

NANOGRAFI NANOTECHNOLOGY

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

1.1 Product identifiers

Product Form	Substance
Trade Name	Shape Memory Polymer NGP4510, Potting Type
Product Number	NG01SMP005
CAS Number	Methylenebis (4.1-phenylene) Diisocyanate CAS# 101-68-8

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

Classification according to 29 CFR 1910 (OSHA HCS)

H315	Skin Corrosion/Irritation (Category 2)
H319	Serious Eye damage/Irritation (Category 2A)
H335	STOT SE – Respiratory (Category 3)

NANOGRAFI NANOTECHNOLOGY

H372	STOT RE – Respiratory (Category 1)
Ss	Skin Sensitization (Category 1)
Sr	Respiratory Sensitization (Category 1)

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

2.2 Label Elements

Hazard Pictograms



Signal Word

Danger

Hazard Statements

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

H336 May cause drowsiness or dizziness.

H372 Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements

P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear protective gloves/Protective clothing/eye protection/face protection.

P284 In case of inadequate ventilation wear respiratory protection.

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

NANOGRAFI NANOTECHNOLOGY

P304 + P340 + P311 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER/doctor/physician.

P305 + P351 + P338 + P313 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

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

P332 + P313 If skin irritation occurs: Get medical advice/attention.

P362 + P364 Take off contaminated clothing and wash before reuse.

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

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	Methylenebis (4.1-phenylene) Diisocyanate
CAS Number	101-68-8

3.2 Mixtures

Not applicable.

NANOGRAFI NANOTECHNOLOGY

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. Get medical advice/attention.
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 advice/attention.
First-aid measures after ingestion	Get medical attention if symptoms develop.

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	Dry chemical powder, alcohol-resistant foam, water spray, carbon dioxide.
Unsuitable Extinguishing Media	Water jet.

5.2 Special hazards arising from the substance or mixture

Hazardous Decomposition Products	Carbon monoxide. Nitrogen oxides.
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NANOGRAFI NANOTECHNOLOGY

5.3 Advice for firefighters

In case of fire wear self-contained breathing apparatus and full protective clothing.

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. Do not breath vapor. Remove sources of ignition if safe to do so.

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 let product enter drains.

6.3 Methods and material for containment and cleaning up

For Containment

Use non-sparking tools. Scatter a neutralizer. Avoid generation of dust. Ensure adequate ventilation.

Methods for cleaning up

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

6.4 Reference to other sections

For further information refer to section 13.

NANOGRAFI NANOTECHNOLOGY**SECTION 7 HANDLING AND STORAGE****7.1 Precautions for safe handling**

Precautions for Safe Handling	Avoid contact with skin, eyes and clothes. Wear protective gloves/protective clothing/eye protection/face protection. Carry out operations in the open/under local exhaust/ventilation or with respiratory protection. Do not breath dust/fume/gas/mist/vapor/spray.
Hygiene measures	Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed outside of the workplace. Wash skin thoroughly after handling.

7.2 Conditions for safe storage, including any incompatibilities

Storage Conditions	Store in dry, cool and well-ventilated area. Keep container tightly closed.
Technical Measures	No smoking in the storage area. Keep away from heat, spark, naked light and sources of ignition.

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**

No data available.

NANOGRAFI NANOTECHNOLOGY

8.2 Exposure controls

Appropriate Engineering Controls	Handle in accordance with good industrial hygiene and safety practice. Use only outdoors or in a well-ventilated area. The facilities should be equipped with emergency shower and eye wash station. Wash hands before breaks and at the end of workday.
Hand Protection	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 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	Liquid
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NANOGRAFI NANOTECHNOLOGY

Color	Light yellow
Odor	No data available
Odor Threshold	No data available
pH	No data available
Relative Evaporation Rate	No data available
Melting Point	No data available
Freezing Point	No data available
Boiling Point	No data available
Flash Point	>200 °C
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
Density at 25°C	1.15-1.18 g/cm ³
Solubility in H ₂ O	No data available
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

9.2 Other information

No other information available.

SECTION 10 STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical stability

Stable at normal conditions.

NANOGRAFI NANOTECHNOLOGY

10.3 Possibility of hazardous reactions

May react with water.

10.4 Conditions to avoid

None known.

10.5 Incompatible materials

Strong oxidizing agents. Strong acids. Strong alkali. Amines, Alcohol, Water.

10.6 Hazardous decomposition products

Reaction with water generates carbon dioxide.

In case of fire nitrous gases and carbon monoxide may be generated.

SECTION 11 TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute Toxicity	Oral: LD50 31,600 mg/kg (rat) Dermal: Not classified. Respiratory: LC50 0.369 mg/L 4h (rat)
Skin corrosion/irritation	Category 2
Serious eye damage/irritation	Category 2A
Respiratory or Skin Sensitization	Respiratory: Category 1 Skin: Category 1
Germ Cell Mutagenicity	No effects known.
Carcinogenity	Not classified.
Reproductive Toxicity	No effects known.
STOT-Single Exposure	Category 3
STOT-Repeated Exposure	Category 1
Aspiration Hazard	No data available
Other Information	RTECS: Not available

NANOGRAFI NANOTECHNOLOGY

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.

SECTION 13 DISPOSAL CONSIDERATIONS**13.1 Waste treatment methods**

Waste treatment methods	Consult official regulations to ensure proper disposal.
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NANOGRAFI NANOTECHNOLOGY

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

No data available.

SECTION 16 OTHER INFORMATION

16.1 Abbreviation of acronyms

CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
PBT	Persistent Bioaccumulative Toxic
vPvB	Very Persistent and Very Bioaccumulative
Ss	Skin Sensitizer
Sr	Respiratory Sensitizer

16.2 Full text of H-statements

H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H372	Causes damage to organs through prolonged or repeated exposure.

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.