

**TESLA NANOCOATINGS, INC.
SAFETY DATA SHEET**

This Safety Data Sheet has been prepared to comply with the EU Regulation and the OSHA Hazard Communication Standard.

**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION
AND THE COMPANY/UNDERTAKING**

1.1 Product Identifier:

Trade Name: TESLAN® 4000 Low VOC Urethane Topcoat – Part B

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against:

Product Use: Topcoat
Uses Advised Against: None

1.3 Details of the Supplier of the Safety Data Sheet:

Manufacturer: Tesla NanoCoatings, Inc.
50 North Avenue NW
Massillon, OH 44647 USA
Information Phone Number: +1-330-417-3550
Contact: Todd Hawkins
Email: todd@teslanano.com

Only Representative (REACH)/Nominated EU Importer:

nEMCEL LTD.
Myllarintie 1
40640 JYVASKYLA, Finland
Tel: +040-171-3894

1.4 Emergency Telephone Number: +1-330-417-3550 or +040-171-3894

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the Substance or Mixture:

GHS Classification:

Acute Toxicity (Inhalation): Category 4 (H332)
Skin Sensitization Category 1 (H317)
Specific Target Organ Toxicity Single Exposure Category 3 (Respiratory system) (H335)

2.2 Label Elements:

Warning!



Contains: Homopolymer of Hexamethylene Diisocyanate; Hexamethylene-1-6, Diisocyanate

Hazard Phrases

H317	May cause an allergic skin reaction.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.

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Precautionary Phrases

P261	Avoid breathing dust, mist, gas, vapours, or spray.
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.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P333 + P313	If skin irritation or rash occurs: Get medical attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P304 + P340	IF INHALED: Remove person to fresh air and at rest in a position comfortable for breathing.
P342 + P311	Call a doctor or emergency medical facility (i.e. 911) if you feel unwell.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents and container in accordance with existing federal, state and local environmental control laws.

2.3 Other Hazards: None known.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixture:

Chemical Name	CAS#	EINECS#	EU Classification (67/548/EEC)	CLP Annex VI Classification	%
Homopolymer of Hexamethylene Diisocyanate	28182-81-2	931-274-8	Xn R20, R37, R43	Acute Tox. Cat 4 (H332), Skin Sens. Cat 1 (H317), STOT SE Cat 3 (H335)	95-100
Hexamethylene-1,6-Diisocyanate	822-06-0	273-201-6	T, Xi R23, R36/37/38, R42/43	Acute Tox. Cat 4 (H302), Acute Tox. Cat 1 (H330), Skin Corr./Sens. Cat 1 (H317), Eye Cat 1 (H319), Resp. Sens. Cat 1 (H334), STOT SE Cat 3 (H335)	<=0.7

See Section 16 for further information on EU and GHS Classification.

SECTION 4: FIRST AID MEASURES

4.1 Description of First Aid Measures:

Eye: Immediately flush eyes with plenty of water for at least 15 minutes. Use lukewarm water if possible. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Then remove contact lenses, if easily removable, and continue eye irrigation for not less than 15 minutes. Get medical attention if irritation develops.

Skin: Immediately remove contaminated clothing. Wipe off product from the skin using dry towels or other similar absorbent fabric. If readily available, apply a polyglycol-based cleanser (e.g. Colorimetric Laboratories, Inc. (CLI) D-TAM™ Skin Cleanser) or corn oil. Wash with soap and water and pat dry. If a polyglycol-based cleanser is not available, wash with soap and warm water for 15 minutes. If available, use a wipe test pad to verify decontamination is complete (e.g. CLI SWYPE™). Get medical attention if irritation develops. Discard or wash contaminated clothing before reuse.

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Inhalation: Move to an area free from further exposure. Extreme asthmatic reactions that may occur in sensitized persons can be life threatening. Get medical attention immediately. Administer oxygen or artificial respiration as needed. Asthmatic symptoms may develop and may be immediate or delayed up to several hours.

Ingestion: Do NOT induce vomiting. Wash mouth out with water. Do not give anything by mouth to an unconscious person. Get medical attention.

Notes to Physician: Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing vision. **Skin:** This compound is a skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn. **Ingestion:** Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of the compound. **Inhalation:** Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to the material should be removed from further exposure to any diisocyanate.

4.2 Most Important symptoms and effects:

Acute: Isocyanate vapors or mist at concentrations above the exposure limits or guidelines can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) with symptoms of runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing difficulty). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

May cause skin irritation with symptoms of reddening, itching and swelling. Can cause sensitization. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling and rash. Cured material is difficult to remove. May cause eye irritation with symptoms of reddening, tearing, stinging and swelling. May cause temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing. May cause irritation of the digestive tract; Symptoms may include abdominal pain, nausea, vomiting and diarrhea.

Delayed: Symptoms affecting the respiratory tract can also occur several hours after overexposure.

4.3 Indication of any immediate medical attention and special treatment needed: Immediate medical attention may be required for asthmatic reactions.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing Media: Use dry chemical, carbon dioxide (CO₂), foam or water spray for large fires.

5.2 Special Hazards Arising from the Substance or Mixture:

Unusual Fire and Explosion Hazards: Product is not flammable but will burn under fire conditions. Closed container may forcibly rupture under extreme heat or when contents are contaminated with water (CO₂ formed). Use cold water spray to cool fire-exposed containers to minimize the risk of rupture. Large fires can be extinguished with large volumes of water applied from a safe distance, since reaction between water and hot diisocyanate can be vigorous.

Combustion Products: Oxides of carbon and nitrogen, hydrogen cyanide, isocyanate, isocyanic acid, and dense black smoke, other undetermined compounds.

5.3 Advice for Fire-Fighters:

Wear NFPA compliant structural firefighting protective equipment, including self-contained breathing apparatus and NFPA compliant helmet, hood, boots and gloves. Avoid contact with product. Decontaminate equipment and protective clothing prior to reuse. During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. Exposure to heated diisocyanate can be extremely dangerous.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures:

Wear appropriate protective clothing to prevent eye and skin contact including impervious gloves, safety goggles and respirator if needed. Ventilate area.

6.2 Environmental Precautions:

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Report spills and releases as required to appropriate authorities.

6.3 Methods and Material for Containment and Cleaning Up:

Cover with an inert absorbent material and collect into an appropriate container for disposal.

6.4 Reference to Other Sections:

Refer to Section 8 for Personal Protective Equipment and Section 13 for Disposal information.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for Safe Handling: Do not breathe vapors, mists or dust. Use adequate ventilation. Wear respiratory protection if material is heated, sprayed, used in a confined space or if the exposure limit is exceeded. Avoid contact with the eyes, skin and clothing. Wear appropriate eye and skin protection. Wash thoroughly after handling. Do not breath smoke and gases created by overheating or burning this material. Decomposition products can be highly toxic and irritating.

7.2 Conditions for Safe Storage, Including any Incompatibilities: Store in a cool, dry, well-ventilated location away from acids and other incompatible materials. Keep containers tightly closed to prevent moisture contamination. Do not reseal if contamination is suspected.

7.3 Specific end use(s): Industrial use only

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters:

Chemical Name	Exposure Limits
Homopolymer of Hexamethylene Diisocyanate	0.5 mg/m ³ TWA 1.0 mg/m ³ (15 min) STEL
Hexamethylene-1,6-Diisocyanate	0.005 ppm TWA ACGIH TLV 0.005 ppm TWA, 0.005 ppm STEL DFG MAK (inhalable, sensitization to airways and skin)

8.2 Exposure Controls:

Ventilation: Use with adequate general or local exhaust ventilation to maintain exposure levels below the occupational exposure limits. Use explosion proof electrical equipment and wiring where required.

Personal Protective Equipment:

Respiratory Protection: In operations where the occupational exposure limits are exceeded, an approved respirator with applicable cartridges, designed for particulates, e.g., 3M Type P, or supplied air respirator should be used. Respirator selection and use should be based on contaminant type, form and concentration. Follow applicable regulations and good Industrial Hygiene practice.

Skin Protection: Impervious nitrile gloves are required. Contact your glove supplier for selection assistance.

Eye Protection: Chemical safety goggles and a face shield are recommended.

Other Protective Equipment: Impervious clothing as needed to avoid skin contact and contamination of personal clothing. An eye wash facility and safety shower should be available in the work area.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic Physical and Chemical Properties:

Appearance: Clear, pale yellow liquid	Vapor Density: No data available
Odor: Almost odorless	Specific Gravity: 1.11-1.13
Odor Threshold: No data available	Solubility: Insoluble
pH: No data available	Octanol/Water Partition Coefficient: No data available

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Melting Point/Freezing Point: No data available	Autoignition Temperature: No data available
Boiling Point: ca. 136°C (276.8°F) @ 1,013 hPa with decomposition.	Decomposition Temperature: No data available
Flash Point: ca. 169°C (336.2°F) @ 1,013 hPa (DIN EN 22719)	Viscosity: ca 2500 mPa.s @ 23°C
Evaporation Rate: No data available	Explosive Properties: Not explosive
Flammable Limits: LEL: Not available UEL: Not available	Oxidizing Properties: Not an oxidizer
Vapor Pressure: 4.7 x 10 ⁻⁷ mmHg @ 20°C	Relative Density: No data available
Molecular Formula: Mixture	Flammability (solid, gas): Not applicable
Molecular Weight: Mixture	

9.2 Other Information: VOC: 0.0 lbs/gal / 0.0 g/L (calculated on non-exempt (US EPA) solvent basis), % Volatile weight: 0.0%, Volatile volume: 0.0%

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity: Contact with moisture or temperatures above 350°F (177°C) may cause polymerization.

10.2 Chemical Stability: Stable under normal storage and handling conditions.

10.3 Possibility of Hazardous Reactions: None known.

10.4 Conditions to Avoid: Keep away from heat, sparks, flames and freezing.

10.5 Incompatible Materials: Water, amines, strong bases, alcohols, copper alloys.

10.6 Hazardous Decomposition Products: Combustion will produce carbon and nitrogen, hydrogen cyanide, isocyanate, isocyanic acid, and smoke.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects:

Potential Health Effects:

Eye: May cause mild to moderate irritation. Permanent eye injury is unlikely.

Skin: May cause mild to moderate skin irritation. May cause allergic skin reaction (sensitization).

Inhalation: Inhalation of vapors, mists or aerosols may cause respiratory irritation. Symptoms of central nervous system depression include headache, dizziness, and drowsiness. May cause allergic respiratory reaction (asthma).

Ingestion: Swallowing may cause severe gastrointestinal irritation and central nervous system depression with symptoms similar to those described under inhalation.

Chronic Hazards: None known.

Acute Toxicity Values:

Homopolymer of Hexamethylene Diisocyanate: Oral rat LD50->2500 mg/kg; Inhalation rat LC50-543 mg/m³/4 hr; Dermal rat LD50->2000 mg/kg

Hexamethylene-1,6-Diisocyanate: Oral rat LD50-959 mg/kg; Inhalation rat LC50-0.124 mg/L/4 hr; Dermal rat LD50->7000 mg/kg
Calculated ATE: Inhalation vapor LC50-12.4 mg/L/4hr

Skin corrosion/irritation: No data available for the mixture. This product is not classified as a skin irritant.

Eye damage/irritation: No data available for the mixture. This product is not classified as an eye irritant.

Respiratory Irritation: No data available for the mixture. This product is classified as a respiratory irritant.

Respiratory Sensitization: No data available for the mixture. This product is classified as a respiratory sensitizer.

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Skin Sensitization: No data available for the mixture. This product is classified as a skin sensitizer.

Germ Cell Mutagenicity: No data available.

Carcinogenicity: None of the components of this product are listed as carcinogens by OSHA, IARC, NTP, ACGIH and the EU CLP.

Reproductive Toxicity: No data available.

Specific Target Organ Toxicity:

Single Exposure: No data available

Repeat Exposure: No data available.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

No data available for the mixture.

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: No data available

12.6 Other Adverse Effects: Not applicable

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods:

Dispose in accordance with all local, state and federal regulations.

SECTION 14: TRANSPORTATION INFORMATION

	14.1 UN Number	14.2 UN Proper Shipping Name	14.3 Hazard Class(s)	14.4 Packing Group	14.5 Environmental Hazards
US DOT	None	Not Regulated	None	None	No
Canadian TDG	None	Not Regulated	None	None	No
EU ADR/RID	None	Not Regulated	None	None	No
IMDG	None	Not Regulated	None	None	No
IATA/ICAO	None	Not Regulated	None	None	No

* **Hazardous Substance (49CFR172.101):**

14.6 Special Precautions for User: Hexamethylene-1,6-Diisocyanate (RQ 100 lbs)

14.7 Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

SECTION 15: REGULATORY INFORMATION

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15.1 Safety, Health and Environment Regulations/Legislation Specific for the Substance or Mixture:

U.S. FEDERAL REGULATIONS:

CERCLA 103 Reportable Quantity: This product has an RQ of 10,000 lbs (based on the RQ of Hexamethylene-1,6-Diisocyanate of 100 lbs present at <1%). Some states have more stringent reporting requirements. Report all spills in accordance with local, state, and federal regulations.

SARA TITLE III:

Hazard Category for Section 311/312: Acute Health

Section 313 Toxic Chemicals: This product contains the following chemicals subject to SARA Title III Section 313 Reporting requirements:

Hexamethylene-1,6-Diisocyanate	822-06-0	<1%
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Section 302 Extremely Hazardous Substances (TPQ): None

EPA Toxic Substances Control Act (TSCA) Status: All of the components of this mixture are listed on the TSCA inventory.

STATE REGULATIONS:

California Proposition 65: This product does not contain substances known in the State of California to cause cancer and/or reproductive harm.

INTERNATIONAL REGULATIONS:

EUROPEAN REGULATIONS

REACH: Tesla NanoCoatings, Inc. products comply with REACH regulation as applicable. For more information, contact Tesla NanoCoatings, Inc.

SVHC: This product contains the following Substances of Very High Concern (SVHCs): None.

15.2 Chemical Safety Assessment: None Required

SECTION 16: OTHER INFORMATION

HMIS Ratings: Health – 2	Flammability - 1	Physical Hazard - 0
NFPA Ratings: Health - 2	Flammability - 1	Instability - 0

SDS Revision History:

- 1/29/15: New SDS
- 3/3/16: Revised/Updated SDS
- 5/17/17: Revised/Updated SDS

GHS Classification for Reference (See Sections 2 and 3):

- Acute Tox. Cat 4 Acute Toxicity Category 4
- Acute Tox. Cat 1 Acute Toxicity Category 1
- Eye Irrit. Cat 2A Eye Irritant Category 2A
- Resp. Sens. Cat 1 Respiratory Sensitization Category 1
- Skin Irrit. Cat 2 Skin Irritant Category 2
- Skin Sens. Cat 1 Skin Sensitization Category 1
- STOT SE Cat 3 Specific Target Organ Toxicity Single Exposure Category 3
- H302 Harmful if swallowed.

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- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H319 Causes serious eye irritation.
- H330 Fatal if inhaled.
- H332 Harmful if inhaled.
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H335 May cause respiratory irritation.

EU Classes and Risk Phrases for Reference (See Sections 2 and 3):

- Xi Irritant
- Xn Harmful
- R20 Harmful by inhalation.
- R23 Toxic by inhalation.
- R36/37/38 Irritating to eyes, respiratory system and skin.
- R37 Irritating to respiratory system.
- R42/43 May cause sensitization by inhalation and skin contact.
- R43 May cause sensitization by skin contact.

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This above information is believed to be correct but does not propose to be all inclusive and shall be used only as a guide. Tesla NanoCoatings, Inc. shall not be held liable for any damage resulting from handling or from contact with the above product.

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