SAFETY DATA SHEET
According to Regulation (EC) No. 1907/2006

Triethylenetetramine, TETA

1. IDENTIFICATION OF THE SUBSTANCE OR PREPARATION AND THE COMPANY/UNDERTAKING

Product label name
Triethylenetetramine

Supplier
DELAMINE B.V.
Barchman Wuytierslaan 10
3818 LH Amersfoort
PO Box 473
3800 AL Amersfoort
The Netherlands
Tel.: +31-334676897

E-mail address of person responsible for safety data sheet
SDS.Delamine@delamine.com

Emergency telephone
AkzoNobel Chemicals-Deventer-NLT +31 570 679211
F +31 570 679801

Intended use
Chemical intermediate

Date of last issue / Revision number
2010/06/03 / 6.07

2. HAZARDS IDENTIFICATION

Harmful in contact with skin.
May be very toxic by inhalation of aerosols
Causes burns.
May cause sensitization by inhalation and skin contact.
Harmful to aquatic organisms.
May cause long-term adverse effects in the aquatic environment.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is to be considered as a substance in conformance to EC directives.

Information on hazardous ingredients

Chemical description
Triethylenetetramine

Composition / information on ingredients

Number	% w/w	CAS-number	Chemical name
1	approx. 100	000112-24-3	Triethylenetetramine

	Index-No.	EC-number	Symbol(s) (EU classification)	Risk-phrase(s)
1	612-059-00-5	00203-950-6	C	R21 R34 R43 R52/53

4. FIRST AID MEASURES

Symptoms and effects
Corrosive to eyes, skin and upper respiratory tract. May be very toxic by inhalation of aerosols (Do not delay treatment of exposed individuals, death may result).

First aid

General
In all cases of doubt, or when symptoms persist, seek medical attention.

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Inhalation
Provide fresh air, rest, half upright position. Seek medical advice after significant exposure.

Skin
Remove immediately all contaminated clothing. Wash off with soap and water. Seek medical advice if irritation develops. Launder contaminated clothes with plenty of water before reuse. Destroy contaminated shoes if made of leather.

Eye
Rinse immediately and as long as possible with plenty of water (at least 15 minutes). Eyelids should be held away from the eyeball to ensure thorough rinsing. DO NOT remove contact lenses.

Ingestion
Only when conscious, rinse mouth, give plenty of water to drink. DO NOT induce vomiting. Seek medical advice.

Advice to physician
No specific antidote known. Symptomatic treatment is advised. If burn is present treat as any thermal burn after decontamination. If necessary evacuation of the stomach contents should be undertaken by means carrying the least likelihood of aspiration (e.g. gastric lavage in combination with endotracheal intubation).

5. FIRE-FIGHTING MEASURES

Extinguishing media
water, spray, foam, sand, Carbon dioxide, dry powder.

Unsuitable extinguishing media
halones.

Hazardous decomposition / combustion products
Nitrous gases may be produced.

Protective equipment
Wear self contained breathing apparatus. Wear a standard aluminised firefighting suit.

Other information
Cool closed containers with water. Do not direct a solid stream of water or foam into the burning material; this may cause spattering and spread the fire. Water used to extinguish a fire should not be allowed to enter the drainage system or water courses.

Fire and explosion hazard
Toxic fumes.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
For personal protection see Section 8.

Environmental precautions
Treat using the best available techniques before discharge into drains or the aquatic environment.

Methods for cleaning up
Absorb with sand, sweep up and put into a container for disposal. Flush remainder with water.

7. HANDLING AND STORAGE

Handling
Persons with a history of sensitization of the skin or the respiratory tract should not be employed in any process in which this product is used. Transfer and handle product only in closed system. When using do not eat, drink or smoke. Avoid contact with skin and eyes. Use only in well-ventilated areas. When workers are facing concentrations above 1 ppm v/v they must use appropriate certified respirators.

Fire and explosion prevention
Keep away from sources of ignition - No smoking.

Storage requirements
Store in a dry well ventilated place away from sources of heat and direct sunlight. Store in closed containers preferably under nitrogen. Avoid contact with atmospheric moisture.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls
Take precautionary measures against static discharges. Use only in closed system. Do not use copper, nickel and cobalt containing alloys in process equipment. Ensure good ventilation and local exhaustion of the working area.

Personal protection

Respiratory
When workers are facing concentrations above 1 ppm v/v they must use appropriate certified respirators. Use self-contained or supplied-air respiratory equipment with filter K . When aerosols are present the combined cartridge K/P should be used.

Hand
Protective neoprene gloves.

Eye
Wear tightly fitting safety goggles.

Skin and body
Protective neoprene boots and protective clothing.

Other information
Launder contaminated clothes with plenty of water before reuse. Contaminated leather items (shoes, belts, watch bands etc.) should be removed and destroyed.

In this country no exposure limit has been established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
liquid

Colour
pale yellow

Odour
ammonia like

Boiling point/range
277 ℃

Melting point/range
Solidifies at -35 ℃

Flash point
122 ℃ (Pensky-Martens, closed cup)

Flammability
not determined

Explosive properties
not determined

Oxidising properties
not applicable

Vapour pressure
< 0.001 kPa (20 ℃)

Density
981 kg/m³ (20 ℃)

Bulk density
not applicable

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Solubility in water Completely miscible
Solubility in other solvents not available
pH value 12 (100 g/l water, 20 ℃)
Partition coefficient n-octanol/water Log Pow: < 0
Relative vapour density (air=1) 5.0
Viscosity 30 mPa.s (20 ℃)
Autoignition temperature 335 ℃
Explosion limits not determined

10. STABILITY AND REACTIVITY

Conditions to avoid	
	Formation of an aerosol.
Stability Stable under recommended storage and handling conditions (see section 7).	
Incompatibles acids, chlorinated hydrocarbons, oxidising agents, copper and copper alloys, nickel, cobalt.	
Hazardous decomposition products Nitrous gases may be produced.	
Other information none	

11. TOXICOLOGICAL INFORMATION

Triethylenetetramine.	
	Acute toxicity
	Oral LD50 rat: 2500-4300 mg/kg.
	Dermal LD50 rabbit: 550-805 mg/kg.
	Inhalation LC50 May be very toxic by inhalation of aerosols.
	Irritation
	Skin Corrosive.
	Eye Corrosive.
	Respiratory Highly irritating.
	Genotoxicity in vitro: Ames test mutagenic. Unscheduled DNA synthesis in mammalian cells in vitro - in CHO cells: mutagenic in vivo: Sex-Linked Recessive Lethal Test (Drosophila melanogaster): Not clear. Micronucleus test - mouse: Not mutagenic. Dermal - mouse: not carcinogenic.

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12. ECOLOGICAL INFORMATION

Triethylenetetramine.

Ecotoxicity

fish
Acute toxicity, 96h-LC50: 570 mg/l (Poecilia reticulata).

daphnia
Acute toxicity, 48h-EC50: 31 mg/l (Daphnia magna).

algae
Acute toxicity, 72h-IC50: 20 mg/l (Selenastrum capricornutum).

bacteria
Acute toxicity, EC 50: 137 mg/l (Pseudomonas putida).
Acute toxicity, EC 50: 16 mg/l (Nitrifying bacteria).

Fate

Degradation Abiotic
Not readily biodegradable (Closed bottle test).

Other information
Activated sludge respiration inhibition test EC50: 800 mg/l.

13. DISPOSAL CONSIDERATIONS

Product
Incineration is recommended.

Contaminated packaging
Containers which cannot be cleaned should be disposed of in the same manner as the substance.

Other information
For further advice contact manufacturer.

14. TRANSPORT INFORMATION

Land transport

Class
8

Classification Code
C7

RID class
8

Packing group
II

Hazard Identification No.
80

Substance Identification No.
2259

UN number
2259

Proper Shipping Name
TRIETHYLENETETRAMINE

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Other information Transport label(s): 8

Sea transport (IMO / IMDG-code)
Class 8
Packing group II
UN number 2259
EMS F-A,S-B
Marine pollutant no
Proper Shipping Name Triethylenetetramine
Other information Transport label(s): 8

Air transport (ICAO-TI / IATA-DGR)
UN number 2259
Class 8
Packing group II
Proper Shipping Name Triethylenetetramine
Other information none

15. REGULATORY INFORMATION

Product label name Triethylenetetramine
Labelling according to EC directives
EC-number 2039506
Classification based on Annex-VI

R(isk) phrase(s) (EU classification)	
Code	**Description**
R21	Harmful in contact with skin
R34	Causes burns

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R43	May cause sensitization by skin contact
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

S(afety) phrase(s) (EU classification)	
Code	**Description**
S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S36/37/39	Wear suitable protective clothing, gloves and eye/face protection
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
S61	Avoid release to the environment. Refer to special instructions/Safety data sheets

Symbol(s) (EU classification)

CORROSIVE

Other information
TSCA Inventory (USA): yes
DSL (Canada): yes

German Water Hazard Class (WGK)
2

16. OTHER INFORMATION

R-phrase information

Chemical name	R(isk) phrase(s) (EU classification)	
Triethylenetetramine	R21 R34 R43 R52/53	Harmful in contact with skin Causes burns May cause sensitization by skin contact Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

History

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Changes were made in section
Composers