

Safety Data Sheet

fluorochem.

1. Identification of the substance/mixture

1.1 Product identification

Product name	4,4'-Methylenebis(2-methylcyclohexanamine) mixture of isomers
Other names	2,2'-dimethyl-4,4'-methylenebis(cyclohexylamine)
Product code	F239511
CAS	6864-37-5
MDL	MFCD00075535
EINECS	229-962-1
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

H302 Acute Tox. 4
H311 Acute Tox. 3
H314 Skin Corr. 1B
H330 Acute Tox. 2
H373 STOT RE 2
H411 Aquatic Chronic 2

2.2 Label Elements

Signal Word

Danger

Pictograms



GHS05



GHS06



GHS07



GHS08



GHS09

Hazards

H302 Harmful if swallowed.
H311 Toxic in contact with skin.
H314 Causes severe skin burns and eye damage.
H330 Fatal if inhaled.
H373 May cause damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long lasting effects.

Precautions

P101 If medical advice is needed, have product container or label at hand.
P102 Keep out of reach of children.
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P262 Do not get in eyes, on skin, or on clothing.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing and eye/face protection.
P284 Wear respiratory protection.
P301+P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P302+P352 IF ON SKIN: Wash with plenty of water and soap.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or

shower.

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.

P320 Specific treatment is urgent (see Section 4 on this SDS).

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

P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER/doctor.

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
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4,4'-
Methylenebis(2-
methylcyclohex-
anamine) mix-
ture of isomers

6864-37-5

229-962-1

H302 Acute Tox. 4
H311 Acute Tox. 3
H314 Skin Corr. 1B
H330 Acute Tox. 2
H373 STOT RE 2
H411 Aquatic Chronic
2

3.2 MIXTURE

Not applicable. Product is a substance.

For the full text of the H-Statements mentioned in this Section, see Section 16.

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	Where Diphoterine is not available, rinse mouth with copious amounts of water. Seek urgent medical advice.
Inhalation	Remove person to fresh air and keep comfortable for breathing. If breathing is irregular or stopped, administer artificial respiration and seek immediate medical attention.
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.

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.

Unsuitable Fire Extinguishing Media No known unsuitable media.

5.2 Special hazards arising from the substance or mixture

Special Hazards

In combustion toxic fumes may form.

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

In compliance with the regulation (CE) no. 1907/2006

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): 6.1A, Combustible substances of acute toxicity, categories 1 and 2/very toxic 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.
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8. Exposure Controls / Personal Protection

8.1 Control Parameters

Control Parameters	No data available.
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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 adequate 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	-7.1°C
e) Initial Boiling point or Boiling range	342.0°C
f) Flammability	No data available.
g) Upper / Lower Flammability or Explosion Limits	No data available.
h) Flash Point	173°C
i) Auto Ignition Temperature	275°C
j) Decomposition Temperature	250
k) pH	No data available.
l) Viscosity	152
m) Solubility	2.01g/L at 20°C in Water
n) Partition Coefficient	2.3 at 23°C
o) Vapour Pressure	0.001 hPa at 20°C
p) Relative Density	0.946g/cm ³ at 20°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 Fatal if inhaled.

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	Oral LD50, Rat, >320 - <460mg/kg Inhalation LC50, Rat, 0.42mg/l/4 h Dermal LD50, Rabbit, >200 - <400mg/kg/24 h Intraperitoneal LD50, 47mg/kg
Skin Corrosion / Irritation	Strong corrosive effect on skin and mucous membranes.
Serious Eye Damage / Irritation	Strong corrosive effect.
Respiratory or Skin Sensitisation	Fatal if inhaled., Toxic in contact with skin.
Germ Cell Mutagenicity	May cause damage to organs through prolonged or repeated exposure.
Carcinogenicity	No Toxicology data available for this product.
Reproductive Toxicity	No Toxicology data available for this product.
STOT-single Exposure	Fatal if inhaled., May cause damage to organs through prolonged or repeated exposure.
STOT-repeated Exposure	May cause damage to organs through prolonged or repeated exposure.
Aspiration Hazard	No Toxicology data available for this product.

11.2 Information about Other Hazards

Addition Toxicology Information	No Toxicology data available for this product.
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12. Ecological Information

12.1 Toxicity

Toxicity	Toxicity to fish: Oryzias latipes LC50 - 22.3mg/l/96 h Toxicity to aquatic invertebrates: Daphnia magna EC50 - 4.57mg/l/48 h Toxicity to aquatic algae and cyanobacteria: Desmodesmus subspicatus EC50 - 7.9mg/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	Log Pow: 2.3 at 23°C
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12.5 Results of PBT and vPvB assessment

Results of PBT and vPvB assessment 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.

12.6 Endocrine Disrupting Properties

Endocrine Disrupting Properties The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other Adverse Effects

Other Adverse Effects Avoid release to the environment.

13. Disposal Considerations

13.1 Waste Treatment Methods

Disposal Operations
Disposal of Packaging

14. Transport Information

14.1 UN Number

IATA UN Number	2927	ADR UN Number	2927	IMDG UN Number	2927
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14.2 Official UN Shipping Name

IATA Proper Shipping Name	TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (4,4'-Methylenebis(2-methylcyclohexanamine) mixture of isomers)	ADR Proper Shipping Name	TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (4,4'-Methylenebis(2-methylcyclohexanamine) mixture of isomers)	IMDG Proper Shipping Name	TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (4,4'-Methylenebis(2-methylcyclohexanamine) mixture of isomers)
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14.3 Hazard classes for transport purposes

IATA Hazard Class	6.1	ADR Hazard Class	6.1	IMDG Hazard Class	No data available.
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14.4 Packing Group

IATA Packing Group	II	ADR Packing Group	II	IMDG Packing Group	II
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14.5 Environmental Hazards

IATA Environme
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IATA	No data	ADR	No data	IMDG	No data
Envir on- men- tal Hazar ds	avail- able.	Enviro nmen- tal Hazard s	avail- able.	Environmenta l- Hazards	avail- able.

14.6 Special Precautions

No Information Available

14.7 Bulk Maritime Transport in accordance with IMO Instructions

IATA	8	ADR	8	IMDG	8
Sub Class		Sub Class		Sub Class	

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 3, highly hazardous to water - ID-Number 1335 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.: H2 ACUTE TOXIC Lower: 50mt 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.
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16. Other Information

Information Not Covered in Other Sections

Full Text of H-Statements	H302 Harmful if swallowed. H311 Toxic in contact with skin. H314 Causes severe skin burns and eye damage. H330 Fatal if inhaled.
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14.6 Special Precautions

No Information Available

14.7 Bulk Maritime Transport in accordance with IMO Instructions

IATA Sub Class	8	ADR Sub Class	8	IMDG Sub Class	8
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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 3, highly hazardous to water - ID-Number 1335 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.: H2 ACUTE TOXIC Lower: 50mt Upper: 200mt
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Information Not Covered in Other Sections

Full Text of H-Statements

H302 Harmful if swallowed.
H311 Toxic in contact with skin.
H314 Causes severe skin burns and eye damage.
H330 Fatal if inhaled.
H373 May cause damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long lasting effects.

Full Text of Abbreviations

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road (European agreement on the international transport of dangerous goods by road)
CAS: Chemical Abstracts Service
EC50: Effective Concentration 50%
EINECS: European Inventory of Existing Commercial Chemical Substances
ErC50: Effective Reduction Concentration in Growth Rate 50%
GHS: Globally Harmonized System for Classification and Labelling of Chemicals
IATA-DGR: Dangerous Goods Regulations for International Air Transport Association
IATA: International Air Transport Association
ICAO-TI: Technical instructions from ICAO
ICAO: International Civil Aviation Organisation
IMDG: International Maritime Code for Dangerous Goods
LC50: Lethal Concentration 50%
LCLo: Lethal Concentration Low
LD50: Lethal Dose 50%
MDL: Molecular Data Library
PBT: Persistent, Bioaccumulative and Toxic substance
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals
RID: International Regulations concerning the Transport of Dangerous Goods by Rail (Regulations regarding the international transport of dangerous goods by rail)
SDS: Safety Data Sheet
STOT: Specific target organ toxicity
vPvB: Very Persistent and Very Bioaccumulative
WEL: Workplace Exposure Limit

Key literature references and sources for data

<https://echa.europa.eu/information-on-chemicals>

Other Information

Changes From Previous Version

Changes From Previous Version

1. Other Information

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

ation 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.