b>	Not applicable
<b>% Volatiles by volume @ 21C (70F):</b>	Not applicable
<b>Boiling Point:</b>	Not applicable
<b>Melting Point:</b>	Not applicable
<b>Vapor Density (Air=1):</b>	Not applicable
<b>Vapor Pressure (mm Hg):</b>	Not applicable
<b>Evaporation Rate (BuAc=1):</b>	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**

<b>Acute toxicity:</b>	Shall not be classified as acutely toxic
<b>Skin corrosion:</b>	Shall not be classified as corrosive to skin
<b>Serious eye damage:</b>	Shall not be classified as seriously damaging to the eye
<b>Respiratory or skin sensitization:</b>	Shall not be classified as respiratory or skin sensitizer
<b>Summary of evaluation of the CMR properties</b>	Shall not be classified as germ cell mutagenic, carcinogenic nor as a reproductive toxicant
<b>Specific target organ toxicity – single exposure</b>	Shall not be classified as a specific target organ toxicant (single exposure)
<b>Specific target organ toxicity – repeated exposure</b>	Shall not be classified as a specific target organ toxicant (repeated exposure)
<b>Aspiration hazard</b>	Shall not be classified as presenting an aspiration hazard

**SECTION 12 – ECOLOGICAL INFORMATION**

<b>Environmental Fate:</b>	No information found.
<b>Environmental Toxicity:</b>	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.