

SECTION 1: Identification of the substance/mixture and of the company/undertaking

- **1.1 Product identifier**
- **Trade name** NEUKADUR hardener T 3
- **Utilization of the substance of the formulation:** Hardener for epoxy resin
- **CAS Number:**
4067-16-7
- **EC number:**
223-775-9
- **Registration number** 01-2119485826-22
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
- **Application for the substance / the preparation** hardener for epoxy resin
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
Suter Kunststoffe AG
Aefligenstrasse 3
CH-3312 Fraubrunnen
Tel. +41 (0)31 763 60 60
Fax. +41 (0)31 763 60 61
e-mail: info@swiss-composite.ch
- **Further information obtainable from:** info@swiss-composite.ch
- **1.4 Emergency telephone number:**
Toxikologisches Infozentrum Zuerich
Tel. 145 (International +41 (0) 44 251 51 51)

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**



GHS05 corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.



GHS09 environment

Aquatic Acute 1 H400 Very toxic to aquatic life.

Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.



GHS07

Acute Tox. 4 H302 Harmful if swallowed.

Acute Tox. 4 H312 Harmful in contact with skin.

Skin Sens. 1 H317 May cause an allergic skin reaction.

- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008**
The substance is classified and labelled according to the CLP regulation.

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· Hazard pictograms



GHS05 GHS07 GHS09

· Signal word Danger

· Hazard-determining components of labelling:

3,6,9,12-tetra-azatetradecamethylenediamine

· Hazard statements

H302+H312 Harmful if swallowed or in contact with skin.

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H410 Very toxic to aquatic life with long lasting effects.

· Precautionary statements

P260 Do not breathe dusts or mists.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER/doctor.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· 2.3 Other hazards

· Results of PBT and vPvB assessment

· PBT: Not applicable.

· vPvB: Not applicable.

* SECTION 3: Composition/information on ingredients

· 3.1 Chemical characterization: Substance

· CAS No. Description

4067-16-7 3,6,9,12-tetra-azatetradecamethylenediamine

· Identification number(s)

· EC number: 223-775-9

· Dangerous components: Void

* SECTION 4: First aid measures

· 4.1 Description of first aid measures

· General information:

Take affected persons out of danger area and lay down.

Immediately remove any clothing soiled by the product.

In case of irregular breathing or respiratory arrest provide artificial respiration.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

Personal protection for the First Aider.

· After inhalation:

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

In case of unconsciousness place patient stably in side position for transportation.

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- **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
Immediate medical treatment necessary. Failure to treat burns can prevent wounds from healing.
- **After eye contact:**
Rinse opened eye for several minutes under running water. Then consult a doctor.
Protect unharmed eye.
Call a doctor immediately.
- **After swallowing:**
Do not induce vomiting; call for medical help immediately.
If swallowed or vomiting, danger of entering the lungs.
Rinse out mouth and then drink plenty of water.
A person vomiting while laying on their back should be turned onto their side.
Call for a doctor immediately.
- **4.2 Most important symptoms and effects, both acute and delayed** No further relevant information available.
- **4.3 Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:**
Use fire extinguishing methods suitable to surrounding conditions.
CO₂, powder or water spray. Fight larger fires with water spray.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **5.2 Special hazards arising from the substance or mixture**
Formation of toxic gases is possible during heating or in case of fire.
In case of fire, the following can be released:
Nitrogen oxides (NO_x)
Carbon monoxide (CO)
carbon dioxide
- **5.3 Advice for firefighters**
- **Protective equipment:**
Wear fully protective suit.
Do not inhale explosion gases or combustion gases.
Wear self-contained respiratory protective device.
- **Additional information**
Cool endangered receptacles with water spray.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
Wear protective clothing.
Avoid contact with eyes and skin.
Ensure adequate ventilation
Keep away from ignition sources.
Protective equipment (see section 8). adequate
Provide ventilation. Keep unnecessary people away.
- **6.2 Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to penetrate the ground/soil.
- **6.3 Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralising agent.
Dispose contaminated material as waste according to item 13.

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Ensure adequate ventilation.

· **6.4 Reference to other sections**

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**

Ensure good ventilation/exhaustion at the workplace.

Keep receptacles tightly sealed.

Ensure that suitable extractors are available on processing machines

Prevent formation of aerosols.

· **Information about fire - and explosion protection:**

Keep ignition sources away - Do not smoke.

Protect against electrostatic charges.

· **7.2 Conditions for safe storage, including any incompatibilities**

· **Storage:**

· **Requirements to be met by storerooms and receptacles:**

Keep container tightly closed and dry and storage in a good ventilated room.

Storage temperature: 20 - 25 °C.

Prevent any seepage into the ground.

· **Information about storage in one common storage facility:**

Do not store together with reducing agents, heavy-metal compounds, acids and alkalis.

Store away from foodstuffs.

· **Further information about storage conditions:**

Protect from heat and direct sunlight.

Protect from exposure to the light.

Store receptacle in a well ventilated area.

Keep container tightly sealed.

· **Storage class:** 8 A

· **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

· **Additional information about design of technical facilities:** No further data; see item 7.

· **8.1 Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:** Not required.

· **DNELs**

4067-16-7 3,6,9,12-tetra-azatetradecamethylenediamine

Oral	DNEL Acute systemic effects - short term	32 mg/kg bw/day (General population)
	DNEL systemic effects - long term exposure	0.65 mg/kg bw/d (General population)
Dermal	DNEL Acute systemic effects - short term	13 mg/kg bw/day (General population)
	DNEL systemic effects - long term exposure	0.4 mg/kg bw/d (General population)
		0.91 mg/kg bw/d (workers)
	DNEL Acute local effects - short term	1.59 mg/cm ² (General population)
	DNEL Acute local effects - long term	0.68 mg/cm ² (General population)
		0.044 mg/cm ² (workers)
Inhalative	DNEL Acute systemic effects - short term	2,542 mg/m ³ (General population)
		8,550 mg/m ³ (workers)
	DNEL systemic effects - long term exposure	0.46 mg/m ³ (General population)

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	1.59 mg/m ³ (workers)
· PNECs	
4067-16-7 3,6,9,12-tetra-azatetradecamethylenediamine	
PNEC	0.22 mg/kg (freshwater- sediment)
	0.14 mg/kg (seawater - sediment)
PNEC soil	0.18 mg/kg (-)
PNEC	0.0025 mg/l (freshwater)
	0.0025 mg/l (marine water)
	1.64 mg/l (sewage plant)
	25 mg/l (intermittent releases)

· **Additional information:** The lists valid during the making were used as basis.

· **8.2 Exposure controls**

· **Personal protective equipment:**

· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

· **Respiratory protection:**

Use suitable respiratory protective device when aerosol or mist is formed.

Use suitable respiratory protective device in case of insufficient ventilation.

Use a properly fitted, air-purifying or air-fed an approved respirator complying if the Risk assessment requires. The selection of respirators must be based on known or anticipated exposure levels, the Hazards of the product and the safe working limits of the

Respirator. Recommended: ammonia filter (type K) with filters Ammonia (Type K) and particle.

· **Protection of hands:**

When handling chemical products, before chemical resistant, carried impervious gloves complying with an approved standard be if a risk assessment indicates this is necessary.

Gloves approved to relevant standards as EN 374 (Europe) and F739 (U.S.)

tested gloves are used. Suitability and durability of a Glove is dependent on usage, for example frequency and duration of contact,

chemical resistance of glove material and dexterity Always seek advice from glove suppliers.

Preventive skin protection (3-point program) required



Protective gloves

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

Suitable materials for protective gloves, EN 374-3:

Polychloroprene - CR: thickness > = 0.5 mm, breakthrough time > = 480 min.

NBR - NBR: thickness > = 0,35 mm, Breakthrough time > = 480 min.

Butyl rubber - IIR: thickness > = 0.5 mm, breakthrough time > = 480 min.

Fluorine rubber - FKM: thickness > = 0.4 mm; breakthrough time > = 480 min.

Recommendation: Dispose of contaminated gloves ..

The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

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- **Not suitable are gloves made of the following materials:**

- Leather gloves
 - Strong material gloves

- **Eye protection:**

- Face protection



- Tightly sealed goggles

- **Body protection:**

- Impervious protective clothing

- Boots

- Protective work clothing

SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**

- **General Information**

- **Appearance:**

Form:	Fluid
Colour:	Yellowish
Odour:	Ammonia-like
Odour threshold:	Not determined.

- **pH-value at 20 °C:** 12

- **Change in condition**

Melting point/freezing point:	Undetermined.
Initial boiling point and boiling range:	ca. 230 °C

- **Flash point:** 174 °C

- **Flammability (solid, gas):** Not applicable.

- **Ignition temperature:** ca.360 °C

- **Decomposition temperature:** Not determined.

- **Auto-ignition temperature:** Not determined.

- **Explosive properties:** Product does not present an explosion hazard.

- **Explosion limits:**

Lower:	Not determined.
Upper:	Not determined.

- **Vapour pressure at 20 °C:** < 1 hPa

Density at 20 °C:	1 g/cm ³
Relative density	Not determined.
Vapour density	Not determined.
Evaporation rate	Not determined.

- **Solubility in / Miscibility with water:** Insoluble.

- **Partition coefficient: n-octanol/water:** Not determined.

- **Viscosity:**

Dynamic:	Not determined.
Kinematic:	Not determined.

- **Solvent content:**

VOC (EC)	0.0 g/l
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· **9.2 Other information** No further relevant information available.**SECTION 10: Stability and reactivity**

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions**
Exothermic polymerisation.
Reacts with acids, alkalis and oxidising agents.
Reaction with epoxies and isocyanates
- **10.4 Conditions to avoid**
Moisture. Heat, open flames and other ignition sources. With contaminated pipes and tanks or corroded or rusty containers may lead to increased formation of hydrogen. Detail in section 7.
- **10.5 Incompatible materials:** Incompatible with oxidizers, acids
- **10.6 Hazardous decomposition products:**
Corrosive gases/vapours
Ammonia

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
 - **Acute toxicity**
Harmful if swallowed or in contact with skin.
 - **LD/LC50 values relevant for classification:**
- | 4067-16-7 3,6,9,12-tetra-azatetradecamethylenediamine | | |
|---|------|---------------------------|
| Oral | LD50 | 1,600 mg/kg (Ratte) |
| Dermal | LD50 | 1,465.4 mg/kg (Kaninchen) |
- **Primary irritant effect:**
 - **Skin corrosion/irritation**
Causes severe skin burns and eye damage.
 - **Serious eye damage/irritation**
Causes serious eye damage.
 - **Respiratory or skin sensitisation**
May cause an allergic skin reaction.
 - **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
According to current knowledge, no known CMR effects
 - **Germ cell mutagenicity** Based on available data, the classification criteria are not met.
 - **Carcinogenicity** Based on available data, the classification criteria are not met.
 - **Reproductive toxicity** Based on available data, the classification criteria are not met.
 - **STOT-single exposure** Based on available data, the classification criteria are not met.
 - **STOT-repeated exposure** Based on available data, the classification criteria are not met.
 - **Aspiration hazard** Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

- **12.1 Toxicity**
 - **Aquatic toxicity:**
- | 4067-16-7 3,6,9,12-tetra-azatetradecamethylenediamine | |
|---|---|
| LC50 (96 h) | 180 mg/l (Guppy (<i>Poecilia reticulata</i>)) |
| | 310 mg/l (Elritze (<i>Pimephales promelas</i>)) |
| EC50 (48 h) | 18 mg/l (<i>Daphnia Magna</i>) |

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EC50 (24h)	24.1 mg/l (Daphnia Magna)
NOEC/72h	0.25 mg/l (A)

- **12.2 Persistence and degradability** No further relevant information available.
- **Other information:** Elimination by adsorption onto activated sludge
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Very toxic for fish
- **Additional ecological information:**
- **General notes:**
Must not reach sewage water or drainage ditch undiluted or unneutralised.
Also poisonous for fish and plankton in water bodies.
Very toxic for aquatic organisms
Rinse off of bigger amounts into drains or the aquatic environment may lead to increased pH-values. A high pH-value harms aquatic organisms. In the dilution of the use-level the pH-value is considerably reduced, so that after the use of the product the aqueous waste, emptied into drains, is only low water-dangerous.
Water hazard class 3 (German Regulation) (Self-assessment): extremely hazardous for water
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Danger to drinking water if even extremely small quantities leak into the ground.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
- **Recommendation**
Must not be disposed together with household garbage. Do not allow product to reach sewage system.
- **Waste disposal key:**
The waste code according to the Waste Catalogue (AVV) depends on the waste producer and can therefore be different for a product. The waste code is to identify them separately from each waste producer.
- **European waste catalogue**
Allocation of a waste code number, according to the European Waste Catalogue (EWC) is carried out in agreement with the regional waste disposal.
- **Uncleaned packaging:**
- **Recommendation:**
Material and its container must be disposed of in a safe way. Be careful when Handling emptied containers that have not been cleaned or rinsed out. empty Containers or liners may retain some product residues. avoid the spread of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

- | | |
|---------------------------------------|--|
| · 14.1 UN-Number | UN2735 |
| · ADR, IMDG, IATA | |
| · 14.2 UN proper shipping name | 2735 POLYAMINES, LIQUID, CORROSIVE, N.O.S. |
| · ADR | (amines, polyethylenepoly-, pentaethylenehexamine fraction), ENVIRONMENTALLY HAZARDOUS |

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· IMDG	<i>POLYAMINES, LIQUID, CORROSIVE, N.O.S. (amines, polethylenepoly-, pentaethylenehexamine fraction), MARINE POLLUTANT</i>
· IATA	<i>POLYAMINES, LIQUID, CORROSIVE, N.O.S. (amines, polethylenepoly-, pentaethylenehexamine fraction)</i>

 · **14.3 Transport hazard class(es)**

 · **ADR**


· Class	8 (C7) Corrosive substances.
· Label	8

 · **IMDG**


· Class	8 Corrosive substances.
· Label	8

 · **IATA**


· Class	8 Corrosive substances.
· Label	8

 · **14.4 Packing group**

· ADR, IMDG, IATA	II
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 · **14.5 Environmental hazards:**

· Marine pollutant:	Yes Symbol (fish and tree)
· Special marking (ADR):	Symbol (fish and tree)

 · **14.6 Special precautions for user**

· Danger code (Kemler):	Warning: Corrosive substances. 80
· EMS Number:	F-A,S-B
· Segregation groups	Alkalis
· Stowage Category	A
· Segregation Code	SG35 Stow "separated from" acids.

 · **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**

Not applicable.

 · **Transport/Additional information:**

· ADR	
· Limited quantities (LQ)	1L
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
· Transport category	2
· Tunnel restriction code	E

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<ul style="list-style-type: none"> · IMDG · Limited quantities (LQ) · Excepted quantities (EQ) 	<p>1L Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml</p>
<ul style="list-style-type: none"> · UN "Model Regulation": 	<p>UN 2735 POLYAMINES, LIQUID, CORROSIVE, N.O.S. (AMINES, POLYETHYLENEPOLY-, PENTAETHYLENEHEXAMINE FRACTION), 8, II, ENVIRONMENTALLY HAZARDOUS</p>

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
- **Labelling according to Regulation (EC) No 1272/2008**
The substance is classified and labelled according to the CLP regulation.
- **Hazard pictograms**



GHS05 GHS07 GHS09

- **Signal word** *Danger*
- **Hazard-determining components of labelling:**
3,6,9,12-tetra-azatetradecamethylenediamine
- **Hazard statements**
H302+H312 Harmful if swallowed or in contact with skin.
H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H410 Very toxic to aquatic life with long lasting effects.
- **Precautionary statements**
P260 Do not breathe dusts or mists.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.
- **Directive 2012/18/EU**
- **Named dangerous substances - ANNEX I** Substance is not listed.
- **Seveso category E1** Hazardous to the Aquatic Environment
- **Qualifying quantity (tonnes) for the application of lower-tier requirements** 100 t
- **Qualifying quantity (tonnes) for the application of upper-tier requirements** 200 t
- **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3
- **National regulations:**
- **Waterhazard class:** Water hazard class 3 (Self-assessment): extremely hazardous for water.
- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing SDS:** *info@swiss.composite.ch*

· **Contact:**

Herr Karasmann Tel. +41 (0)31 763 60 60

Herr Ottensmann Tel. +49 (0)2056-25863-7

· **Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

GHS: Globally Harmonised System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

VOC: Volatile Organic Compounds (USA, EU)

DNEL: Derived No-Effect Level (REACH)

PNEC: Predicted No-Effect Concentration (REACH)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

PBT: Persistent, Bioaccumulative and Toxic

vPvB: very Persistent and very Bioaccumulative

Acute Tox. 4: Acute toxicity – Category 4

Skin Corr. 1B: Skin corrosion/irritation – Category 1B

Eye Dam. 1: Serious eye damage/eye irritation – Category 1

Skin Sens. 1: Skin sensitisation – Category 1

Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1

Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1

· *** Data compared to the previous version altered.**