1. Identification

1.1. Product identifier

Trade name	Si 264
Chemical Name	Triethoxy(3-thiocyanatopropyl)silane
CAS-No.	34708-08-2

1.2. Recommended use of the chemical and restrictions on use

Relevant applications identified	Rubber - producing and processing industry

1.3. Details of the supplier of the safety data sheet

Company	Evonik Corporation USA 299 Jefferson Road Parsippany,NJ 07054-0677 USA
Telephone	973-929-8000
Telefax	973-929-8040
Email address	Product-Regulatory-Services@Evonik.com

1.4. 24 HOUR EMERGENCY TELEPHONE NUMBERS:

CHEMTREC - US & CANADA:	800-424-9300
CHEMTREC MEXICO:	01-800-681-9531
CHEMTREC INTERNATIONAL:	+1 703-527-3887 **(collect calls accepted)**
Product Regulatory Services :	973-929-8060

2. Hazards identification

2.1. Classification of the substance or mixture

Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

Flammable liquids	Category 4	H227
Acute toxicity (Oral)	Category 4	H302
Acute aquatic toxicity	Category 3	H402

2.2. Label elements

Statutory basis: Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

Symbol(s):

Signal word	Warning
Hazard statement	H227 - Combustible liquid. H302 - Harmful if swallowed. H402 - Harmful to aquatic life.
Precautionary statement: Prevention	P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking. P264 - Wash skin thoroughly after handling. P270 - Do not eat, drink or smoke when using this product. P273 - Avoid release to the environment. P280 - Wear protective gloves/ eye protection/ face protection.
Precautionary statement: Reaction	P301 + P312 + P330 - IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell. Rinse mouth. P370 + P378 - In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
Precautionary statement: Storage	P403 + P235 - Store in a well-ventilated place. Keep cool.
Precautionary statement: Disposal	P501 - Dispose of contents/ container to an approved waste disposal plant.

Contains Triethoxy(3-thiocyanatopropyl)silane
The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 100 %

2.3. Other hazards
None known

3. Composition/information on ingredients

• Triethoxy(3-thiocyanatopropyl)silane <= 100%

CAS-No. 34708-08-2

Flammable liquids	Category 4
Acute toxicity (Oral)	Category 4
Acute aquatic toxicity	Category 3
Chronic aquatic toxicity	Category 3

Other information
This material is classified as hazardous under OSHA regulations.

4. First aid measures

4.1. Description of first aid measures

General advice
Remove contaminated or saturated clothing.

Inhalation
Following inhalation of product dust:
Move victims into fresh air.
If symptoms persist, call a physician.

Skin contact
Wash off with soap and water.

Eye contact
Possible discomfort is due to foreign substance effect.

Rinse thoroughly with plenty of water keeping eyelid open.
In case of persistent discomfort: Consult an ophthalmologist.

Ingestion
Have the mouth rinsed with water.
After absorbing large amounts of substance:
Consult a physician.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms
Following inhalation:
Possible signs of poisoning: headache, dizziness, drowsiness, nausea, seizures, unconciousness, respiratory disturbance, cessation of breathing, cardiac arrest.

Hazards
In the case of fire:
General advice
Combustion gases can contain hydrogen cyanide.
Observe self-protection
Move out of dangerous area.

4.3. Indication of any immediate medical attention and special treatment needed

If substance has been swallowed:
administration of activated charcoal.
Acceleration of gastrointestinal passage
In case of signs of poisoning:
Notify ambulance immediately (keyword: poisoning by hydrocyanic acid).
Move victims into fresh air.
Do not leave victims unattended.
Keep warm and in a quiet place.
In case of difficulties in breathing, supply oxygen.
Employ artificial respiration if breathing ceases.
No artificial respiration, mouth-to-mouth or mouth to nose. Use suitable instruments/apparatus.
Place person on side in stable position if unconscious.

Notes to physician
Therapy as for hydrocyanic acid poisoning.
Observe national methods of treatment.

5. Fire-fighting measures

5.1. Extinguishing media

Suitable extinguishing media:	water spray, foam, Carbon dioxide (CO2), dry powder
Unsuitable extinguishing media:	high volume water jet

5.2. Special hazards arising from the substance or mixture

May be released in case of fire:
Hydro-cyanic acid
Carbon dioxide (CO2)
Carbon monoxide
organic and sulphurous products of decomposition

5.3. Advice for firefighters

As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear.
Water used to extinguish fire should not enter drainage systems, soil or stretches of water.

Ensure there are sufficient retaining facilities for water used to extinguish fire.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Wear personal protective equipment.

6.2. Environmental precautions
Obey relevant local, state, provincial and federal laws and regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.

6.3. Methods and material for containment and cleaning up
Pick up mechanically with a suitable material and collect in a suitable container.

Additional advice
Defect containers must be isolated and sealed immediately.

7. Handling and storage

7.1. Precautions for safe handling
Always close container tightly after removal of product. If temperature is > 120°C: hydrocyanic acid may be released during processing. Information on request. Encapsulation or suction necessary. Do not introduce suctioned air to the work rooms.

7.2. Conditions for safe storage, including any incompatibilities
Advice on protection against fire and explosion
Keep away from sources of ignition - No smoking.
Take precautionary measures against static discharges.
Explosion protection is recommended in case the explosion limits for the following substance might be exceeded: Ethanol.
Danger of explosion from residual product fumes; therefore avoid spark production through cutting, grinding, or welding work in the area of the container.
When repairs of the production system are to be made (e.g. welding work), the section to be repaired must be essentially free of product.

Storage
Keep in a dry, cool and well-ventilated place.

Storage stability
12 month 10 - 40 °C

8. Exposure controls/personal protection

8.1. Control parameters

• **Ethanol**		
CAS-No. Control parameters	64-17-5 1000 ppm 1900 mg/m3	Permissible exposure limit:(OSHA Z1)
Control parameters	1000 ppm 1900 mg/m3	Time Weighted Average (TWA) Permissible Exposure Limit (PEL):(US CA OEL)
Control parameters	1000 ppm	Short Term Exposure Limit (STEL):(ACGIH)
Control parameters	1000 ppm 1900 mg/m3	Time Weighted Average (TWA):(TN OEL)

8.2. Exposure controls

Engineering measures

Ensure suitable suction/aeration at the work place and with operational machinery.
see also section 7.

Personal protective equipment

Respiratory protection

A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.

Hand protection

Wear protective gloves made of resistant material.

Glove material	for example, butyl-rubber
Material thickness	0.5 mm
Break through time	>= 480 min
Glove material	for example, Fluorinated rubber (Viton)
Material thickness	0.4 mm
Break through time	>= 480 min

The above mentioned hand protection is based on knowledge of the chemistry and anticipated uses of this product but it may not be appropriate for all workplaces. A hazard assessment should be conducted prior to use to ensure suitability of gloves for specific work environments and processes prior to use.
Use impermeable gloves.
Suitability for specific workplaces should be clarified with protective glove manufacturers.
The rupture time and material thickness data are guideline values! Exact rupture time / material thickness data can be obtained from the protective glove manufacturer.
Please observe that the daily duration of usage of a chemical protective glove is in practice far shorter due to the many influencing factors (e.g. temperature, mechanical strain on the glove material) than the permeation time determined acc. EN 374.

Eye protection

goggles

Skin and body protection

When handling larger quantities:
chemical protective suit, disposable protective suit
Remove contaminated or saturated clothing.
A safety shower and eye wash fountain should be readily available.
To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product.

Hygiene measures

The usual precautionary measures for dealing with chemicals should be observed. No eating, drinking, smoking, or snuffing tobacco at work. Wash face and/or hands before break and end of work.
Preventive skin protection is recommended.

Protective measures

If there is the possibility of skin/eye contact, the indicated hand/eye/body protection should be used.
If workplace exposure limits are exceeded and/or larger amounts are released (leakage, spilling, dust) the indicated respiratory protection should be used.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

physical state	liquid (20 °C) (1013 hPa)
Colour	light brown
Form	liquid

Odour	characteristic
Odour Threshold	not determined
pH	not applicable
Melting point/range	-122 °C Method: OECD TG 102 glass transition temperature
Boiling point/range	96 °C Method: (0.1 mm)
Flash point	> 93 °C Method: DIN EN ISO 2719 (Pensky-Martens, Closed Cup)
Evaporation rate	not determined
Flammability (solid, gas)	not determined
Lower explosion limit	not determined
Upper explosion limit	not determined
Vapour pressure	< 1 hPa (20 °C)
Vapour density	not determined
Density	ca. 1 g/cm3 (20 °C)
Water solubility	insoluble
Partition coefficient: n-octanol/water	log Pow: 3.1 (20 °C) Method: QSAR
Thermal decomposition	> 150 °C
Viscosity, dynamic	ca. 3 mPa.s (20 °C) Method: Ubbelohe viscometer

9.2. Other information

Explosiveness	not explosive

10. Stability and reactivity

10.1. Reactivity

No dangerous reaction known under conditions of normal use.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	No dangerous reactions known.

10.4. Conditions to avoid
Keep away from heat and sources of ignition.
In the presence of oxygen and heat, the ethanol forming during the reaction may produce acetaldehyde.
Material may form acetaldehyde when heated with inorganic pigments in the presence of air.

10.5. Incompatible materials
None known

10.6. Hazardous decomposition products
decomposition products with heating above decomposition temperature
Ethanol, Hydrogen cyanide (hydrocyanic acid)

11. Toxicological information

11.1. Information on toxicological effects

Acute oral toxicity	LD50 Rat: 1423 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	No data available
Acute dermal toxicity	LD50 Rat: > 2000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity
Skin irritation	Rabbit No skin irritation Method: OECD Test Guideline 404
Eye irritation	Rabbit No eye irritation Method: OECD Test Guideline 405
Sensitization	Buehler Test Rabbit: Does not cause skin sensitisation. Method: OECD Test Guideline 406
Assessment of STOT single exposure	no evidence for hazardous properties
Assessment of STOT repeat exposure	no evidence for hazardous properties
Risk of aspiration toxicity	No evidence of aspiration toxicity
Gentoxicity in vitro	Ames test S. typhimurium / E. coli negative Method: OECD 471 chromosomal aberration Chinese hamster (V 79 -cells) positive Method: OECD TG 473 gene mutation TK +/- mouse lymphoma cell (L5178Y) positive Method: OECD TG 476

carcinogenicity assessment	Contains no carcinogenic substances as defined by NTP, IARC and/or OSHA.
Toxicity to reproduction	No data available

12. Ecological information

12.1. Toxicity

Toxicity to fish	LC50 Brachydanio rerio (zebrafish): 18 mg/l / 96 h Method: OECD 203
Toxicity in aquatic invertebrates	EC50 Daphnia magna (Water flea): 29 mg/l / 24 h Method: OECD 202
Toxicity to algae	EC50 Desmodesmus subspicatus (green algae): 160 mg/l / 96 h Method: OECD TG 201
	NOEC Desmodesmus subspicatus (green algae): 32 mg/l / 96 h Method: OECD TG 201
Toxicity to bacteria	EC 10 local activated sludge: 4.3 mg/l / 3 h Method: OECD TG 209
	EC50 local activated sludge: 130 mg/l / 3 h Method: OECD TG 209

12.2. Persistence and degradability

Biodegradability	Exposure time: 28 d Result: 53 % Not readily biodegradable. Method: OECD 301 C

12.3. Bioaccumulative potential

Bioaccumulation	low

12.4. Mobility in soil

Mobility	Adsorption on the floor: low.

12.5. Other adverse effects

Further Information	Harmful to aquatic life with long lasting effects.

13. Disposal considerations

13.1. Waste treatment methods

Product

Waste must be disposed of in accordance with federal, state and local regulations. Incineration is the preferred method.

Uncleaned packaging
Do not reuse empty containers and dispose of in accordance with the regulations issued by the appropriate local authorities.
Incorrect disposal or reuse of this container is illegal and can be dangerous.
If there is product residue in the emptied container, follow directions for handling on the container's label.
Other countries: observe the national regulations.

14. Transport information

Not dangerous according to transport regulations.

14.1.	UN number:	--
14.2.	UN proper shipping name:	--
14.3.	Transport hazard class(es):	--
14.4.	Packing group:	--
14.5.	Environmental hazards (Marine pollutant):	--
14.6.	Special precautions for user:	Yes

Not dangerous according to transport regulations.

15. Regulatory information

US Federal Regulations

OSHA

If listed below, chemical specific standards apply to the product or components:

- None listed

Clean Air Act Section (112)

If listed below, components present at or above the de minimus level are hazardous air pollutants:

- None listed

CERCLA Reportable Quantities

If listed below, a reportable quantity (RQ) applies to the product based on the percent of the named component:

- None listed

SARA Title III Section 311/312 Hazard Categories

The product meets the criteria only for the listed hazard classes:

- Acute Health Hazard

- Fire Hazard

SARA Title III Section 313 Reportable Substances

If listed below, components are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

- None listed

Toxic Substances Control Act (TSCA)

If listed below, non-proprietary substances are subject to export notification under Section 12 (b) of TSCA:

- None listed

State Regulations

California Proposition 65

A warning under the California Drinking Water Act is required only if listed below:

- None listed

An employer using HMIS/NFPA labeling must through training ensure that its employees are fully aware of the hazards of the chemicals used.

HMIS Ratings

Health :	2
Flammability :	2
Physical Hazard :	0

NFPA Ratings

Health :	2
Flammability :	2
Reactivity :	0

16. Other information

Further information

Revision date 05/29/2015

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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Legend

ACC	American Chemistry Council
ACGIH	American Conference of Governmental Industrial Hygenists
ACS	Advisory Committee on Sustainability
ADI	Acceptable Daily Intake
ASTM	American Society for Testing and Materials
ATP	Adaptation to Technical Progress
BCF	Bioconcentration factor
BOD	Biochemical oxygen demand
c.c.	closed cup
CAO	Cargo Aircraft Only
Carc	Carcinogen
CAS	Chemical Abstract Services
CDN	Canada
CEPA	Canadian Environmental Protection Act
CERCLA	Comprehensive Environmental Response – Compensation and Liability Act
CFR	Code of Federal Regulations
CMR	carcinogenic-mutagenic-toxic for reproduction
COD	Chemical oxygen demand
DIN	German Institute for Standardization
DMEL	Derived minimum effect level
DNEL	Derived no effect level
DOT	Department of Transportation
EC50	half maximal effective concentration
EPA	Environmental Protection Agency
ErC50	Reduction of Growth Rate
ERG	Emergency Response Guide Book
FDA	Food and Drug Administration
GHS	Globally Harmonized System of Classification and Labelling of Chemicals (GHS)
GLP	Good Laboratory Practice
GMO	Genetic Modified Organism
HCS	Hazard Communication Standard
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Container
ICAO-TI	International Civil Aviation Organization- Technical Instructions
ICCA	International Council of Chemical Association
ID	Identification number
IMDG	International Maritime Dangerous Goods
IUPAC	International Union of Pure and Applied Chemistry
ISO	International Organization For Standardization
LC50	50 % Lethal Concentration
LD50	50 % Lethal Dose
L(E)C50	LC50 or EC50
LOAEL	Lowest observed adverse effect level
LOEL	Lowest observed effect level
MARPOL	International Convention for the Prevention of Pollution from Ships
NFPA	National Fire Protection Association
NOAEL	No observed adverse effect level
NOEC	no observed effect concentration
NOEL	no observed effect level
o. c.	open cup
OECD	Organisation for Economic Cooperation and Development
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PBT	Persistent, bioaccumulative, toxic
PEC	Predicted effect concentration
PNEC	Predicted no effect concentration
RQ	Reportable Quantity
SDS	Safety Data Sheet
STOT	Specific Target Organ Toxicity
UN	United Nations
vPvB	very persistent, very bioaccumulative

voc	volatile organic compounds
WHMIS	Workplace Hazardous Materials Information System
WHO	World Health Organization