

Material Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Few Layer Reduced Graphene Oxide (FL-RGO; 5-7% Reduced Graphene Oxide content; water-based paste)

Product Number: GD 001-0.1
GD 001-1
GD 001-5

Brand : Prochimia Surfaces

Supplier : Prochimia Surfaces
81-823 Sopot, ul. Zacisze 2
POLAND
phone/fax +4858.698.21.81
e-mail: office@prochimia.com

Emergency Phone: +48502115807

Preparation Information : Prochimia Surfaces

2. HAZARDS IDENTIFICATION

Caution! To the best of our knowledge the toxicological properties of this material has not been thoroughly investigated.

Hazards Classification for the substance according to the European directives:
According to Regulation CLP (EC) No 1272/2008:
Eye irritation (category 2)
Specific target organ toxicity – single exposure (category 3)



Signal word:
Warning

Hazard statements:
H319 Causes serious eye irritation
H335 May cause respiratory irritation

Precautionary statements:
P261 Avoid breathing dust/fume/gas/mist/vapours/spray
P305+ P351+ P338 If contact with eyes: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to go. Continue rinsing.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Graphene oxide CAS: 7782-42-5
Carbon: >85%

Oxygene: <10%
Hydrogen: <1%
Nitrate: <3%
Inorganic impurities: manganese oxide, sulfates: <0.1%
Ash: <0.1%

4. FIRST AID MEASURES

If inhaled

If breathed in, move person into fresh air. If necessary, give artificial respiration with oxygen. Consult a physician if necessary.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water with eyelid held wide open for at least 15 minutes. Consult an eye specialist.

If swallowed

Make victim drink plenty of water. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

In case of persisting adverse effects

Consult a physician.

General

Show safety data sheet to the doctor in attendance.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products

Carbon dioxide, carbon monoxide. May form toxic fumes.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Provide appropriate ventilation.

Environmental precautions

Do not let product enter drains/surface waters/groundwaters.

Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place. Avoid eye and skin contact. Avoid dust and aerosols formation. Provide appropriate ventilation at places where dust is formed. Normal measures for preventive fire protection. This powder is electrically conductive. Due to this reason the presence of FL-RGO in places where it can create short electrical circuits should be avoided.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure controls

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a dust mask type N95 (US or P1 type (EN143) respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. The selected protective gloves have to satisfy the specification of EU Directive 89/686/EEC and the standard EN 374 derived form. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices.
Wash and dry hands.

Eye protection

Use safety glasses with side-shields conforming to EN166.

Skin and body protection

The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

General industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

black water-based paste; 5-7% Reduced Graphene Oxide content

Safety data

pH 6-8

Melting point/freezing point 3650 °C

Boiling point 4200 °C

Bulk density 0.9-1.1 g/cm³

Flash point no data available

Ignition temperature no data available

Autoignition temperature no data available

Lower explosion limit no data available

Upper explosion limit no data available

Vapour pressure no data available

Partition coefficient: n-octanol/water no data available

Relative vapour density no data available

Evaporation rate no data available

Odour odour-free

Solubility practically insoluble

10. STABILITY AND REACTIVITY

Chemical stability

Thermal decomposition or combustion causes carbon oxide and carbon dioxide emission.

Possibility of hazardous reactions

no data available

Conditions to avoid

Heating should be avoided. This powder is electrically conductive. Due to this reason the presence of FL-RGO in places where it can create short electrical circuits should be avoided.

Materials to avoid

Strong oxidizing and/or reducing agents

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Carcinogenicity

no data available

Other information on toxicological carcinogenicity

no data available

Skin corrosion/irritation

no irritation and no corrosion

Serious eye damage/eye irritation

irritations

Ingestion

no data available

Inhalation

May cause respiratory irritation

12. ECOLOGICAL INFORMATION

Persistence and degradability

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

Other adverse effects

no data available

13. DISPOSAL CONSIDERATIONS

Product

Product is not dangerous. Contact a licensed waste disposal company to dispose this material. Dissolve or mix material with combustible solvent and burn in a chemical incinerator equipped with afterburn and scrubber.

Contaminated packaging
Dispose of as unused product.

Observe all federal, state, and local environmental regulations.

14. TRANSPORT INFORMATION

| | |
|---------------------|---------------------|
| Road transportation | Not dangerous goods |
| Sea transportation | Not dangerous goods |
| Air transportation | Not dangerous goods |

15. REGULATORY INFORMATION

Safety data sheet complies with the requirements of Regulation (EC) 1907/2006 and/or 67/548/EEC and/or 1999/45/EEC:

| | |
|------------|--|
| R-phrases: | R36/37/38 Irritating to eyes, skin and respiratory system |
| S-phrases: | S22 - Avoid dust inhalation |
| | S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice |
| | S36 Wear suitable protective clothing |

16. OTHER INFORMATION

The content and format of this MSDS are in accordance with EEC Commission Directive 2001/58/EC, 67/548/EC resp. 99/45/EC.

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. Prochimia Surfaces shall not be held liable for any damage resulting from handling or from contact with the above product.

For R&D use only. Not for drug, household or other uses.