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SAFETY DATA SHEET

SECTION 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Identifier

Product Name : Thanecure® T9 Unground, Thanecure® T9 Superfine
CAS Number : Mixture
Product Description : Toluene Diisocyanate Dimmer

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

Use(s) : Used as an accelerator in the curing of elastomers; rubber vulcanization accelerator.
Restrictions on Use(s) : None known.

1.3 Supplier

TSE Industries, Inc.
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SECTION 2: Hazards Identification

2.1 Classification of the Substance or Mixture

Product Definition : Mixture
Physical Hazards : Not Classified as physical hazard according to 2012 OSHA Hazard Communication Standard: 29 CFR1910.1200.
Health Hazards : Not Classified as physical hazard according to 2012 OSHA Hazard Communication Standard: 29 CFR1910.1200.

This mixture has not been tested as a whole and classification is based on the toxicity of individual components. Acute toxicity of 98.9% of this mixture is unknown.

2.2 Label Elements : None needed based on classification criteria

2.3 Hazard Not Otherwise Classified

Asphixiant : None
Combustible Dust : None
Other : May cause sensitization by inhalation and skin contact. 2,4-Toluene Diisocyanate in even small amounts may trigger asthmatic reaction with sensitized individuals as referenced in section 4.2.

SECTION 3: Composition/Information on Ingredients

Substance/Mixture : Mixture

PRODUCT/INGREDIENT NAME	CAS#	%
1,3-Diazatididine-2,4-dione, 1,3-bis(3-isocyanatomethylphenyl)-	26747-90-0	>98.9

Dimethyl silicone polymer with silica	67762-90-7	1.0
Toluene-2,4-diisocyanate	584-84-9	<0.1

There are no additional ingredients present which, within the current knowledge of the supplier, are classified and contribute to the classification of the substance and hence require reporting in this section.

SECTION 4: First Aid Measures

4.1 Description of First Aid Measures

- Eye Contact** : Immediately flush eyes with plenty of water for at least 15 min., occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
- Inhalation** : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Administer oxygen or artificial respiration as needed. Get medical attention immediately if irritation symptoms occur.
- Skin Contact** : Remove contaminated clothing and shoes. Flush contaminated skin with plenty of soap and water for at least 15 minutes. Wash clothing before reuse. Get medical attention if symptoms occur.
- Ingestion** : Do not induce vomiting unless directed to do so by medical personnel. Wash out mouth with water. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
- Protection of First-Aiders** : No action shall be taken involving any personal risk or without suitable training.

4.2 Most Important Symptoms of Exposure

- Acute** : Exposure to diisocyanate vapors or mists at concentration above PEL can irritate the mucus membranes in the respiratory tract, cause runny nose, sore throat, coughing, chest discomfort, shortness of breath and breathing obstruction.
Exposure well above PEL may lead to bronchitis, bronchial spasm and pulmonary edema. Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills) has also been reported. These effects are usually reversible.
Persons with preexisting, nonspecific bronchial hyper reactivity can respond to concentration below PEL with similar symptoms as well as asthma attack symptoms.
May cause skin irritation with symptoms of reddening, itching and swelling. Person previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling and rash.
May cause serious eye irritation with symptoms of reddening, tearing, stinging, swelling and burning.
- Delayed** : Symptoms of acute inhalation can be delayed for several hours after overexposure.

4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed

- Notes to Physician** : Inhalation effects may be delayed. Keep affected person under observation.

SECTION 5: Firefighting Measures

5.1 Extinguishing Media

- Suitable Extinguishing Media** : Dry chemical, CO₂, foam.
- Unsuitable Extinguishing Media** : Do not use high-pressure water streams.

5.2 Special Hazards Arising from the Substance or Mixture

- Hazards from the Substance or Mixture** : Fine dust clouds may form explosive mixture with air.
- Hazardous Thermal Decomposition Products** : Carbon dioxide, carbon monoxide, oxides of nitrogen, hydrogen cyanide, toluene diisocyanate vapors, formaldehyde.

5.3 Advice for Firefighters

- Special Protective Actions for Firefighters** : Move container(s) from fire area if it can be done without risk. Cool material with water spray until well after the fire is out. Do not scatter spilled material with high-pressure water streams.

Special Protective Equipment for Firefighters : Fire-fighters should wear NFPA compliant firefighting protective equipment and self-contained breathing apparatus (SCBA).

SECTION 6: Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

Emergency Response Personnel : Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Put on appropriate personal protective equipment as specified in Section 8 of this SDS. Remove ignition sources.

6.2 Environmental Precautions : Avoid dispersal of spilt material and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution.

6.3 Methods and Materials for Containment and Cleaning Up

Small Spill : Move containers from spill area. Vacuum or sweep up material and place it in an approved labeled container. Seal the container and dispose according to instructions in section 13 of this SDS.

Large Spill : Not anticipated.

SECTION 7: Handling and Storage

7.1 Handling

Protective Measures : Wear appropriate personal protective equipment, as specified in section 8 of this SDS, while handling this material.

Handling : Use only in well-ventilated areas. Avoid contact with eyes. Avoid generation and breathing of dust. Do not eat, drink or smoke while handling this material. Clean any spills immediately and decontaminate surface according to procedure in section 6.

7.2 Storage : Store in accordance with local regulations. Store in original container in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Do not store in unlabeled containers.

Storage Temperature

SECTION 8: Exposure Controls/Personal Protection

8.1 Occupational Exposure Limits

Name	CAS#	Regulatory Limits (OSHA PEL)		Recommended Limits (ACGIH TLV)	
		ppm	mg/ m ³	ppm	mg/ m ³
Toluene-2,4-diisocyanate	584-84-9	0.02 ***	0.14***	0.005	0.036
Dust or Particulates not otherwise specified	NA	-	15* 5**	-	10* 3**

*Total Dust

**Respirable Dust

***Ceiling Limit Value

Recommended Monitoring : Personal and workplace atmosphere monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

8.2 Exposure Controls

Engineering Controls : Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Ensure compliance with applicable exposure limits. Use process enclosures, local ventilation or other engineering controls to keep worker exposure to airborne contaminants if user operations generate dust, fumes, gas or vapors.

Environmental Controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual Protection Measures

Hygiene Measures : Remove contaminated clothing. Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location

Eye/Face Protection : Eye protection complying with OSHA 1910.133 standard.

Hand Protection : Chemical-resistant, impervious gloves complying with OSHA 1910.138 standard should be worn at all times when handling chemical products. Recommended gloves: Nitrile rubber

Body Protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Use permeation resistant clothing when spray mist/vapors are anticipated.

Foot Protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Foot protection should comply with OSHA 1910.136 standard.

Respiratory Protection : Use air-purifying respirator complying with OSHA 1910.134 standard if vapors form. Recommended air-purifying respirator cartridge is an organic vapor with particulate filter (Combination OV/P100) cartridge.

SECTION 9: Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Appearance

Physical State : Solid powder

Color : White

Odor : Aromatic

Odor Threshold : No data available

pH : No data available

Melting Point/Freezing Point : >145°C (293°F)

Initial Boiling Point & Boiling Range : No data available

Flash Point : No data available

Evaporation Rate : No data available

Flammability : No data available

Upper/Lower Flammability or Explosive Limits : No data available

Vapor Pressure : No data available

Vapor Density : No data available

Relative Density : 1.48 mg/cm³ @ 21°C(70°F)

Solubility(ies) : No data available

Partition Coefficient: n-octano/water : No data available

Auto-ignition Temperature : 500°C (953 F)

Decomposition Temperature : No data available

Viscosity : No data available

9.2 Other Information : None

SECTION 10: Stability and Reactivity

10.1 Reactivity	:	No reactivity hazard is expected.
10.2 Chemical Stability	:	Reacts slowly with moisture form air to form carbon dioxide.
10.3 Possibility of Hazardous Polymerization	:	Under normal conditions of storage and use, hazardous reactions will not occur. Will not polymerize.
10.4 Conditions to Avoid	:	Avoid dust formation. Avoid heat, flames, sparks and other source of ignition. Avoid contact with incompatible materials. At temperatures above 100°C (212°F), decomposition accelerates with generation of 2,4-Toluene Diisocyanate. May release formaldehyde when heated to temperatures higher then 150° C (302°F) in the presence of air. Formaldehyde is a known sin and lung sensitizer and is regulated as a carcinogen.
10.5 Incompatible Materials	:	Amines, alcohols, surfactants
10.6 Hazardous Decomposition Products	:	Carbon dioxide, carbon monoxide, oxides of nitrogen, hydrogen cyanide, toluene diisocyanate vapors, formaldehyde.

SECTION 11: Toxicological Information

Information on toxicological effects of material is not available at this time. Individual component information and calculations method have been used to evaluate health and physical hazards of the mixture.

Toxicity Data for Toluene Diisocyanate Dimer : No data available

Toxicity Data for Dimethyl Silicone Polymer with Silica

Acute Toxicity	:	Oral LD ₅₀ : >5000 mg/kg (rat) Dermal LD ₅₀ : Not data available. Inhalation LC ₅₀ : No suitable testing procedure is available due to the product's physical characteristics
Sensitization	:	Contains no known sensitizers.
Skin Irritation	:	Primary irritation index=0 Non-irritating.
Eye Irritation	:	Primary irritation index=0 @ 48 hr. Non-irritating.
Repeated Dose Toxicity	:	Not data available.
Mutagenicity	:	Not mutagenic in AMES Test, chromosomal aberration in Chinese hamster ovary (CHO) cells.
Carcinogenicity	:	Not data available. This product contains no listed carcinogenic substances as defined by IARC, NTP, ACGIH or OSHA.
Reproductive Toxicity	:	Not data available. According to experience not expected.
Teratogenicity	:	Not data available.
Specific Target Organ Toxicity (single exposure)	:	None observed.
Specific Target Organ Toxicity (repeated exposure)	:	Not expected.
Aspiration Hazard	:	Not data available.
Information on the Likely Routes of Exposure	:	Inhalation, Dermal contact.
<u>Potential Acute Health Effects</u>		
Eye Contact	:	May cause mechanical irritation.
Inhalation	:	May be irritating to respiratory tract.
Skin Contact	:	No known significant effects or critical hazards.
Ingestion	:	No known significant effects or critical hazards.
<u>Delayed and Immediate Effects and also Chronic Effects from Short and Long Term Exposure</u>		
<u>Short Term Exposure</u>		
Potential Immediate Effects	:	Not available.

Potential Delayed Effects	:	Not available.
<u>Long Term Exposure</u>		
Potential Immediate Effects	:	Not available.
Potential Delayed Effects	:	
<u>Potential Chronic Health Effects</u>		
General	:	Repeated exposure may cause skin dryness or cracking.
Carcinogenicity	:	This product contains no listed carcinogenic substances above the cut-off value as defined by IARC, NTP, ACGIH or OSHA.
Mutagenicity	:	No known significant effects or critical hazards.
Teratogenicity	:	No known significant effects or critical hazards.
Developmental Effects	:	No known significant effects or critical hazards.
Fertility Effects	:	No known significant effects or critical hazards.
Other Information	:	None

Toxicity Data for 2,4-Toluene Diisocyanate

Acute Toxicity	:	Oral LD ₅₀ : 5110 mg/kg (rat, male) 4130 mg/kg (rat, female) Dermal LD ₅₀ : >9400 mg/kg (rabbit) Inhalation LC ₅₀ : 66 ppm, 1h (rat)
Sensitization	:	Skin sensitization (local lymph node assay (LLNA)):positive (mouse, OECD Test Guideline 429) Inhalation: sensitizer (guinea pig, other method).
Skin Irritation	:	Rabbit, Draize, exposure time: 24 h, Moderately irritating
Eye Irritation	:	Rabbit, Severe irritant
Repeated Dose Toxicity	:	113 weeks, inhalation NOAEL: 0.05 ppm (rat, Male/Female, 6 hr. /day 5 days/week) Irritation to lungs and nasal cavity. No systematic effects were observed. 90 Days, Oral: NOAEL: 30 mg/kg LOAEL: 60 mg/kg (rat, Male/Female, 5 days/week) Reduced body weight gain. Changes in lungs.
Mutagenicity	:	Genetic Toxicity in Vitro: Ames: (Salmonella typhimurium, Metabolic Activation: with/without).Positive and negative results were reported. The use of certain solvents which rapidly hydrolyze diisocyanates is suspected of producing the positive mutagenicity results. Genetic Toxicity in Vivo: Micronucleus Assay: Negative (rat). Unscheduled DNA synthesis: Negative (rat).
Carcinogenicity	:	Rat, Male/Female, inhalation 113 weeks, 6 hr./day, 5days/week: Negative.
Reproductive Toxicity	:	Two generation study, inhalation, 6 hr. /day, 7 days/week (rat, Male/Female) NOAEL (parental): 0.08 ppm, NOAEL (F1): 0.02 ppm, NOAEL (F2): 0.3 ppm, No effects on reproductive parameters observed at doses tested.
Teratogenicity	:	Rat, Female, inhalation, gestation days 6-15, 6 hr. /day, 7 days/week, NOAEL (teratogenicity): 0.1 ppm, NOAEL (maternal): 0.1 ppm No Teratogenic effects observed at does tested. Fetotoxicity seen only with material toxicity.
Specific Target Organ Toxicity (single exposure)	:	Respiratory system
Specific Target Organ Toxicity (repeated exposure)	:	Not data available.
Aspiration Hazard	:	Not data available.
Information on the Likely Routes of Exposure	:	Inhalation, skin and eye contact.
<u>Potential Acute Health Effects</u>		
Eye Contact	:	Eye irritation. May cause temporary corneal injury.

- Inhalation** : Respiratory tract irritation with exposure above PEL. Bronchitis, bronchial spasm and pulmonary edema with exposure well above PEL. Possible chemical or hypersensitivity pneumonitis.
- Skin Contact** : Skin irritation. Allergic skin reaction with person previously sensitized.
- Ingestion** : Irritation of the digestive tract.

Delayed and Immediate Effects and also Chronic Effects from Short and Long Term Exposure

Short Term Exposure

- Potential Immediate Effects** : Respiratory, eye and skin irritation. and allergic reaction.
- Potential Delayed Effects** : Symptoms affecting the respiratory tract can also occur hours after overexposure.

Long Term Exposure

- Potential Immediate Effects** : Allergic skin reaction. Asthmatic reaction.
- Potential Delayed Effects** : Not information available.

Potential Chronic Health Effects

- General** : Sensitization to diisocyanates can be permanent. Decreased pulmonary function. Asthmatic response to dust, cold air or other irritants.
- Carcinogenicity** : This product contains no listed carcinogenic substances above the cut-off value as defined by IARC. NTP, ACGIH or OSHA.
- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental Effects** : No known significant effects or critical hazards.
- Fertility Effects** : No known significant effects or critical hazards.
- Other Information** : None

SECTION 12: Ecological Information

- 12.1 Ecotoxicity** : Not data available.
- 12.2 Persistence and Degradability** : Not data available.
- 12.3 Bioaccumulative Potential** : Not data available.
- 12.4 Mobility in Soil** : Not data available.
- Soil/Water Partition Coefficient (K_{oc})** : Not data available.
- Mobility** : Not data available.
- 12.5 Other Adverse Effects** : Not data available.

SECTION 13: Disposal Considerations

- 13.1 Waste Treatment Methods**
- Methods of Disposal** : Dispose product via a licensed waste disposal contractor in accordance with existing federal, state and local environmental laws. Incineration is the preferred method.
- Empty Container Disposal** : Empty container contains product residue. Do not reuse. If container is to be disposed, ensure all product residue is removed prior to disposal.
- Special Precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers.

SECTION 14: Transport Information

- Land Transport (DOT)** : Not regulated.
- Sea Transport (IMODG)** : Not regulated.
- Air Transport (ICAO/IATA)** : Not regulated.

Additional Transportation Information : Not regulated.

SECTION 15: Regulatory Information

U.S. EPA CERCLA Hazardous Substances (40CFR302.4) :

Components

None

Reportable quantity

U.S. EPA SARA TITLE III: Section 311/312 Categorizations (40CFR370) : Chronic Health Hazard

U.S. EPA Emergency Planning and Community Right-to-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substances (40CFR 355, Appendix A) : None

U.S. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65)-Supplier Notification Required : This product does not contain a chemical which is listed in Section 313 at or above 'de minimis' concentrations.

U.S. Toxic Substances Control Act : All components of this material are in compliance with the current inventory requirements.

State Right-to-Know Information

The following chemical is specifically listed by individual states; other product specific health and safety data in other sections of the SDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

<u>Weight %</u>	<u>Components</u>	<u>CAS-No.</u>	<u>State</u>
>98.9	Toluene Diisocyanate Dimer	26747-90	PA, NJ
<0.1	2,4-Toluene Diisocyanate	584-84-9	PA, MA,

California Proposition 65

WARNING! This product contains a chemical known to the state of California to cause cancer. 2,4-Toluene Diisocyanate (CAS#584-84-9)

SECTION 16: Other information

Abbreviations and Acronyms

- ATE : Acute Toxicity Estimate
- DNEL : Derived No Effect Level
- ACGIH : American Conference of Governmental Industrial Hygienists
- CASRN : Chemical Abstracts Service Registry Number
- IARC : International Agency for Research on Cancer
- N/A : Not Applicable
- N/D : Not Determined
- N/E : Not Established
- NTP : National Toxicology Program
- OSHA : Occupational Safety & Health Administration
- PEL : Permissible Exposure Limit

PPE	:	Personal Protective Equipment
STEL	:	Short Term (15 min) Exposure Limit
STP	:	Standard Temperature and Pressure
TLV	:	Threshold Limit Value
TWA	:	Time Weighted Average (8 hr.) Time Weighted Average (8 hr.)

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