



MATERIALS SAFETY DATA SHEET OF GRAPHENE
[CAS NUMBER 7782-42-5]

According to Regulation (EC) No.1907/2006
Company Document Ref: SD01/1-18



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1.1 Trade name: Graphene Powder

Product Name: GRAPHENE POWDER, Technical Grade/Research Grade/Industrial Grade

SYNONYMS: Graphite flakes, Graphene Oxide, Graphite Oxide, Graphite dust, Reduced Graphene Oxide, Multilayer, MONOLAYER GRAPHENE

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.

CAS No. : 7782425 (graphite) / 1034343980(graphene)

Ingredients:

Graphite: Up to 100% with Metal traces impurities

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

Identified uses: Laboratory chemicals

Additives for reinforcement of engineering materials plastic electronic items, Ink, Paint

1.3. Company Identification & Contact

MANUFACTURER & SUPPLIER: GraphOn.Ltd

2.1. Classification of the substance or mixture

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

2.2. Label elements

The product does not need to be labelled in accordance with EC directives or respective national laws.

2.3. Other hazards

None.

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3. Composition/Information on ingredients

3.1. Substances

Synonyms: Graphene

Formula: C_xH_y

Molecular weight: n/a

CAS No. : 7782425 (graphite) / 1034343980 (graphene)

No components need to be disclosed according to the applicable regulations.

4. First aid measures

4.1. Description of first aid measures

After Inhalation

Remove person to fresh air. If not breathing, give person artificial respiration.

After skin contact

Wash with soap and water.

After eye contact

Flush with copious amounts of water as a precaution.

After Ingestion

Rinse out mouth with water.

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

The most important known symptoms and effects are described in section 11.

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

No data available.

5. Fire fighting

5.1. Extinguishing media

Suitable extinguishing media: Dry chemical, alcohol-resistant foam, carbon dioxide or water spray. Consult with local fire authorities before attempting large scale fire-fighting operations.

5.2. Special hazards arising from the substance of mixture

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Hazardous combustion products: Carbon oxides.

5.3. Advice for fire-fighters

Wear a self-contained breathing apparatus if necessary. During a fire, irritating and highly toxic gases and vapours may be generated by thermal decomposition.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Wear personal protective equipment (section 8). Avoid dust formation. Ensure room is well ventilated.

6.2. Environmental precautions

Do not let product enter drains.

6.3. Containment and cleaning

Contain and clean up spill if safe to do so using an electrically protected vacuum cleaner or by wet-brushing. Dispose of dry waste in closed container for proper disposal according to local regulations.

7. Handling and storage

7.1. Precautions for safe handling

Avoid formation of dust and aerosols. Keep away from sources of ignition and avoid the build-up of electrostatic charge. Provide exhaust ventilation in places where dust is formed.

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool, dry and well-ventilated place inside of a tightly sealed container. Reseal containers that have been opened and keep upright to prevent leakage.

7.3. Specific end uses

Use in laboratories.

8. Exposure controls / Personal protection

8.1. Control parameters

Exposure limit sources

UK – EH40 Workplace Exposure Limits (WEL).

Components with workplace control parameters

Component	CAS #	Control parameters
Graphite	– inhalable dust 7782-42-5	10 mg/m ³ (TWA)
Graphite – respirable dust	7782-42-5	4 mg/m ³ (TWA)

TWA - time weighted average; STEL - Short Term Exposure Limit

Inhalable dust is the fraction of material that is available for deposition in the respiratory tract; respirable dust is the fraction that penetrates into the gas exchange region of the lung.

Biological occupational exposure limits

This product does not contain any hazardous materials with biological limits.

8.2. Exposure controls

Engineering measures

Handle in accordance with good industrial engineering/laboratory practices for hygiene and safety. Ensure eyewash stations and safety showers are close to the laboratory workstation. Ensure good general ventilation is present when handling the product.

Personal protective equipment

Eyes: Wear safety glasses with side-shields conforming to appropriate government standards such as NOISH (US) or EN166 (EU).

Skin: Handle with appropriate gloves and use proper glove removal technique to avoid skin contact. Dispose of gloves in accordance with applicable laws. Wash and dry hands.

The selected protective gloves must satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Clothing: Wear complete suit protecting against chemicals; the type of equipment should be appropriate for the concentration and amount of dangerous substance used.

Respirators: Where protection from nuisance dusts is needed, use type N95 (US) or type P1 (EN 143) dust masks or those approved under appropriate government standards such as NIOSH (US) or CEN (EU).

General hygiene measures

Wash thoroughly after handling. Wash contaminated clothing before reuse.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical and chemical properties: • General Information •

Form: Powders

Colour: Black

Odor: Odorless

Melting point/Melting range: Estimated 3652-3697 ° C (subl/vac)

Boiling point/Boiling range: Not determined

Sublimation temperature / start: Not determined

Flash point: Not applicable

Ignition temperature: Not determined

Decomposition temperature: Not determined

Danger of explosion: Product does not present an explosion hazard.

pH : neutral

Melting/freezing point : No data available

Boiling point/range : No data available

Flash point : No data available

Evaporation rate : No data available

Flammability : No data available

Explosive limits : No data available

Vapour pressure : No data available

Vapour density : No data available

Relative density : No data available

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Solubility(ies) : No data available

Partition coefficient: *n*-octanol/water : No data available

Auto ignition temperature: No data available

Decomposition temperature: No data available

Viscosity: No data available

Explosive properties : No data available

Oxidising properties : No data available

9.2. Other safety information

No data available.

10. Stability and reactivity

10.1 Reactivity

No data available.

10.2. Chemical stability

Stable under normal temperatures and pressures under recommended storage conditions humid free area.

10.3. Possibility of hazardous reactions

No data available.

10.4. Conditions to avoid

No data available.

10.5. Incompatible materials

Strong oxidising agents.

10.6. Hazardous decomposition products

No known hazardous decomposition products.

11. Toxicological information

11.1. Information on toxicological effects

Routes of Entry: Inhalation. Ingestion.

Toxicity to Animals:

LD50 (oral, rat): >2000mg/kg (Graphite)

LC50 (inhalation, rat): Not available.

Chronic Effects on Humans: Causes damage to the following organs:
upper respiratory tract.

It may cause damage to the following organs: cardiovascular system.

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Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans

Acute toxicity

No data available.

Skin corrosion/irritation

No data available.

Serious eye damage/eye irritation

No data available.

Respiratory or skin sensitization

No data available.

Germ cell mutagenicity

No data available.

Carcinogenicity

No data available.

Reproductive toxicity

No data available.

Specific target organ toxicity - single exposure

No data available.

Specific target organ toxicity - repeated exposure

No data available.

Aspiration hazard

No data available.

Routes of exposure

Eye contact, ingestion, inhalation, skin contact.

Signs and Symptoms of Exposure

No data available.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6. Other adverse effects

No data available

13. Disposal

13.1. Waste treatment methods

Product

Burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state and local environmental regulations and directives on waste and hazardous waste. Offer surplus material to a licensed professional waste disposal professional.

Contaminated packaging

Dispose of as unused product.

14. Transport

Non-hazardous for road, air and sea transport.

IATA: Not regulated as a hazardous material.

IMO: Not regulated as a hazardous material.

RID/ADR: Not regulated as a hazardous material.

15. Regulatory information

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006, the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

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15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available.

15.2 Chemical safety assessment

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

16. Other Information

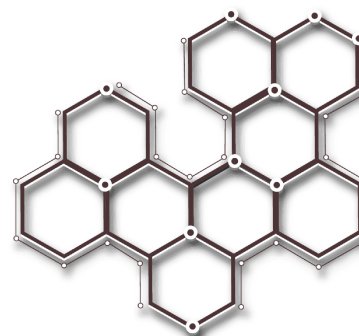
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This information is based on our present state of knowledge and our research into available scientific literature as well as information obtained from our vendors. This one edition is varied from the previous one.

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