

Safety Data Sheet

fluorochem.

1. Identification of the substance/mixture

1.1 Product identification

Product name	N1,N1'-(Ethane-1,2-diyl)bis(N2-(2-aminoethyl)ethane-1,2-diamine) (mixture of isomers)
Other names	3,6,9,12-Tetraazatetradecamethylenediamine / Pentaethylenehexamine
Product code	F462641
CAS	4067-16-7
MDL	MFCD00008167
EINECS	223-775-9
REACH Registration number	N/A
Nanoform	The product does not contain nanoparticles.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant uses	For research and development purposes.
Uses advised against	No uses advised.

1.3 Safety Data Sheet supplier details

Company	Fluorochem Limited
Address	Unit 14, Graphite Way Hadfield Glossop Derbys. SK13 1QH United Kingdom
Telephone	+44 1457 860111
Email	sds@fluorochem.co.uk

1.4 Emergency Telephone

Emergency Telephone	+44 20 3807 3798 (Poison Information)
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2. Hazard Identification

2.1 Classification of the substance or mixture

Classification	H314 Skin Corr. 1B H317 Skin Sens. 1 H400 Aquatic Acute 1 H410 Aquatic Chronic 1
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2.2 Label Elements

Signal Word

Danger

Pictograms



GHS05



GHS07



GHS09

Hazards

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

Precautions

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P264 Wash hands thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P273 Avoid release to the environment.

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

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.

P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

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

P308+P313 IF exposed or concerned: Get medical advice/attention.

P310 Immediately call a POISON CENTER/doctor.

P321 Specific treatment (see Section 4 on this SDS).

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P361+P364 Take off immediately all contaminated clothing and wash it before reuse.

P391 Collect spillage.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P501 Dispose of contents/container to hazardous waste disposal.

Supplemental Hazard Information

None

2.3 Other Hazards

Other Classification Hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological Information

This substance/mixture contains no components considered to have

endocrine disrupting properties for environment , according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

Toxicological Information

This substance/mixture contains no components considered to have endocrine disrupting properties affecting human health, according to REACH Article 57(f), Commission Regulation (EU) 2018/605 or Commission Delegated Regulation (EU) 2017/2100.

3. Composition

3.1 SUBSTANCE

Name	CAS	Einecs	Composition	Hazards
N1,N1'-(Ethane-1,2-diyl)bis(N2-(2-aminoethyl)ethane-1,2-diamine) (mixture of isomers)	4067-16-7	223-775-9		H314 Skin Corr. 1B H317 Skin Sens. 1 H400 Aquatic Acute 1 H410 Aquatic Chronic 1

3.2 MIXTURE

Not applicable. Product is a substance.

4. First Aid Measures

4.1 Description of First Aid Measures

Eye Contact	Where Diphoterine is not available, rinse eyes with copious amounts of water for at least 20 minutes. Protect uninjured eye. Remove contact lenses if present and easy to do. Continue rinsing and seek immediate medical attention.
Ingestion	If swallowed rinse the mouth with plenty of water (only if the person is conscious) and obtain immediate medical attention. Do not induce vomiting.
Inhalation	Remove person to fresh air and keep comfortable for breathing. Immediately seek medical attention. If breathing is irregular or stopped, administer artificial respiration.
Skin Contact	Where Diphoterine is not available, wash immediately with plenty of water and soap. Remove contaminated clothing immediately. Immediately seek medical attention.
General Advice	If exposed or concerned, seek immediate medical attention.

4.2 Most Important Symptoms and Effects

Most Important Symptoms and Effects	Severe burns may occur.
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4.3 Indication of any urgent medical attention and special treatments needed

Immediate First Aid Measures No special immediate treatment required.

5. Fire Fighting Measures

5.1 Extinguishing Media

Suitable Fire Extinguishing Media Carbon dioxide, alcohol resistant foam or dry chemical powder., Use water to extinguish fire.

Unsuitable Fire Extinguishing Media No known unsuitable media.

5.2 Special hazards arising from the substance or mixture

Special Hazards Thermal decomposition can lead to release of irritating gases and vapours.

5.3 Recommendations for firefighting personnel

Advice for Fire Fighters As in any fire, wear self-contained breathing apparatus and full protective gear.

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Keep personnel away from spill/leak.

6.2 Environmental Precautions

Environmental Precautions Prevent further leakage if safe to do so. Prevent product from entering drains. Do not let product enter waterways or sewer systems. Discharge into the environment must be avoided.

6.3 Containment and cleaning methods and materials

Containment - Methods and Materials Absorb the spilled material with an inert absorbent (e.g. sand, silica gel, rag, vermiculite) before transferring into an airtight container. Remove all sources of ignition. Dispose of appropriately according to local regulations.

6.4 References to other sections

Referenced SDS Sections For personal protection see section 8. For disposal see section 13.

7. Handling and Storage

7.1 Precautions for safe handling

Safe Handling Wear appropriate personal protective equipment. Use only under a chemical fume hood. Keep away from heat/sparks/open flame/hot surfaces. Take measures to prevent the build-up of electrostatic charge. Ensure adequate exhaust ventilation, especially if dust, aerosol or

fumes will be generated. Avoid contact with skin, eyes and clothing. For precautions see section 2.2.

Protection Against Explosion and Fire Where possible, use anti static and spark proof equipment when handling.

General Occupational Hygiene Handle in accordance with good industrial hygiene and safety practice. Wash hands before and after use. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use.

7.2 Conditions for Safe Storage and Incompatibilities

Managing Storage Risks Keep container tightly closed and upright. Store in a cool, dry and well-ventilated place

Storage Controls No special requirements

Maintaining Integrity Keep container tightly closed in a cool area away from sunlight or heat sources

Storage Class Storage class (TRGS 510): 8A, Combustible corrosive substances

Other Advice No other specific advice available

7.3 Specific End Use(s)

Specific End Use(s) No specific end uses are advised. The products supplied are for research purposes only.

8. Exposure Controls / Personal Protection

8.1 Control Parameters

Control Parameters No data available.

8.2 Exposure Controls

Engineering Measures Use only under a chemical fume hood ensuring adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure that eyewash stations and safety showers are close to the workstation location.

Face Protection Wear tightly fitting safety goggles which adhere to European standard EN 166. Ensure eye bath is to hand.

Hand Protection Handle with impermeable gloves. Inspect gloves before use. Gloves must satisfy the specifications of EU Directive 89/686/EEC and the standard EN374 derived from it. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Skin Protection Wear appropriate protective clothing ensuring all skin is covered. Wear safety shoes that meet at least S1 standards. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory Protection Product should be handled in a fume cupboard with adeq-

uate extraction. No respiratory equipment is needed under normal use conditions.

Hygiene Measures

Ensure hair or skin particles cannot enter the chemical container.

Environment Exposure Controls

Avoid discharge into the environment, see section 6.2.

9. Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

a) State	Liquid
b) Colour	No data available.
c) Odour	No data available.
d) Melting Point / Freezing Point	<-20°C
e) Initial Boiling point or Boiling range	380.0°C
f) Flammability	No data available.
g) Upper / Lower Flammability or Explosion Limits	No data available.
h) Flash Point	113°C Closed Cup
i) Auto Ignition Temperature	335°C at 1027hPa
j) Decomposition Temperature	No data available.
k) pH	No data available.
l) Viscosity	No data available.
m) Solubility	500g/L at 20°C in Water
n) Partition Coefficient	No data available.
o) Vapour Pressure	No data available.
p) Relative Density	0.95g/cm ³ at 25°C
q) Vapour Density	No data available.
r) Appearance	No data available.

9.2 Other Safety Information

Other Information No data available.

10. Stability and Reactivity

10.1 Reactivity

Reactivity No known reactivity, based on information available.

10.2 Stability

Stability Stable under recommended storage conditions.

10.3 Possibility of Hazardous Reactions

Possibility of Hazardous Reactions No data available.

10.4 Conditions to Avoid

Conditions to Avoid Heat, sparks, open flames, sources of ignition. Exposure

to moisture.

10.5 Incompatible Materials

Incompatible Materials Strong oxidizing agents.

10.6 Hazardous Decomposition Products

Hazardous Decomposition Products No data available.

11. Toxicology Information

11.1 Information on Hazard Classes, as defined in Regulation (EC) No. 1271/2008

Acute Toxicity	No toxicological data available for this product.
Skin Corrosion / Irritation	Strong corrosive effect on skin and mucous membranes.
Serious Eye Damage / Irritation	Strong corrosive effect.
Respiratory or Skin Sensitisation	May cause an allergic skin reaction.
Germ Cell Mutagenicity	No Toxicology data available for this product.
Carcinogenicity	No Toxicology data available for this product.
Reproductive Toxicity	No Toxicology data available for this product.
STOT-single Exposure	No Toxicology data available for this product.
STOT-repeated Exposure	No Toxicology data available for this product.
Aspiration Hazard	No Toxicology data available for this product.

11.2 Information about Other Hazards

Endocrine Disrupting Properties	Avoid release to the environment.
Addition Toxicology Information	No Toxicology data available for this product.

12. Ecological Information

12.1 Toxicity

Toxicity	Toxicity to fish: Poecilia reticulata LC50 - 0.18mg/l/96 h Toxicity to aquatic invertebrates: Daphnia magna EC50 - 17.5mg/l/48 h Toxicity to aquatic algae and cyanobacteria: Pseudokirchneriella subcapitata EC50 - 0.7mg/l/72 h
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12.2 Persistence and Degradability

Persistence and Degradability	No Ecological data available for this product.
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12.3 Bio-Accumulative Potential

Bio-Accumulative Potential	No Ecological data available for this product.
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12.4 Mobility in Soil

Mobility in Soil	No Ecological data available for this product.
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12.5 Results of PBT and vPvB assessment

Results of PBT and vPvB assessment No Ecological data available for this product.

12.6 Endocrine Disrupting Properties

Endocrine Disrupting Properties Avoid release to the environment.

12.7 Other Adverse Effects

Other Adverse Effects No Ecological data available for this product.

13. Disposal Considerations

13.1 Waste Treatment Methods

Disposal Operations Ensure product is disposed of by licensed waste carriers.

Disposal of Packaging Ensure INNER PACKAGING is disposed of by licensed waste carriers. Some OUTER PACKAGING MAY be recyclable if not contaminated.

14. Transport Information

14.1 UN Number

IATA UN Number	ADR UN Number	IMDG UN Number
2735	2735	2735

14.2 Official UN Shipping Name

IATA Proper Shipping Name	ADR Proper Shipping Name	IMDG Proper Shipping Name
AMINES, LIQUID, CORROSIVE, N.O.S. (N1,N1'-(Ethane-1,2-diyl)bis(N2-(2-aminoethyl)ethane-1,2-diamine) (mixture of isomers))	AMINES, LIQUID, CORROSIVE, N.O.S. (N1,N1'-(Ethane-1,2-diyl)bis(N2-(2-aminoethyl)ethane-1,2-diamine) (mixture of isomers))	AMINES, LIQUID, CORROSIVE, N.O.S. (N1,N1'-(Ethane-1,2-diyl)bis(N2-(2-aminoethyl)ethane-1,2-diamine) (mixture of isomers))

14.3 Hazard classes for transport purposes

IATA Hazard Class	ADR Hazard Class	IMDG Hazard Class
8.0	8.0	No data available.

14.4 Packing Group

IATA Packing Group	ADR Packing Group	IMDG Packing Group
III	III	III

14.5 Environmental Hazards

IATA Environme

ntal Hazards	No data available.	ADR Environmental Hazards	No data available.	IMDG Environmental Hazards	No data available.
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14.6 Special Precautions

No Information Available

14.7 Bulk Maritime Transport in accordance with IMO Instructions

IATA Sub Class	No data available.	ADR Sub Class	No data available.	IMDG Sub Class	No data available.
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15. Regulatory Information

15.1 Health, safety and environmental regulations/legislation specific to the substance or mixture

Regulatory Information This safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

Authorisations and Restrictions on Use REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII):

Entry Number:3

National Legislation Water contaminating class (Germany): WGK 2, obviously hazardous to water - ID-Number 4053 Classification according to AwSV §6(4)

Seveso III: If the substance is present in quantities equal to or in excess of the lower-tier or upper-tier quantities, check Directive 2012/18/EU for relevant provisions.:

E1 ENVIRONMENTAL HAZARDS

Lower: 100mt

Upper: 200mt

Other Regulations Take note of Dir 94/33/EC on the protection of young people at work

15.2 Chemical Safety Assessment

Chemical Safety Assessment There is no chemical safety assessment available for this product.

16. Other Information

Information Not Covered in Other Sections

Information Not Covered in Other Sections ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road (European agreement on the international transport of dangerous goods by road). RID: International Regulations concerning the Transport of Dangerous Goods by Rail (Regulations regarding the international transport of dangerous goods by rail). IMDG: International Maritime Code for Dangerous

Goods. IATA: International Air Transport Association. IATA-DGR: Dangerous Goods Regulations fra International Air Transport Association. ICAO: International Civil Aviation Organisation. ICAO-TI: Technical instructions from ICAO. GHS: Globally Harmonized System for Classification and Labelling of Chemicals. CAS: Chemical Abstracts Service

Other Information

Revision

1

Date Modified

25/02/2026 14:40:37

Disclaimer

The product listed is for research and development purposes only and not for human or animal use. As such, in most cases, the toxicological, ecological and physico-chemical properties have not been fully determined and the product should be treated with respect and always handled under suitable conditions by appropriately qualified personnel. The responsible party shall use this datasheet only in conjunction with other sources of information gathered by them, and should make an independent judgement of suitability, to ensure proper use and protect the health and safety of employees. This information is furnished without warranty and any use of the product not in conformance with this material safety data sheet, or in combination with any other product or process, is the responsibility of the user. This SDS adheres to Regulation (EC) No 1907/2006, and as of 13th April 2023, also conforms to EU Regulation 2020/878.