

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® 3100 Low VOC Epoxy CNT Topcoat – Part B

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

Product Use: Topcoat Coating

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:

Flammable Liquid Category 3 (H226)

Eye Damage Category 1 (H318)

Skin Irritant Category 2 (H315)

Skin Sensitization Category 1 (H317)

Specific Target Organ Toxicity Single Exposure Category 3 (H335, H336)

Aquatic Chronic Toxicity Category 3 (H412)

EU Classification:

Flammable, Irritant (Xi), Harmful (Xn) R10, R22, R37/38, R41, R43, R67, R52/53

2.2 Label Elements:

Danger!



Contains: Fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines, 1-Butanol

Hazard Phrases

H226	Flammable liquid and vapour.
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H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H412	Harmful to aquatic life with long lasting effects.

Precautionary Phrases

P210	Keep away from heat, sparks, open flames, and hot surfaces. –No smoking.
P233	Keep container tightly closed.
P240	Ground or bond container and receiving equipment.
P241	Use explosion-proof electrical, ventilating, or lighting equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P261	Avoid breathing mist, vapours, or spray.
P264	Wash thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves, eye protection and face protection.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor or physician.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P333 + P313	If skin irritation or rash occurs: Get medical advice or attention.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a POISON CENTER or doctor if you feel unwell.
P370 + P378	In case of fire: Use water fog or spray, universal foam, carbon dioxide or dry chemical to extinguish.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents and container in accordance with local and national regulations.

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	%
Titanium dioxide	13463-67-7	236-675-5	No EU Classification or R phrase	No GHS Classification	35-45
1-Butanol	71-36-3	200-751-6	Xi, Xn R10, R22, R37/38, R41, R67	Flam. Liq. Cat 3 (H226), Acute Tox. Cat 4 (H302), Skin Irrit. Cat 2 (H315), Eye Dam. Cat 1 (H318),	15-25
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				STOT SE Cat 3 (H335, H336)	
Benzyl Alcohol	100-51-6	202-859-9	Xn R20/22	Acute Tox. Cat 4 (H302, H332)	<25
Fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines	68410-23-1	614-452-7	Xi, N R38, R41, R43, R51/53	Skin Irrit. Cat 2 (H315), Eye Dam. Cat 1 (H318), Skin Sens. Cat 1 (H317), Aq. Chronic Cat 2 (H411)	<25
Tert-Butyl Acetate	540-88-5	208-760-7	F R11, R66	Flam. Liq. Cat 2 (H225) EUH066	<10
Fatty acids, tall-oil, reaction products with tetraethylenepentamine	68953-36-6	273-201-6	Xi R36/37/38, R43	Skin Irrit. Cat 2 (H315), Skin Sens. Cat 1 (H317), Eye Irrit. Cat 2 (H319), STOT SE Cat 3 (H335)	<5
Silicon Dioxide, amorphous	7631-86-9	231-545-4	No EU Classification or R phrase	No GHS Classification	<5
Aluminum Hydroxide	21645-51-2	244-492-7	No EU Classification or R phrase	No GHS Classification	<5
Tetraethylenepentamine	112-57-2	203-986-2	C, Xn, N R21/22, R34, R43, R51/53	Acute Tox. Cat 4 (H302, H312), Skin Corr. Cat 1B (H314), Skin Sens. Cat 1 (H317), Aq. Chronic Cat 2 (H411)	<0.5

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 rinse thoroughly with water for at least 30 minutes, while holding the eye lids open to be sure the material is washed out. Get immediate medical attention.

Skin: Remove contaminated clothing. Wash contact area thoroughly with soap and water. Get medical attention if irritation or rash occurs. Launder clothing before re-use.

Inhalation: Remove victim to fresh air. Give artificial respiration if needed. Get medical attention if irritation or symptoms of exposure persist.

Ingestion: If the victim is conscious, give 1-2 glasses of water to dilute. Do not induce vomiting unless directed to do so by medical personnel. If irritation or discomfort occurs, get medical attention.

4.2 Most Important symptoms and effects, both acute and delayed: May cause severe irritation and burns to eyes with possible eye damage. May cause moderate skin irritation. May cause skin sensitization. May cause respiratory irritation with headache, dizziness, nausea and other symptoms of central nervous system depression. Refer to Section 11 for detailed information.

4.3 Indication of any immediate medical attention and special treatment needed: Immediate medical attention is required for eye contact.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing Media: Use water fog or spray, universal foam, carbon dioxide or dry chemical.

5.2 Special Hazards Arising from the Substance or Mixture:

Unusual Fire and Explosion Hazards: Flammable liquid and vapor. Vapors are heavier than air and may travel along surfaces to remote ignition sources and flash back. Vapors may form explosive mixtures with air in confined areas.

Combustion Products: Oxides of carbon and nitrogen, ammonia, nitric acid, nitrosamine, aldehydes, smoke and hydrocarbons.

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5.3 Advice for Fire-Fighters:

Wear an approved, positive pressure, self-contained breathing apparatus and full protective clothing. Cool fire exposed containers with water.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures:

Remove all ignition sources such as open flames, spark producing equipment, pilot lights, etc. 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:

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. Use only non-sparking tools. Dispose of any contaminated cleaning materials in a sealed container.

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, aerosols and mists. Use with adequate ventilation. Prevent contact with the eyes, skin and clothing. Always wear impervious gloves, chemical safety goggles and protective clothing when handling this material. Wash thoroughly after handling. Do not eat, drink or smoke in the work area. Keep product away from heat, sparks, flames and all other sources of ignition. No smoking in storage or use areas. Keep containers closed when not in use.

7.2 Conditions for Safe Storage, Including any Incompatibilities: Store in a cool, dry, well-ventilated location away from oxidizing agents and other incompatible materials. Keep containers closed when not in use.

7.3 Specific end use(s): Industrial use only

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters:

Chemical Name	Exposure Limits
Titanium dioxide	10 mg/m ³ TWA ACGIH TLV 15 mg/m ³ TWA OSHA PEL (total dust) 10 mg/m ³ (inhalable), 4 mg/m ³ (respirable) TWA UK WEL
1-Butanol	20 ppm TWA ACGIH TLV 100 ppm TWA OSHA PEL 100 ppm TWA , 100 ppm STEL DFG MAK 50 ppm STEL UK WEL
Benzyl Alcohol	10 ppm TWA AIHA WEEL
Fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines	None Established
Tert-Butyl Acetate	200 ppm TWA ACGIH TLV 200 ppm TWA OSHA PEL 50 ppm TWA, 200 ppm STEL DFG MAK 200 ppm TWA, 250 ppm STEL UK WEL
Fatty acids, tall-oil, reaction products with tetraethylenepentamine	None Established

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Silicon Dioxide, amorphous	80 mg/m ³ TWA OSHA PEL % SiO ₂ 4 mg/m ³ TWA DFG MAK (inhalable) 6 mg/m ³ (inhalable aerosol), 2.4 mg/m ³ (respirable aerosol) TWA UK WEL
Aluminum Hydroxide	4 mg/m ³ (Inhalable), 1.5 mg/m ³ (Respirable) TWA DFG MAK
Tetraethylenepentamine	5 mg/m ³ TWA AIHA WEEL (Skin; DSEN)

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 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 gloves such as nitrile rubber are recommended to prevent skin contact. Contact your glove supplier for selection assistance.

Eye Protection: Chemical safety goggles 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: White liquid	Vapor Density: No data available
Odor: Amine odor	Specific Gravity: 1.340
Odor Threshold: No data available	Solubility: Slightly soluble in water
pH: Not available	Octanol/Water Partition Coefficient: No data available
Melting Point/Freezing Point: No data available	Autoignition Temperature: No data available
Boiling Point: 208.0°F (97.8°C) (Tert-Butyl Acetate)	Decomposition Temperature: No data available
Flash Point: 130°F (54°C)	Viscosity: No data available
Evaporation Rate: No data available	Explosive Properties: Not explosive
Flammable Limits: LEL: 1.4% (1-Butanol) UEL: 11.2% (1-Butanol)	Oxidizing Properties: Not an oxidizer
Vapor Pressure: No data available	Relative Density: No data available
Molecular Formula: Mixture	Flammability (solid, gas): Not applicable
Molecular Weight: Mixture	

9.2 Other Information: VOC: 2.38 lbs/gal / 285.2 g/L (calculated on non-exempt (US EPA) solvent basis), % Volatile weight: 29.3%, % Volatile volume: 47.6%.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity: Not reactive.

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

10.3 Possibility of Hazardous Reactions: Hazardous polymerization will not occur.

10.4 Conditions to Avoid: Keep away from heat, sparks, flames and other sources of ignition. Avoid incompatible materials.

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10.5 Incompatible Materials: Nitrous acid and other nitrosating agents, organic acids, mineral acids, sodium hypochlorite, common metals such as aluminum, halogens and oxidizing agents.

10.6 Hazardous Decomposition Products: Combustion will produce oxides of carbon and nitrogen, ammonia, nitric acid, nitrosamine, aldehydes, smoke and hydrocarbons.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects:

Potential Health Effects:

Eye: May cause severe irritation and burns. Permanent eye injury is likely.

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

Inhalation: Inhalation of vapors, mists or aerosols may cause mucous membrane and respiratory irritation and burns with the possibility of central nervous system depression. Symptoms of central nervous system depression include headache, dizziness, drowsiness, nausea and unconsciousness.

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:

Titanium dioxide: Oral rat LD50 - >5000 mg/kg; Inhalation rat LC50->6.82 mg/L/4hr (no mortality)

1-Butanol: Oral rat LD50-790 mg/kg; Inhalation rat LC50-24 mg/L/4hr; Skin rabbit LD50-3400 mg/kg

Benzyl Alcohol: Oral rat LD50-1620 mg/kg; Inhalation rat LC50->4.178 mg/L/4hr; Skin rabbit LD50-2000 mg/kg

Fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines: Oral rat LD50->2000 mg/kg; Skin rat LD50->2000 mg/kg

Tert-Butyl Acetate: Oral rat LD50-4500 mg/kg; Inhalation rat LC50-12.52 mg/L/4hr; Skin rabbit LD50->2000 mg/kg

Fatty acids, tall-oil, reaction products with tetraethylenepentamine: No toxicity data available

Silicon Dioxide, amorphous: Oral rat LD50->5000 mg/kg; Inhalation rat LC50->0.69 mg/L/4hr (no mortality); Skin rabbit LD50->2000 mg/kg

Aluminum Hydroxide: Oral rat LD50->2000 mg/kg; Inhalation rat LC50->2.3 mg/L/4hr (no mortality)

Tetraethylenepentamine: Oral rat LD50 – 2100-3990 mg/kg; Skin rabbit LD50-660 mg/kg

Skin corrosion/irritation: No data available for the mixture. This product is classified as a skin irritant.

Eye damage/irritation: No data available for the mixture. This product is classified as corrosive to eyes.

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

Respiratory Sensitization: No data available.

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

Germ Cell Mutagenicity: No data available.

Carcinogenicity: Titanium dioxide is listed by IARC as a group 2B carcinogen (possible human carcinogen). 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.

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SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity:

No data available for the mixture. The following information is for the components:

Fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines: 96 hr LC50 Zebrafish-7.07 mg/L; 48 hr EC50 Daphnia magna- 5.18 mg/L; 72 hr ErC50 Green algae – 4.11 mg/L
 Tert-Butyl Acetate: 96 hr LC50 Rainbow trout- 240 mg/L; 48 hr EC50 Daphnia magna- 350 mg/L; 72 hr EC50 Green algae – 16 mg/L, 96 hr EC50 Green algae – 64 mg/L (NOEC- 2.3 mg/L)
 Tetraethylenepentamine: 96 hr LC50 Poecilia reticulata-420 mg/L; 48 hr EC50 Daphnia magna- 24.1 mg/L; 72 hr EC50 Selenastrum capricornutum (Algae)- 2.1 mg/L (NOEC – 0.5 mg/L)

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	UN1263	Paint*	3	PG III	No
Canadian TDG	UN1263	Paint	3	PG III	No
EU ADR/RID	UN1263	Paint	3	PG III	No
IMDG	UN1263	Paint	3	PG III	No
IATA/ICAO	UN1263	Paint	3	PG III	No

* **Hazardous Substance (49CFR172.101):** 1-Butanol (RQ 5,000 lbs) (20,000 lbs. product)

14.6 Special Precautions for User: Not applicable

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

SECTION 15: REGULATORY INFORMATION

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 20,000 lbs (based on the RQ of 1-Butanol of 5,000 lbs present at 15-25%). Some states have more stringent reporting requirements. Report all spills in accordance with local, state, and federal regulations.

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SARA TITLE III:

Hazard Category for Section 311/312: Acute Health, Fire Hazard

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

1-Butanol	71-36-3	15-25%
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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.

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 - 3 Flammability - 2 Physical Hazard - 0
NFPA Ratings: Health - 3 Flammability - 2 Instability - 0

SDS Revision History:

5/29/14: New SDS
2/29/16: Revised/Updated SDS

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

Acute Tox. Cat 4 Acute Toxicity Category 4
Aq. Chronic Cat 2 Aquatic Chronic Toxicity Category 2
Aq. Chronic Cat 3 Aquatic Chronic Toxicity Category 3
Eye Dam. Cat 1 Eye Damage Category 1
Eye Irrit. Cat 2A Eye Irritant Category 2A
Skin Corr. Cat 1B Skin Corrosion Category 1B
Skin Irrit. Cat 2 Skin Irritant Category 2
Skin Sens. Cat 1 Skin Sensitization Category 1
Flam. Liq. Cat 2 Flammable Liquid Category 2
Flam. Liq. Cat 3 Flammable Liquid Category 3
STOT SE Cat 3 Specific Target Organ Toxicity Single Exposure Category 3
H225 Highly flammable liquid and vapor.
H226 Flammable liquid and vapor.
H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.

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H411 Toxic to aquatic life with long lasting effects.
 H412 Harmful to aquatic life with long lasting effects.
 EUH066 Repeated exposure may cause skin dryness or cracking.

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

- C Corrosive
- F Highly flammable
- N Dangerous for the Environment.
- Xi Irritant
- Xn Harmful
- R10 Flammable
- R11 Highly flammable
- R20/22 Harmful by inhalation and if swallowed.
- R21/22 Harmful in contact with skin and if swallowed.
- R22 Harmful if swallowed.
- R34 Causes burns.
- R36/37/38 Irritating to eyes, respiratory system and skin.
- R37/38 Irritating to respiratory system and skin.
- R38 Irritating to the skin.
- R41 Risk of serious damage to eyes.
- R43 May cause sensitization by skin contact.
- R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
- R66 Repeated exposure may cause skin dryness or cracking.
- R67 Vapors may cause drowsiness and dizziness.

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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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