

## 1. Identification

<b>Product identifier</b>	<b>ZNano™</b>	
<b>Other means of identification</b>		
<b>Document number</b>	SDS-047-ZD REV A	
<b>Recommended use</b>	Dental composite.	
<b>Recommended restrictions</b>	None known.	
<b>Manufacturer/Importer/Supplier/Distributor information</b>		
<b>Supplier</b>		
<b>Company name</b>	Zest Dental Solutions	
<b>Address</b>	2875 Loker Avenue East Carlsbad, CA 92010	
<b>Telephone</b>	1-800-262-2310	
<b>Contact</b>	Customer Service	
<b>E-mail</b>	customerservice@zestdent.com	
<b>Website</b>	www.zestdent.com	
<b>Emergency telephone number</b>	800-451-8346 / 760-602-8703	

## 2. Hazard(s) identification

<b>Physical hazards</b>	Not classified.	
<b>Health hazards</b>	Sensitization, skin	Category 1B
<b>Environmental hazards</b>	Hazardous to the aquatic environment, acute hazard	Category 2
	Hazardous to the aquatic environment, long-term hazard	Category 3
<b>OSHA defined hazards</b>	Not classified.	

### Label elements



<b>Signal word</b>	Warning	
<b>Hazard statement</b>	May cause an allergic skin reaction. Toxic to aquatic life. Harmful to aquatic life with long lasting effects.	
<b>Precautionary statement</b>		
<b>Prevention</b>	Avoid breathing mist/vapors. Contaminated work clothing must not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves.	
<b>Response</b>	If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.	
<b>Storage</b>	Store away from incompatible materials.	
<b>Disposal</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.	
<b>Hazard(s) not otherwise classified (HNOC)</b>	None known.	
<b>Supplemental information</b>	None.	

## 3. Composition/information on ingredients

### Mixtures

Chemical name	CAS number	%
Filler 1	Proprietary	24 - 78
Monomer 1	Proprietary	20 - 37
Filler 2	Proprietary	4 - 18
Monomer 2	Proprietary	2 - 5
Co-initiator	Proprietary	1 - 3
Stabilizer 1	Proprietary	< 1
Stabilizer 2	Proprietary	< 1
Titanium compound	Proprietary	< 1

**Composition comments** All concentrations are in percent by weight unless otherwise indicated. Components not listed are either non-hazardous or are below reportable limits.

The manufacturer has claimed one or more hazardous ingredients as trade secret under the OSHA Hazard Communication Standard. The hazards of this (these) ingredient(s) are given on this SDS.

#### 4. First-aid measures

**Inhalation**

Move to fresh air. Call a physician if symptoms develop or persist.

**Skin contact**

Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.

**Eye contact**

Rinse with water. Get medical attention if irritation develops and persists.

**Ingestion**

Rinse mouth. Get medical attention if symptoms occur.

**Most important symptoms/effects, acute and delayed**

May cause an allergic skin reaction. Dermatitis. Rash.

**Indication of immediate medical attention and special treatment needed**

Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

**General information**

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Wash contaminated clothing before reuse.

#### 5. Fire-fighting measures

**Suitable extinguishing media**

Water fog. Foam. Dry chemical powder. Carbon dioxide (CO<sub>2</sub>).

**Unsuitable extinguishing media**

Do not use water jet as an extinguisher, as this will spread the fire.

**Specific hazards arising from the chemical**

During fire, hazardous combustion products are released that may include: Carbon oxides. Nitrogen oxides. Fumes of metal oxides. Silicon oxide fumes. Fluorine compounds.

**Special protective equipment and precautions for firefighters**

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

**Fire fighting equipment/instructions**

Move containers from fire area if you can do so without risk. Cool containers exposed to flames with water until well after the fire is out.

**Specific methods**

Use standard firefighting procedures and consider the hazards of other involved materials.

**General fire hazards**

Contains one or more components that will burn if involved in a fire.

#### 6. Accidental release measures

**Personal precautions, protective equipment and emergency procedures**

Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

<b>Methods and materials for containment and cleaning up</b>	Prevent product from entering drains.  Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.  Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.  Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
<b>Environmental precautions</b>	Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

## 7. Handling and storage

<b>Precautions for safe handling</b>	Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Persons susceptible to allergic reactions should not handle this product. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
<b>Conditions for safe storage, including any incompatibilities</b>	Store in a well-ventilated place. Do not freeze. Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

## 8. Exposure controls/personal protection

<b>Occupational exposure limits</b>	No exposure limits noted for ingredient(s).
<b>Biological limit values</b>	No biological exposure limits noted for the ingredient(s).
<b>Appropriate engineering controls</b>	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash fountain and emergency showers are recommended.
<b>Individual protection measures, such as personal protective equipment</b>	
<b>Eye/face protection</b>	Wear approved chemical safety goggles. Face shield is recommended.
<b>Skin protection</b>	
<b>Hand protection</b>	Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.
<b>Skin protection</b>	
<b>Other</b>	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
<b>Respiratory protection</b>	None required where adequate ventilation conditions exist. In case of insufficient ventilation, wear suitable respiratory equipment.
<b>Thermal hazards</b>	Wear appropriate thermal protective clothing, when necessary.
<b>General hygiene considerations</b>	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing must not be allowed out of the workplace.

## 9. Physical and chemical properties

<b>Appearance</b>	
<b>Physical state</b>	Liquid.
<b>Form</b>	Viscous paste.
<b>Color</b>	Not available.
<b>Odor</b>	None.
<b>Odor threshold</b>	Not available.
<b>pH</b>	Not available.
<b>Melting point/freezing point</b>	Not available.
<b>Initial boiling point and boiling range</b>	Not available.
<b>Flash point</b>	Does not flash.
<b>Evaporation rate</b>	Not available.
<b>Flammability (solid, gas)</b>	Not applicable.

### Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%) Not available.

Vapor pressure Not available.

Vapor density Not available.

Relative density Not available.

### Solubility(ies)

Solubility (water) Not available.

Partition coefficient (n-octanol/water) Not available.

Auto-ignition temperature Not available.

Decomposition temperature Not available.

Viscosity 20.5 mm<sup>2</sup>/s (104 °F (40 °C))

### Other information

Explosive properties Not explosive.

Oxidizing properties Not oxidizing.

## 10. Stability and reactivity

**Reactivity** The product is stable and non-reactive under normal conditions of use, storage and transport.

**Chemical stability** Material is stable under normal conditions.

**Possibility of hazardous reactions** No dangerous reaction known under conditions of normal use.

**Conditions to avoid** Contact with incompatible materials. Excessive heat. Freezing temperatures.

**Incompatible materials** Strong oxidizing agents.

**Hazardous decomposition products** Decomposition is not expected under normal conditions of use and storage. For hazardous combustion products, see section 5.

## 11. Toxicological information

### Information on likely routes of exposure

**Inhalation** Prolonged inhalation may be harmful.

**Skin contact** May cause an allergic skin reaction.

**Eye contact** Direct contact with eyes may cause temporary irritation.

**Ingestion** May cause discomfort if swallowed.

**Symptoms related to the physical, chemical and toxicological characteristics** May cause an allergic skin reaction. Dermatitis. Rash.

### Information on toxicological effects

**Acute toxicity** Not expected to be acutely toxic.

Components	Species	Test Results
Filler 1 (CAS Proprietary)		
<b>Acute</b>		
<b>Dermal</b>		
LD50	Rabbit	> 5000 mg/kg, 24 Hours
<b>Inhalation</b>		
<i>Dust</i>		
LC50	Rat	> 0.14 mg/l, 4 Hours
<b>Oral</b>		
LD50	Rat	> 3300 mg/kg

Components	Species	Test Results
Stabilizer 1 (CAS Proprietary)		
<b>Acute</b>		
<b>Dermal</b>		
LD50	Rat	> 2000 mg/kg
<b>Oral</b>		
LD50	Rat	> 2930 mg/kg
Titanium compound (CAS Proprietary)		
<b>Acute</b>		
<b>Inhalation</b>		
LC50	Rat	3.43 mg/l, 4 Hours
<b>Oral</b>		
LD50	Rat	> 5000 mg/kg
<b>Skin corrosion/irritation</b>	Prolonged skin contact may cause temporary irritation.	
<b>Serious eye damage/eye irritation</b>	Direct contact with eyes may cause temporary irritation.	
<b>Respiratory or skin sensitization</b>		
<b>Respiratory sensitization</b>	Not a respiratory sensitizer.	
<b>Skin sensitization</b>	May cause an allergic skin reaction.	
<b>Germ cell mutagenicity</b>	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.	
<b>Carcinogenicity</b>	Due to the form of the product, exposure to the potentially carcinogenic components is not expected.	

#### IARC Monographs. Overall Evaluation of Carcinogenicity

Filler 1 (CAS Proprietary)	3 Not classifiable as to carcinogenicity to humans.
Filler 2 (CAS Proprietary)	3 Not classifiable as to carcinogenicity to humans.
Stabilizer 1 (CAS Proprietary)	3 Not classifiable as to carcinogenicity to humans.
Titanium compound (CAS Proprietary)	2B Possibly carcinogenic to humans.

#### NTP Report on Carcinogens

Not listed.

#### OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

<b>Reproductive toxicity</b>	This product is not expected to cause reproductive or developmental effects.
<b>Specific target organ toxicity - single exposure</b>	Not classified.
<b>Specific target organ toxicity - repeated exposure</b>	Not classified.
<b>Aspiration hazard</b>	Not an aspiration hazard.
<b>Chronic effects</b>	Prolonged inhalation may be harmful.

## 12. Ecological information

**Ecotoxicity** Toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Components	Species	Test Results
Stabilizer 1 (CAS Proprietary)		
<b>Aquatic</b>		
<i>Chronic</i>		
Crustacea	NOEC	Daphnia magna
		0.07 mg/l, 21 days
Stabilizer 2 (CAS Proprietary)		
<b>Aquatic</b>		
<i>Acute</i>		
Fish	LC50	Oncorhynchus mykiss
		> 0.17 mg/l, 96 hours

Components	Species	Test Results
Titanium compound (CAS Proprietary)		
<b>Aquatic</b>		
<i>Acute</i>		
Crustacea	EC50	Daphnia magna > 100 mg/l, 48 Hours
Fish	LL50	Oryzias latipes > 100 mg/l, 96 Hours

**Persistence and degradability** No data is available on the degradability of this product.

**Bioaccumulative potential**

**Partition coefficient n-octanol / water (log Kow)**

Co-initiator	1.88
Monomer 1	5.3 - 5.62

**Mobility in soil** No data available for this product.

**Other adverse effects** None known.

**13. Disposal considerations**

**Disposal instructions** Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Local disposal regulations** Dispose in accordance with all applicable regulations.

**Hazardous waste code** The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**Waste from residues / unused products** Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

**Contaminated packaging** Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

**14. Transport information**

**DOT**

Not regulated as dangerous goods.

**IATA**

Not regulated as dangerous goods.

**IMDG**

Not regulated as dangerous goods.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not established.

**15. Regulatory information**

**US federal regulations** This mixture is a product regulated by the FDA. Within the meaning of the OSHA Hazard Communication Standard [29 CFR 1910.1200]: this mixture is considered hazardous.

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

**CERCLA Hazardous Substance List (40 CFR 302.4)**

Not listed.

**SARA 304 Emergency release notification**

Not regulated.

**OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)**

Not listed.

**Toxic Substances Control Act (TSCA)**

One or more components of the mixture are not on the TSCA 8(b) inventory or are designated "inactive".

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**SARA 302 Extremely hazardous substance**

Not listed.

**SARA 311/312 Hazardous chemical** Yes  
**Classified hazard categories** Respiratory or skin sensitization  
**SARA 313 (TRI reporting)**  
Not regulated.

**Other federal regulations**

**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**  
Not regulated.  
**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**  
Not regulated.  
**Safe Drinking Water Act (SDWA)** Not regulated.

**US state regulations**

**US. Massachusetts RTK - Substance List**

Filler (CAS Proprietary)  
Filler 1 (CAS Proprietary)  
Stabilizer 1 (CAS Proprietary)  
Titanium compound (CAS Proprietary)

**US. New Jersey Worker and Community Right-to-Know Act**

Filler 1 (CAS Proprietary)  
Filler 2 (CAS Proprietary)  
Stabilizer 1 (CAS Proprietary)  
Titanium compound (CAS Proprietary)

**US. Pennsylvania Worker and Community Right-to-Know Law**

Filler 1 (CAS Proprietary)  
Filler 2 (CAS Proprietary)  
Stabilizer 1 (CAS Proprietary)  
Titanium compound (CAS Proprietary)

**US. Rhode Island RTK**

Filler (CAS Proprietary)  
Filler 2 (CAS Proprietary)  
Stabilizer 1 (CAS Proprietary)  
Titanium compound (CAS Proprietary)

**California Proposition 65**

California Safe Drinking Water and Toxic Enforcement Act of 2016 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

**16. Other information, including date of preparation or last revision**

**Issue date** 01-November-2019  
**Revision date** -  
**Version #** 01  
**NFPA ratings**



**Disclaimer**

Zest Dental Solutions cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.