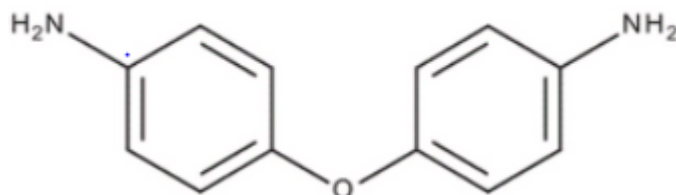


1. General Statement

4,4'-diamino diphenyl ether is a white to beige or brown crystalline powder or solid. It is toxic if swallowed and inhaled. Also, it is toxic in contact with skin. It may cause genetic defects and may cause cancer. It is toxic to aquatic life with long lasting effects and is suspected of damaging fertility. It is a combustible substance that is poorly flammable. Practically insoluble in water. Acute or chronic health hazards result from the substance. The substance is hazardous to the aquatic environment.

2. Chemical identity

Name : 4,4'-diamino diphenyl ether
CAS number(s) : 101-80-4
EC number : 202-977-0
Molecular formula : C₁₂H₁₂N₂O
Structure :



3. Uses and Benefits

The primary use lies in the production of polyimide and poly(ester)imide resins. These resins are used for their temperature-resistant properties and are utilized in products including wire enamels, coatings, film, adhesives, insulating varnishes, coated fabrics, flame-retardant fibers, oil sealants and retainers, insulation for cables and printed circuits and laminates and composite for aerospace vehicles.

4. Physical / chemical properties

Property	Value
Physical state :	Solid
Colour :	Light grey
Odour :	Odourless
pH :	No data available

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Melting point	191.5 °C
Boiling point :	396.8 °C
Flash point :	219 °C
Density :	1315 kg/m3 Type: 'bulk density' Temp.: 20 °C
Solubility in Water:	0.048 g/l at the temperature of:20 °C

5. Health Effects

Effect Assessment	Result
Acute toxicity (Oral / inhalation / dermal)	Toxic if swallowed, in contact with skin or if inhaled.
Irritation / corrosion Skin / eye/ respiratory tract	Not classified
Respiratory or skin sensitisation	May cause an allergic skin reaction
Toxicity after repeated exposure Oral / inhalation / dermal	May cause damage to organs through prolonged or repeated exposure.
Genotoxicity / Mutagenicity	May cause genetic defects.
Carcinogenicity	May cause cancer.
Toxicity for reproduction	Suspected of damaging fertility or the unborn child.

6. Environmental Effects

Effect Assessment	Result
Aquatic toxicity	Toxic to aquatic life with long lasting effects.
Fate and behavior	Result
Persistence and degradability	No data available.
Bioaccumulative potential	No data available.

7. Exposure

Human health

The substance is Toxic if swallowed, in contact with skin or if inhaled, May cause damage to organs through prolonged or repeated exposure , Also chemical is classified as Genotoxic / Mutagenic, Carcinogenic, Toxic to reproduction The most likely route of human exposure (workers) is through skin. In industrial settings, ingestion is not an anticipated route of exposure.The probability of exposure to workers is expected to be low because

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this product is manufactured in an enclosed controlled environment and is transported in well sealed containers.

Workers may be exposed during (un)loading, mixing, sampling, analysis or maintenance operations and particularly in case of batch processes. The exposure must be kept as minimum as possible by the use of appropriate risk management measures as suitable collective and personal protective equipment, good industrial hygiene practices and risk communication through appropriate training of workers.

Careless handling or accidental spillage of the chemical could result in exposure to potentially hazardous levels of chemicals.

Industrial workers should ensure that they follow the advice found in the extended safety data sheet (SDS).

Environment

Care should be taken to avoid releases of these products to sewage, drainage systems and water bodies. Spillage shall be quickly collected in the event of an accidental release. More information about release measures and accidental release measures are available in the extended safety data sheet.

8. Risk Management Recommendations

Human health measures

Organizational	A basic standard of occupational hygiene is recommended. Ensure operatives are well informed of the hazards and trained to minimise exposures.Ensure regular inspection and maintenance of equipment and machines.Handle and store according to the indications of the Safety Data Sheet.	
Protection	Eye protection:	Safety glasses
	Skin and body protection:	Wear suitable protective clothing
	Respiratory protection:	Wear an appropriate mask
Engineering controls	Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.Ensure good ventilation of the work station.	
Environment protective measures		
Products must not be released into water without pre-treatment.		

9. First-aid measures

First-aid measures after inhalation : Remove the person to fresh air and keep them comfortable for breathing. Take medical advice.

First-aid measures after skin contact : Wash skin with plenty of water. Remove/Take off immediately all contaminated clothing. If skin irritation or rash occurs: Get medical advice/attention.

First-aid measures after eye contact : Rinse eyes with water as a precaution.

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First-aid measures after ingestion : Rinse mouth. Call a physician immediately.

10. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam.

Unsuitable extinguishing media : Do not use a heavy water stream.

Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire : Toxic fumes may be released.

Advice for firefighters

Precautionary measures fire : Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.

Firefighting instructions : Fight fire from safe distance and protected location. Do not enter a fire area without proper protective equipment, including respiratory protection.

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

11. Accidental release measures

Protective equipment : Gloves, Face shield, Protective clothing. Dust cloud production: self-contained breathing apparatus. Dust cloud production: dust-tight suit.

Emergency procedures : Mark the danger area. Prevent dust cloud formation, e.g. by wetting. No naked flames. Wash contaminated clothes.

Measures in case of dust release:In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows.

12. Disposal consideration

Regional legislation (waste) : Disposal must be done according to official regulations.

Sewage disposal recommendations : Disposal must be done according to official regulations.

Product/Packaging disposal recommendations : Remove to an incinerator for chlorinated waste materials with energy recovery.

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13. Handling and storage

Precautions for safe handling : Ensure good ventilation of the work station. Obtain special instructions before use. Do not handle it until all safety precautions have been read and understood. Take all necessary technical measures to avoid or minimize the release of the product in the workplace. Limit quantities of product at the minimum necessary for handling and limit the number of exposed workers. Provide local exhaust or general room ventilation. Wear personal protective equipment. Floors, walls and other surfaces in the hazard area must be cleaned regularly. Do not get in eyes, on skin, or on clothing. Avoid breathing dust/fume/gas/mist/vapors/spray.

Hygiene measures : Separate working clothes from town clothes. Launder separately. Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

14. Classification and Labeling

GHS US labeling

Hazard pictograms (GHS US)



Signal word (GHS US)

: Danger

Hazard statements (GHS US)

: H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled
H317 - May cause an allergic skin reaction
H340 - May cause genetic defects.
H350 - May cause cancer.
H361 - Suspected of damaging fertility or the unborn child
H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements (GHS US)

: P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P261 - Avoid breathing dust, fume, gas, mist, spray, vapors.
P264 - Wash hands, forearms and face thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P271 - Use only outdoors or in a well-ventilated area.
P272 - Contaminated work clothing must not be allowed out of the workplace.
P273 - Avoid release to the environment.
P280 - Wear protective clothing, eye and face protection, protective gloves.
P301+P310 - If swallowed: Immediately call a POISON CENTER, a doctor.

15. Conclusion

The substance is Toxic if swallowed, in contact with skin or if inhaled, May cause damage to organs through prolonged or repeated exposure , Also chemical is classified as Genotoxic / Mutagenic, Carcinogenic, Toxic to reproduction. Care should be taken to avoid releases of these products to sewage, drainage systems and water bodies. The exposure must be kept as minimum as possible by the use of appropriate risk management

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measures as suitable collective and personal protective equipment, good industrial hygiene practices and risk communication through appropriate training of workers.

16. Contact Information within company

Manufacturer

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This GPS safety summary is intended to give general information about the health, safety and environmental and not intended to provide in-depth details. To obtain the most accurate and current information, consult the appropriate Safety Data Sheet (SDS) prior to use of the material named herein.