



# MATERIAL SAFETY DATA SHEET

Olin MSDS No.: 00081.0001

Revision No.: 13

Revision Date: 1/1/11

Supercedes: 1/1/10

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** TETRACENE  
**Chemical Name:** 1-s-tetrazolyl-4-guanyltetrazene monohydrate  
**Synonyms:** Tetrazene  
**Chemical Family:** Substituted iminourea; Substituted carbamidine  
**Formula:** C<sub>2</sub>H<sub>8</sub>N<sub>10</sub>O  
**Product Use/ Description:** Initiating explosive

**COMPANY ADDRESS** MSDS Control Group  
Olin Corporation – Winchester  
Division, Inc.  
600 Powder Mill Road  
East Alton, IL 62024  
[www.winchester.com](http://www.winchester.com)

**TECHNICAL INFORMATION:**  
618-258-3507

**EMERGENCY TELEPHONE NUMBER:**  
618-258-2111

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

CAS Number	Components	% By Weight	EINECS/ ELINCS #	EU Classification*	
				Symbol	R-Phrase
109-27-3	Tetrazene	100	203-659-4	E*, Xi	R 3 R 36/38

\*This material is not listed in Annex 1 of Directive 88/379/EEC. Olin has classified the material according to the conventional method based upon information from similar materials.

OSHA REGULATORY STATUS: Explosive, skin and eye irritant

## 3. HAZARDS IDENTIFICATION

### DANGER!

EXPLOSIVE. DO NOT SUBJECT TO MECHANICAL SHOCK OR HEAT. MAY BE HARMFUL IF SWALLOWED OR INHALED. CAN CAUSE EYE AND SKIN IRRITATION. USE ONLY WITH ADEQUATE VENTILATION. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. WASH THOROUGHLY AFTER HANDLING.

#### HAZARD RATINGS (for dust or fume)

Hazardous Materials Identification System (HMIS)

Degree of hazard (0 = low, 4 = extreme)

Health: 1

Flammability: 3

Physical Hazard:

Explosive: 4

National Fire Protection Association (NFPA)

Mixture. Not rated.

#### HUMAN THRESHOLD RESPONSE DATA

Odor Threshold:

Unknown

Irritation Threshold:

Unknown

Immediately Dangerous to Life or Health (IDLH) Value(s):

The IDLH for this product is not known.

#### POTENTIAL HEALTH EFFECTS

##### ACUTE EFFECTS

**Eye:** Dust or fume can cause irritation consisting of redness, swelling, and pain. May cause conjunctivitis with repeated exposures.

**Skin:** Contact with dust may cause irritation consisting of redness and/or swelling. May be harmful if absorbed through skin.

**Inhalation:** Harmful if inhaled. Inhalation of high concentrations may cause respiratory and nasal irritation, coughing, and difficulty breathing.

**Ingestion:** Ingestion may cause nausea, vomiting, constipation, cramps, and or stomach pain.

**CHRONIC EFFECTS:** Prolonged or repeated skin contact may cause more severe irritation or dermatitis. Prolonged or repeated inhalation may cause more severe irritation and possibly lung damage.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Exposure may aggravate an existing dermatitis, blood condition, asthma, kidney disease, emphysema, or other respiratory disease.

**POTENTIAL ENVIRONMENTAL EFFECTS:** None known.

**4. FIRST AID MEASURES**

**EYE CONTACT:** Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If eye irritation develops, call a physician at once.

**SKIN CONTACT:** If exposed, wash skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes and launder before reuse. If skin irritation or rash develops and persists or recurs, get medical attention.

**INHALATION:** If inhaled remove from exposure area to fresh air. If breathing has stopped, perform artificial respiration. If breathing is difficult, give oxygen. Keep affected person warm and at rest. Get medical attention immediately.

**INGESTION:** If swallowed, induce vomiting immediately, as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**NOTE TO PHYSICIANS:** There is no specific antidote to the active ingredients in this product; use symptomatic treatment.

**5. FIRE FIGHTING MEASURES**

PROPERTY	VALUE	PROPERTY	VALUE
Explosive	Yes	Flammable	Not applicable
Combustible	Not applicable	Pyrophoric	No
Flash Point (°C):	130°C (266°F) - explodes	Burning Rate of Material:	Not applicable
Lower Explosive Limit:	Not applicable	Autoignition Temp.:	130°C (266°F) - explodes
Upper Explosive Limit:	Not applicable	Flammability Classification: (defined by 29 CFR 1910.1200)	Explosive

**UNUSUAL FIRE AND EXPLOSION HAZARDS:** Subject to mechanical shock. Material involved in a fire may not be totally destroyed and will still be subject to detonation. Dust may cause an ignitable and/or an explosive atmosphere.

**EXTINGUISHING MEDIA:** Water spray. Apply by mechanical means only. Fight all fires from an explosion resistant location. Evacuate all non-essential personnel.

**SPECIAL FIREFIGHTING PROCEDURES:** Use water to cool containers exposed to fire. Fight fire from an explosion-resistant location. In advanced or massive fires the area should be evacuated a minimum of 25,000 feet in all directions. Do not move material exposed to or involved in a fire. Use extreme caution working around this material and avoid any form of mechanical shock. Keep material wet if possible. "DO NOT ALLOW TO DRY."

**6. ACCIDENTAL RELEASE MEASURES**

**FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC AT 800-424-9300.**

**THIS PRODUCT WILL REPRESENT AN EXPLOSION HAZARD.** Remove all sources of ignition. Stop source of spill as soon as possible and notify appropriate personnel. A spill of this material will require extreme caution. Keep material wet at all times. If a large spill occurs create a dike and flood with large amounts of water. It will decompose in boiling water to form hazardous products listed in Section VII. All materials must be handled in a moist state with extra care taken to properly containerize. Eliminate all sources of heat, static electricity and mechanical shock. This material may be neutralized for disposal; you are requested to call 1-888-2891-911 for technical assistance before beginning any such operation.

**7. HANDLING AND STORAGE**

**HANDLING:** DO NOT SUBJECT TO MECHANICAL SHOCK. Avoid dispersion of dust in air.

**STORAGE:** Store in a cool, dry, well-ventilated place away from all sources of ignition. Do not store above 60°C (140°F). Do not expose to light.

*Shelf Life Limitations:* 1 year

*Incompatible Materials for Packaging:* Package in DOT-approved containers only.

*Incompatible Materials for Storage or Transport:* Oxidizers, strong sulfuric acid, metal salts.

**OTHER PRECAUTIONS:** Do not expose to friction or percussion. Do not shake clothing, rags or other items to remove dust. Dust should be removed by washing or HEPA vacuuming.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

CAS #	CHEMICAL NAME	ACGIH TLV	OSHA PEL	INTERNATIONAL OELS
109-27-3	Tetrazene	None established	None established	None established

<u>ENGINEERING CONTROLS:</u>	Use local explosion-proof exhaust ventilation to minimize dust levels.
<u>EYE / FACE PROTECTION:</u>	Use safety glasses.
<u>SKIN PROTECTION:</u>	Wear gloves, boots, chemical goggles, aprons or impermeable suit to avoid skin and eye contact.
<u>RESPIRATORY PROTECTION:</u>	Wear a NIOSH-approved high efficiency particulate (HEPA) filter respirator.
<u>GENERAL HYGIENE CONSIDERATIONS:</u>	Do not eat, drink, or smoke while using this product in dust form.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

PROPERTY	VALUE	PROPERTY	VALUE
<i>Appearance:</i>	Colorless to pale yellow fluffy solid	<i>Vapor Density (air = 1):</i>	Not applicable
<i>Odor:</i>	None	<i>Boiling Point (°F):</i>	No data
<i>Molecular Weight:</i>	188	<i>Melting point:</i>	(Explodes) 128 - 132°C (262-270°F)
<i>Physical State:</i>	Solid	<i>Specific gravity (g/cc):</i>	1.65
<i>pH:</i>	6 – 7 (saturated solution)	<i>Bulk Density</i>	0.30 g/cc
<i>Vapor Pressure (mm Hg):</i>	Not applicable	<i>Viscosity (cps):</i>	Not applicable
<i>Vapor Density</i>	Not applicable	<i>Decomposition Temperature:</i>	100°C (212°F)
<i>Solubility in Water (20 °C):</i>	Insoluble in cold water; decomposes in boiling water	<i>Evaporation Rate:</i>	Not Applicable
<i>Volatiles, Percent by volume:</i>	Not applicable	<i>Octanol/water partition coefficient:</i>	Unknown

**10. STABILITY AND REACTIVITY**

<u>STABILITY:</u>	Stable under normal temperatures and pressure.
<u>CONDITIONS TO AVOID:</u>	Not affected by mechanical impact or shock or by electrical discharge.
<u>MATERIALS TO AVOID:</u>	Oxidizers, other explosives, metal salts
<u>HAZARDOUS DECOMPOSITION PRODUCTS:</u>	Nitrogen oxides, carbon monoxide
<u>HAZARDOUS POLYMERIZATION:</u>	Will not occur.

**11. TOXICOLOGICAL INFORMATION**

POTENTIAL EXPOSURE ROUTES: For dust: ingestion, inhalation, and eye contact. For fume: inhalation and eye contact. The finished alloy metal is not hazardous.

ACUTE ANIMAL TOXICITY DATA:

Oral LD <sub>50</sub>	Believed to be 1 – 3 g/kg, moderately toxic
Dermal LD <sub>50</sub>	Believed to be > 2 g/kg
Inhalation LC <sub>50</sub>	Believed to be moderately toxic
Irritation	Eye and respiratory irritant

<u>SUBCHRONIC/ CHRONIC TOXICITY:</u>	No information for product.
<u>CARCINOGENICITY:</u>	This product is not listed as a carcinogen by NTP, IARC, OSHA, ACGIH, or EPA.
<u>MUTAGENICITY:</u>	This product is not known or reported to be mutagenic.
<u>REPRODUCTIVE, TERATOGENICITY, OR DEVELOPMENTAL EFFECTS:</u>	This product is not known or reported to cause reproductive or developmental effects.
<u>NEUROLOGICAL EFFECTS:</u>	This product is not known or reported to cause neurological effects.
<u>INTERACTIONS WITH OTHER CHEMICALS WHICH ENHANCE TOXICITY:</u>	None known or reported.

**12. ECOLOGICAL INFORMATION**

ECOTOXICITY: No data is available on this product.  
 MOBILITY: No data is available on this product.  
 PERSISTANCE/DEGRADABILITY: Not biodegradable.  
 BIOACCUMULATION: No data.

**13. DISPOSAL CONSIDERATIONS**

Care must be taken to prevent environmental contamination from the use of this material. The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.

**14. TRANSPORT INFORMATION**

	U.S. DOT	RID/ADR	IMDG	IATA/ICAO	Canada TDG
PROPER SHIPPING NAME:	Guanyl nitrosaminoguanyltet-razene (wetted)				
HAZARD CLASS:	Forbidden				
UN NO.:	1.1A				
PACKING GROUP:	UN0114				
LABEL:	II				
REPORTABLE QUANTITY:	1.1A/1.1 Placard				
SPECIAL COMMENTS:	Forbidden on aircraft. Allowed for shipment by rail, motor or water in non-bulk packages only. The applicable packaging sections in 49 CFR are 173.78 (Only on listed).				

**15. REGULATORY INFORMATION**

*US FEDERAL*

TSCA	The components of this product are listed on the Toxic Substance Control Act inventory.			
CERCLA:	None of the components of this product are listed.			
SARA 313:	None of the components of this product are listed.			
SARA 313 Hazard Class:	<u>Health</u> : Acute – Yes Chronic - No	<u>Fire</u> : None	<u>Reactivity</u> : Yes	<u>Release of Pressure</u> : Yes
SARA 302 EHS List:	None of the components of this product are listed.			

*STATE RIGHT-TO-KNOW STATUS*

Component	*CA Prop. 65	New Jersey	Pennsylvania	Massachusetts	Michigan
Tetrazenes	Not listed	Not listed	Not listed	Not listed	Not listed

*EUROPEAN REGULATIONS*

Hazard Classification

Danger Symbol: E Explosive

Risk Phrases: R3 Extreme risk of explosion by shock, friction, fire or other sources of ignition  
 R6/38 Irritating to eyes and skin

Safety Phrases: S28 After contact with skin, wash immediately with plenty of soap and water  
 S33 Take precautionary measures against static discharges  
 S5 This material and its container must be disposed of in a safe way  
 S48 Keep wetted with water

German WGK Classification: Not determined

*CANADIAN REGULATIONS*

DSL LIST: The components of this product are on the DSL or are exempt from reporting under the New Substances Notification Regulations.  
IDL: Not listed  
WHMIS: This product is regulated as an Explosive Class 3.2 in Canada

#### 16. OTHER INFORMATION

*REVISIONS:* New international format, toxicology review – 1/1/03; 7/1/09 – updated Emergency Contact Number and address;  
1/1/11 - review

*PREPARED BY:* Olin Corporation

**NOTICE:** THE INFORMATION IN THIS MSDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. OLIN BELIEVES THIS INFORMATION TO BE RELIABLE AND CURRENT AS OF THE DATE OF PUBLICATION, BUT MAKES NO WARRANTY THAT IT IS.