

NANOGRAFI NANOTECHNOLOGY

SECTION 1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

1.1 Product identifiers

Product Form	Substance
Trade Name	Silicon Carbide (SiC) Nanopowder/Nanoparticles, Beta, Purity: 99.5+%, Size: < 70 nm
Product Number	NG04CO1504
CAS Number	SiC CAS#: 409-21-2

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

Use of the substance/mixture	Research
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1.3 Details of the supplier of safety data sheet

Company	Nanografi Nanotechnology
Address	ODTÜ Teknokent İkizler Binası B-1/H ODTÜ Teknokent 06531- ANKARA
Phone	+90 312 285 85 09
Fax	+90 312 210 13 09

1.4 Emergency Telephone Number

Emergency Telephone Number	+90 312 285 85 09
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SECTION 2 HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

OSHA Hazards: Irritant

GHS Classification: Eye irritation (Category 2A), H319

Rerspiratory System, H335

For the full text of the H-Statements mentioned in this Section, see Section 16.

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2.2 Label Elements

Hazard Pictograms



Signal Word

Warning

Hazard Statements

H315 Causes skin irritation.

H319 Serious eye irritation.

H335 May cause respiratory irritation.

H351 Suspected of causing cancer.

Precautionary Statements

P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.

P264 Wash skin thoroughly after handling.

P302 + P352 IF ON SKIN: Wash with plenty of water.

P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P312 Call a POISON CENTER or doctor/ physician if you feel unwell.

P405 Store locked up.

P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Other Hazards

None.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms

Silicon Carbide, SiC

CAS Number

SiC CAS#: 409-21-2

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Not applicable.

SECTION 4 FIRST AID MEASURES**4.1 Description of first aid measures**

First-aid measures after inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If required provide artificial respiration. Get medical attention.
First-aid measures after skin contact	Wash with plenty of soap and water. Remove/take off immediately all contaminated clothing. Wash contaminated clothing before reuse.
First-aid measures after eye contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.
First-aid measures after ingestion	Rinse mouth with water. Seek medical attention.

4.2 Most important symptoms and effects, including acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available.

SECTION 5 FIREFIGHTING MEASURES**5.1 Extinguishing media**

Suitable Extinguishing Media	Powder, alcohol-resistant foam, water spray, carbon dioxide.
Unsuitable Extinguishing Media	None known.

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5.2 Special hazards arising from the substance or mixture

Hazardous Decomposition Products Carbon oxides. Silicon oxides.

5.3 Advice for firefighters

In case of fire wear self-contained breathing apparatus.

SECTION 6 ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Protective Equipment

Wear suitable protective clothing.

Emergency Procedures

Avoid formation of dust. Avoid contact with skin, eyes and clothes. Ensure adequate ventilation. Evacuate area.

6.2.2 For emergency responders

Protective Equipment

Wear suitable protective clothing, gloves and eye/face protection.

Emergency Procedures

Provide adequate ventilation. Evacuate area. Avoid generation of dust. Avoid contact with skin and eyes.

6.2 Environmental precautions

Do not allow material to be released to the environment without proper governmental permits.

Do not allow product to enter drains.

Do not allow product to penetrate ground/soil.

6.3 Methods and material for containment and cleaning up

For Containment

Sweep up, shovel or vacuum. Avoid generation of dust. Ensure adequate ventilation.

Methods for cleaning up

Avoid generation of dust. Collect in closed containers for disposal.

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6.4 Reference to other sections

For further information refer to section 13.

SECTION 7 HANDLING AND STORAGE

7.1 Precautions for safe handling

Precautions for Safe Handling	Avoid contact with skin, eyes and clothes. Carry out operations in the open/under local exhaust/ventilation or with respiratory protection.
Hygiene measures	Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse.

7.2 Conditions for safe storage, including any incompatibilities

Storage Conditions	Store in dry, well-ventilated area. Keep container tightly closed.
Technical Measures	No special requirements.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Ingredient	Authority	Type	Limit
SiC (100%)	OSHA	PEL for total dust	15 mg/m ³
SiC (100%)	OSHA	PEL for respirable fraction	5 mg/m ³

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8.2 Exposure controls

Appropriate Engineering Controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Hand Protection

For any handling steps where the substance is in particulate form or in a suspension with pure water where the substance is not solubilized, the gloves must be comprised of material that successfully passes ASTM F-1671. For any handling steps where the substance is part of a carrier liquid, other than the aqueous suspension noted in the previous paragraph, gloves must be comprised of material that successfully passes ASTM F-739 (continuous liquid contact method). Gloves must be changed before they show degradation and before the designated breakthrough time for the carrier liquid (as determined by the ASTM F-739 testing or by the manufacturer). Handle with gloves. 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

Safety glasses with face shield 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.

Respiratory Protection

The EPA mandates the use of full face respirators with minimum N100 grade cartridges if there is any risk of exposure to the dust. For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type

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OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Environmental Exposure Controls

Avoid release to the environment.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical State	Solid
Odor	Odorless
Odor Threshold	No data available
pH	No data available
Relative Evaporation Rate	No data available
Melting Point	2700 °C
Freezing Point	No data available
Boiling Point	No data available
Flash Point	No data available
Auto-ignition Temperature	No data available
Decomposition Temperature	No data available
Flammability (solid, gas)	No data available
Vapor Pressure	No data available
Relative vapor density at 20°C	No data available
Relative Density	3.217 g/cm ³
Solubility in H ₂ O	insoluble
Log Pow	No data available
Viscosity, Kinematic	No data available
Viscosity, Dynamic	No data available
Explosive Properties	No data available
Oxidizing Properties	No data available
Explosive Properties	No data available

9.2 Other information

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No other information available.

SECTION 10 STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical stability

Stable at normal conditions.

10.3 Possibility of hazardous reactions

May react with strong oxidizing agents.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Strong oxidizing agents.

10.6 Hazardous decomposition products

Thermal combustion may release carbon monoxide, carbon dioxide, silicon oxide.

SECTION 11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute Toxicity	No data available
Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/irritation	Causes serious eye damage.
Respiratory or Skin Sensitization	No sensitizing effect known.
Germ Cell Mutagenicity	No effects known.
Carcinogenity	Suspected of causing cancer. (animal)

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Reproductive Toxicity	No effects known.
STOT-Single Exposure	Inhalation: may cause respiratory irritation.
STOT-Repeated Exposure	No data available
Aspiration Hazard	No data available
Other Information	RTECS: Not available To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Substance is not listed under OSHA-Ca.

SECTION 12 ECOLOGICAL INFORMATION

12.1 Toxicity

Ecology-general	No data available.
Acute aquatic toxicity	No data available.
Chronic aquatic 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.

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SECTION 13 DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste treatment methods Consult official regulations to ensure proper disposal.

SECTION 14 TRANSPORT INFORMATION

Safe to carry by any means of transportation. Not restricted any mode of transportation.

SECTION 15 REGULATORY INFORMATION

15.1 Safety, health and environmental regulations

SARA 313 Components

Substance not listed.

Massachusetts Right to Know Components

No components are subject to the Massachusetts Right to Know Act.

California Prop. 65 Components

Substance not listed.

SECTION 16 OTHER INFORMATION

16.1 Abbreviation of acronyms

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
IATA	International Air Transport Association
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
PBT	Persistent Bioaccumulative Toxic

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RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
vPvB	Very Persistent and Very Bioaccumulative

16.2 Full text of H-statements

Eye Irrit.	Eye irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.
STOT SE	Specific target organ toxicity - single exposure

16.3 Hazard classification

Health	1
Flammability	1
Reactivity	1

Disclaimer

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.