

Safety Data Sheet

According to regulation (EC) No. 1907/2006 (REACH)



47130 Graphene

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Revised edition: 19.12.2019

Version: 1

Printed: 20.06.2023

1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1. Product Identifier

Product Name: Graphene

Article No.: 47130

UFI: --

1.2. Relevant identified Uses of the Substance or Mixture and Uses advised against

Identified uses:
Laboratory chemical

Uses advised against:

1.3. Details of the Supplier of the Safety Data Sheet (Producer/Importer)

Company: Kremer Pigmente GmbH & Co. KG

Address: Hauptstr. 41-47, 88317 Aichstetten, Germany

Tel./Fax.: Tel +49 7565 914480, Fax +49 7565 1606

Internet: www.kremer-pigmente.com

E-Mail: info@kremer-pigmente.com

Importer: --

1.4. Emergency No.

Emergency No.: +49 7565 914480 (Mon-Fri 8:00 - 17:00)

1.4.2 Poison Center:

2. Hazards Identification

2.1. Classification of the Substance or Mixture

Classification according to Regulation (EC) No. 1272/2008 (CLP/GHS)

This product does not require classification and labelling as hazardous according to CLP/GHS.

Possible Environmental Effects:

2.2. Label Elements

Classification according to Regulation (EC) No. 1272/2008 (CLP/GHS)

This product does not require classification and labelling as hazardous according to CLP/GHS.

Hazard designation:

Not applicable.

Signal word:

Hazard designation:

Safety designation:

Hazardous components for labelling:

2.3. Other Hazards

*Slipping hazard caused by scattered product
Dust can from ignitable mixtures with air - Risk of dust explosion.
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*Possible harmful effects on humans and possible symptoms:
Material is not entirely examined yet with regard to acute and chronic toxicity effects on humans. Must be handled with care. Formation of inhalable and respirable dusts, these might mechanically irritate eyes and mucous membranes.
Possible harmful effects on the environment:
Material is not entirely examined yet with regard to acute and chronic ecotoxic effects.*

3. Composition/Information on Ingredients

3.1. Substance

3.2. Mixture

Chemical Characterization:

Information on Components / Hazardous Ingredients:

Graphene	100 %	CAS-Nr: 1034343-98-9 EINECS-Nr: 801-282-5 EC-Nr:
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Additional information:

Graphene - Multilayer Graphene (GNP Graphene Nano Platelets) - Morphology: One-dimensionally nano-structured material, 1-100 nm, with two-dimensional graphite structure, 250-600 m²/g absorbtions active BET surface area and formation of agglomerates.

4. First Aid Measures

4.1. Description of the First Aid Measures

General information:

Self-protection of the first-aiders (protective clothes and eyewear, respiratory protection)

Remove contaminated clothes.

Take person away from hazardous area.

If complaints or symptoms occur seek medical treatment.

After inhalation:

Supply fresh air and seek medical advice in case of complaints.

After skin contact:

Wash off immediately with soap and plenty of water and rinse thoroughly.

After eye contact:

Remove contact lens.

Protect unharmed eye.

Rinse open eye for several minutes under running water.

Consult a physician.

After ingestion:

Do NOT induce vomiting. Consult a doctor.

Rinse mouth and give plenty of water to drink.

4.2. Most important Symptoms and Effects, both Acute and Delayed

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Symptoms:

No further information available.

Effects:

4. 3. Indication of any Immediate Medical Attention and special Treatment needed

Treatment:

Mineral dust.

Symptomatic treatment (decontamination, vital functions), no specific antidote known.

5. Fire-Fighting Measures

5. 1. Extinguishing Media

Suitable extinguishing media:

CO₂, extinguishing powder, water jet.

Use extinguishing media for surrounding fire.

Unsuitable extinguishing media:

Water with full jet.

5. 2. Special Hazards arising from the Substance or Mixture

Special hazards:

Dusts can ignite in an oxygen containing atmosphere at 350°C.

When heated or in case of fire: formation of hazard fumes.

In case of fire: formation of carbon monoxide and dioxide.

5. 3. Advice for Firefighters

Protective equipment:

Wear suitable protective clothing.

Wear self-contained respiratory protective device.

Further information:

Cool exposed containers with water spray.

Collect contaminated extinguishing water and debris separately; avoid contamination of sewage system.

6. Accidental Release Measures

6. 1. Personal Precautions, Protective Equipment and Emergency Procedures

Personal precautions:

Avoid contact with skin, eyes and clothing.

Wear protective clothing.

Ensure adequate ventilation.

Avoid formation of dust.

Respiratory protection in case of formation of vapors/dust/aerosol.

6. 2. Environmental Precautions

Environmental precautions:

Prevent contamination of soils, drains and surface water.

6. 3. Methods and Material for Containment and Cleaning Up

Methods and material:

Clean up mechanically. Transfer liquids and solid diking material to

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separate suitable containers for recovery or disposal.

6. 4. Reference to other Sections

For information for safe handling see Section 7.

Protective clothing, see Section 8.

See Section 13 for information on disposal.

7. Handling and Storage

7. 1. Precautions for Safe Handling

Instructions on safe handling:

Avoid formation of dust. Do not inhale dust.

Avoid contact with eyes, skin and clothing.

Provide adequate ventilation.

Carry out filling operations only at sites with extractors available.

Emergency showers when handling larger amounts.

Hygienic measures:

Wash thoroughly after handling.

7. 2. Conditions for Safe Storage, including any Incompatibilities

Storage conditions:

Store in tightly sealed containers in a dry and cool room.

Keep away from heat sources.

Requirements for storage areas and containers:

Do not use food containers. Danger of confusion!

The containers should be durably labelled.

It is not permitted to store the product in passages, passageways, halls, on roofs, in attics and working rooms.

Preferably store in the original container

Information on fire and explosion protection:

Combustible material.

Keep fire extinguisher ready.

Keep away from hot surfaces and ignition sources.

Take measures to prevent electrostatic discharge.

Under certain circumstances fine dust clouds may form an explosive mixture with air.

Do not store together with: foodstuffs, medicinal products and animal feed.

Do not store together with: infectious, radioactive and explosive substances.

Do not store together with: compressed or liquified gases or gases dissolved under pressure.

Do not store together with self-ignitable products.

Do not store together with: substances which, in contact with water, emit flammable gases.

Storage class:

11; Combustible solids (TRGS 510)

Only substances with the same storage class should be stored

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together.

Further Information:

Chemical resistant floors and washing facilities at work.

7.3. Specific End Use(s)

Further information:

8. Exposure Controls/Personal Protection

8.1. Parameters to be Controlled

Parameters to be controlled (DE):

Synthetic graphite (7782-42-5): TLV: 0.65 mg/m³ (airborne fraction) / 4 mg/m³ (inhalable fraction)

Parameters to be controlled:

Derived No-Effect Level (DNEL):

813 mg/kg bw/d (consumer, swallowing, long-term exposition - systemic effects)

0.3 mg/m³ (consumer, inhalation, long-term exposition - local effects)

1.2 mg/m³ (worker, inhalation, long-term exposition - local effects)

Predicted No-Effect Concentration (PNEC):

No representative PNEC values can be determined for such substances.

Additional Information:

8.2. Exposure Controls

Technical protective measures:

Provide adequate ventilation/exhaust system.

Preferably handle in a closed system.

Vacuum dust on site.

Personal Protection

General protective measures:

Keep away from foodstuffs and drinks. Do not eat, drink or smoke during work. Wash hands before breaks and at the end of work.

Take off contaminated clothing immediately. Store working clothing separately.

Do not inhale dust/fumes/mist.

Respiratory protection:

Dust mask recommended when very dusty (with particle filter P1).

Use breathing apparatus with independent air supply (isolated) if the concentrations exceed those of filtering devices, if the oxygen content is below 17% and in case of unclear conditions.

Hand protection:

In general not required.

Protective glove material:

Suitability and durability of a glove is dependent on usage, e.g.

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frequency and duration of contact, chemical resistance of glove material and dexterity. Always seek advice from glove suppliers.

Eye protection:

Safety glasses with protective shields (EN 166).

Body protection:

Protective clothing.

Environmental precautions:

9. Physical and Chemical Properties

9.1. Information on Basic Physical and Chemical Properties

<i>Form:</i>	<i>powder</i>
<i>Color:</i>	<i>black</i>
<i>Odor:</i>	<i>none</i>
<i>Odor threshold:</i>	<i>not determined</i>
<i>pH-Value:</i>	<i>> 3</i>
<i>Melting temperature:</i>	<i>4500°C</i>
<i>Boiling temperature:</i>	<i>not applicable</i>
<i>Flash point:</i>	<i>not applicable</i>
<i>Evaporation rate:</i>	<i>not applicable</i>
<i>Flammability (solid, gas):</i>	<i>flammable</i>
<i>Upper explosion limit:</i>	<i>not determined</i>
<i>Lower explosion limit:</i>	<i>not determined</i>
<i>Vapor pressure:</i>	<i>not applicable</i>
<i>Vapor density:</i>	<i>not relevant</i>
<i>Density:</i>	<i>2.1 g/cm³</i>
<i>Solubility in water:</i>	<i>0 g/l</i>
<i>Auto-ignition temperature:</i>	<i>> 140°C</i>
<i>Decomposition temperature:</i>	<i>not determined</i>
<i>Viscosity, dynamic:</i>	<i>not applicable</i>

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Explosive properties:

Risk of dust explosion.

Oxidizing properties:

Bulk density:

9.2. Further Information

Solubility in solvents:

Viscosity, kinematic:

Burning class:

Solvent content:

Solid content:

Particle size:

Other information:

10. Stability and Reactivity

10.1. Reactivity

Chemically stable.

10.2. Chemical Stability

Stable if used according to specifications.

10.3. Possibility of Hazardous Reactions

Risk of ignition or formation with inflammable vapors or gases with: fluorine and chlorine trifluoride.

10.4. Conditions to Avoid

Conditions to avoid:

Avoid high temperature.

Avoid humidity.

Thermal decomposition:

10.5. Incompatible Materials

Strong oxidizing agents.

10.6. Hazardous Decomposition Products

Carbon monoxide and dioxide.

10.7. Further Information

11. Toxicological Information

11.1. Information on Hazard Classes as defined in Regulation (EC) No. 1272/2008

Acute Toxicity

No toxicity expected.

LD50, oral:

> 2000 mg/kg /bw (mouse; OECD 420)

LD50, dermal:

No information available.

LC50, inhalation:

NOAEL: 1.88 mg/m3 (28d, rat; OECD 412)

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Primary effects

Irritant effect on skin:

Non irritating (rabbit; OECD 404)

Irritant effect on eyes:

Non-irritating to eyes (rabbit; OECD 405)

Inhalation:

No information available.

Ingestion:

No information available

Sensitization:

Non sensitizing (guinea pig; OECD 406).

Mutagenicity:

In vitro genetic-toxicity: no mutagenic effects

Reproductive toxicity:

No relevant data found.

Carcinogenicity:

No cancerogenic effect known.

Teratogenicity:

No information available.

Specific target organ toxicity (STOT):

Single exposure: no information available.

Repeated exposure: no information available.

Aspiration hazard:

Prolonged exposure to excessive dust of synthetic graphite can cause breathing difficulties.

Long-term chronic exposure to synthetic graphite can facilitate the development of silicosis (pneumoconiosis)

11. 2. Information on other Hazards

No further information available.

12. Ecological Information

12. 1. Aquatic Toxicity

Fish toxicity:

No data available.

Daphnia toxicity:

LC50: > 16 mg/l (48h, Daphnia magna; OECD 202)

Bacteria toxicity:

No data available.

Algae toxicity:

EC50: 62.2 mg/l (96h, Chlorella pyrenoidosa; OECD 201)

12. 2. Persistency and Degradability

Inorganic substance. Biological degradability is not affected.

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12.3. Bioaccumulation

No bioaccumulation expected.

12.4. Mobility

No information available.

12.5. Results of PBT- und vPvP Assessment

Not applicable.

12.6. Endocrine Disrupting Properties

No data available.

12.7. Other Adverse Effects

Water hazard class:

3, hazardous

Behaviour in sewage systems:

Further ecological effects:

Macrocrystalline synthetic graphite is chemically inert, not harmful to the environment.

AOX Value:

13. Disposal Considerations

13.1. Waste Treatment Methods

Product:

Residues should be used wherever possible; contaminated waste should be used for energy (incineration).

European Waste Code (EWC):

Uncleaned packaging:

Contaminated packaging can be disposed of as commercial waste.

Waste Code No.:

14. Transport Information

14.1. UN Number

ADR, IMDG, IATA

14.2. UN Proper Shipping Name

ADR/RID:

No hazardous goods according to ADR / DOT (US) (land transportation).

IMDG/IATA:

Not hazardous goods

14.3. Transport Hazard Classes

ADR Class:

not applicable

Hazard no.:

Classification code:

Tunnel restriction code:

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IMDG Class (sea):

not applicable

Hazard no.:

EmS No.:

IATA Class:

not applicable

Hazard no.:

14. 4. Packaging Group

ADR/RID:

not applicable

IMDG:

IATA:

14. 5. Environmental Hazards

None

14. 6. Special Precautions for User

Not classified as a dangerous good under transport regulations.

14. 7. Maritime Transport in Bulk according to IMO Instruments

14. 8. Further Information

15. Regulatory Information

15. 1. Safety, Health and Environmental Regulations/Legislation specific for the Substance or Mixture

Water hazard class:

3, very hazardous for water (according to the German Regulation AwSV)

Local regulations on chemical accidents:

Seveso III Directive: not applicable under Directive 2012/18/EC.

Employment restrictions:

Restriction and prohibition of application:

Technical instructions on air quality:

5.2.1. Total dust, including fine dust: 100 wt-% (m >= 0.2 kg/h, conc. 20 mg/m³)

15. 2. Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this product.

15. 3. Further Information

16. Other Information

This product should be stored, handled and used in accordance with good hygiene practices and in conformity with any legal regulations. This information contained herein is based on the present state of knowledge and is intended to describe our product from the point of view of safety requirements. It should be therefore not be construed as guaranteeing specific properties.