

## NANOGRAFI NANOTECHNOLOGY

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

## 1.1 Product identifiers

Trade Name	Zinc (Zn) Nanopowder/Nanoparticles, High purity: 99.995+%, Size: 60-70 nm
Product Number	NG04EO2403
CAS Number	7440-66-6

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

Use of the substance/mixture	Research
------------------------------	----------

## 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
----------------------------	-------------------

## SECTION 2 HAZARDS IDENTIFICATION

## 2.1 Classification of the substance or mixture

Hazard description

F Highly flammable

Information pertaining to particular dangers for man and environment

R 15 Contact with water liberates extremely flammable gases.

R 17 Spontaneously flammable in air.

## NANOGRAFI NANOTECHNOLOGY

## SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

## 3.1 Substances

Zinc (Zn) Nanopowder/Nanoparticles, High purity: 99.995+%, Size: 90-110 nm  
zinc (CAS# 7440-66-6)

## SECTION 4 FIRST AID MEASURES

## 4.1 Most important symptoms and effects, including acute and delayed

**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

**After skin contact**

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

**After eye contact**

Rinse opened eye for several minutes under running water.

Then consult a doctor.

After swallowing Seek medical treatment.

## 4.2 Indication of any immediate medical attention and special treatment needed

No data available.

## 4.3 Other Information

No data available.

## NANOGRAFI NANOTECHNOLOGY

## SECTION 5 FIRE FIGHTING MEASURES

## 5.1 Extinguishing media

Suitable extinguishing agents

Special powder for metal fires.

Do not use water.

Limestone powder

Dry sand

Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit

## SECTION 6 ACCIDENTAL RELEASE MEASURES

## 6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

## 6.2 Environmental precautions

Do not allow material to be released to the environment.

## 6.3 Methods and material for containment and cleaning up

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

## 6.4 Reference to other sections

See Section 13 for disposal information.

## NANOGRAFI NANOTECHNOLOGY

## SECTION 7 HANDLING AND STORAGE

## 7.1 Precautions for safe handling

## Precautions for Safe Handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

## 7.2 Conditions for safe storage, including any incompatibilities

## Storage Conditions

Keep container tightly sealed.  
Store in cool, dry place in tightly closed containers.  
Ensure good ventilation at the workplace-

## 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

**Components with workplace control parameters**

Contains no substances with occupational exposure limit values.

## 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.

**Personal protective equipment**

## Eye/face protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

## Skin protection

## NANOGRAFI NANOTECHNOLOGY

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.

**Body Protection**

Impervious clothing, 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 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).

**Control of environmental exposure**

Do not let product enter drains.

**SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES****9.1 Information on basic physical and chemical properties**

## General Information

Form: Powder

Color: Black

Odor: Odorless

Value/Range Unit Method

Change in condition

Melting point/Melting range: 419,5 ° C

## NANOGRAFI NANOTECHNOLOGY

Boiling point/Boiling range: 907 ° C

Sublimation temperature / start: Not determined

Flash point: Not applicable

Flammability (solid, gaseous): Product is not flammable.

Ignition temperature: Not determined

Decomposition temperature: Not determined

Danger of explosion:

Product does not present an explosion hazard.

Explosion limits:

Lower: Not determined

Upper: Not determined

Vapor pressure: Not determined

Density: at 20 ° C 7.133 g/cm<sup>3</sup>

Solubility in / Miscibility with

Water: Insoluble

Not determined

## 9.2 Other information

No data available.

## SECTION 10 STABILITY AND REACTIVITY

### 10.1 Reactivity

No dangerous reactions known.

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

No data available.

## NANOGRAFI NANOTECHNOLOGY

## 10.4 Conditions to avoid

No data available.

## 10.5 Hazardous decomposition products

no data available – In the event of fire: see section 5

## SECTION 11 TOXICOLOGICAL INFORMATION

## 11.1 Information on toxicological effects

Acute toxicity:

LD/LC50 values that are relevant for classification:

Oral: LD50: >5000 mg/kg (rat)

Primary irritant effect:

On the skin: Irritant to skin and mucous membranes.

On the eye: Powder: irritant effect

Sensitization: No sensitizing effects known.

Subacute to chronic toxicity:

Zinc containing fumes may cause metal fume fever. Effects include dry throat, metallic taste, chest pain, dyspnea, rales and dry cough. Several hours later, chills may occur with lassitude, malaise, fatigue, headache, back pain, muscle cramps, blurred vision, nausea, fever, perspiration, vomiting and leukocytosis.

Additional toxicological information:

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

## SECTION 12 ECOLOGICAL INFORMATION

## 12.1 Ecotoxicity

No data available.

## NANOGRAFI NANOTECHNOLOGY

## 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.

## SECTION 13 DISPOSAL CONSIDERATIONS

## 13.1 Waste treatment methods

Product	Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.
Contaminated packaging	Dispose of as unused product.

## SECTION 14 TRANSPORT INFORMATION

Not a hazardous material for transportation.

DOT regulations:

Hazard class: 4,3

Land transport ADR/RID (cross-border)

ADR/RID class: None



## NANOGRAFI NANOTECHNOLOGY

Maritime transport IMDG:

IMDG Class: None

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class: None

Transport/Additional information: Not dangerous according to the above specifications.

## SECTION 15 REGULATORY INFORMATION

**SARA 302 Components**

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components**

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Hazards**

Acute Health Hazard

## SECTION 16 OTHER INFORMATION

**Further information**

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. Employers should use this information only as a supplement to other information gathered by them, and should make independent judgment of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.