



Material Safety Data Sheet (MSDS)

Product Name: 1520 Polyaspartic Ester Resin

Manufacturer: Jiangmen Choisum Environmental Materials Co., Ltd.

Address: Lingang Industrial Zone, Gujing Town, Xinhui District, Jiangmen City, Guangdong, China

Emergency consultation phone: 008613828049639 008613929015669

1. CHEMICAL PRODUCTS / IDENTIFICATION OF SUBSTANCE

Product Name: **1520 Polyaspartic Ester Resin**

Application: Active ingredient for polyurethane manufacturing

GHS Hazard Category: NON-HAZARDOUS SUBSTANCE/MIXTURES

2. Composition/Information on Ingredients

Ingredient	CAS NO.	Content
Aspartic acid, N,N'-(methylene di-4,1-cyclohexanediamine di)bis-1,1',4,4'-tetraethyl ester	136210-30-5	99±1%
Diethyl fumarate	623-91-6	5%

3. Hazardous Analysis

GHS classification:

May cause an allergic skin reaction. 1 category (H317)

Harmful to aquatic life with long lasting effects. 3 category (H412)

Label parts:

Hazardous components must be listed on the label. Aspartic acid ester: N,N'-(Methylene di-4,1-cyclohexanediamine diyl) bis-1,1',4,4'-tetraethyl ester

Identification number: 607-521-00-8

Signal Word: Warning

Hazard statements:

H317 May cause an allergic skin reaction.

H412 Harmful to aquatic life with long lasting effects.

Precautionary statements:

Avoid breathing dust / fume/ gas/ mist/ vapours/ spray.

Avoid release to the environment Wear protective gloves/ eye protection/ face protection.

Call a POISON CENTER or doctor/physician if you feel unwell.

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Fire and fire fighting advice In case of fire, use water spray, foam, dry chemical or carbon dioxide to extinguish.

Do not use high pressure water stream.

Store in a well-ventilated place, keep the container tightly closed.

Dispose of contents / container to an approved waste disposal facility.

4. First Aid Measures

INHALATION: Take person out of the contaminated area. Remove patient to fresh air. Call a doctor immediately

SKIN CONTACT : Wash in soap and water and rinse with water. Take off all contaminated clothing.

EYE CONTACT: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Never use solvent. If irritation continues, see an ophthalmologist.

INGESTION : Give lukewarm water to drink. Do not induce vomiting. Do not make the victim drink milk or fatty fluids. If swallowed, seek immediate advice and show container or label to the doctor.

NOTES: Call a doctor in case of doubt or if symptoms persist. If unconscious, place in recovery position and seek medical advice

5. Firefighting measures

Hazard characteristics: Flammable.

Harmful combustion products: Carbon monoxide, carbon dioxide, nitrogen oxides.

Extinguishing methods: Use extinguishing agents to put out the fire, extinguishing agents: water, alcohol-resistant foam, dry powder, carbon dioxide, sand.

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures Wear suitable protective clothing, gloves and eye/face protection. Use self-contained breathing apparatus and chemically protective clothing.

6.2 Environmental precautions Prevent contamination of soil and water. Prevent from spreading or entering into drains, ditches or rivers by using sand, earth or other appropriate barriers.

6.3 Methods and material for containment Transfer to a labelled, sealable container for product recovery or safe disposal. Treat residues as and cleaning up for small spillage

7. Handling and Storage

7.1 Precautions for safe handling Protective measures Wear appropriate personal protective equipment. Avoid contact with eyes, skin or clothing. Do not ingest. Keep containers closed when not in use. Advice on general occupational hygiene Do not eat, drink or smoke when handling this product. Wash hands after handling.

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7.2 Conditions for safe storage, including Keep containers tightly closed in a dry, cool and well ventilated areas any incompatibilities. Do not store in unlabeled containers.

8. Exposure limits and personal protection

8.1 Control parameters

Occupational exposure limits No exposure limit value known

8.2 Exposure controls

Provide readily accessible eye wash stations and safety showers.

Provide natural or explosion proof ventilation adequate to ensure concentrations are kept below explosion limits.

Personal protective equipment

Hand protection Chemically resistant, impervious gloves should be worn at all times when handling.

Butyl rubber, Nitrile rubber, neoprene gloves, impervious gloves, latex or vinyl disposable gloves.

Eye/face protection

Protective eye glasses or goggles must be worn.

Skin and body protection

Standard issue work clothes. Long sleeve shirts, trousers or overalls must be worn.

Environmental exposure controls

Construct a dike to prevent spreading.

9. Physical and Chemical Properties

Appearance	Colorless to pale yellow liquid
Odor	Slight characteristic odor
Odor threshold	No data
pH:	No data
Melting point / range:	Not determined
Boiling point / range:	200 °C at 1,013 hPa
Flash point	Approx. 126 °C (DIN EN ISO 2719)
Evaporation rate:	No data
Flash point	90-95°C

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Flammability (solid, gaseous):	Not applicable
Calorific value:	Not applicable
Upper/lower flammability or explosive limits:	No data
Vapor pressure:	No data
Component vapor pressure (Diethyl fumarate):	Approx. 2.6 hPa at 25 °C
Vapor density:	No data
Density:	1.06 g/cm ³
Miscibility with water:	Slightly soluble in water at 15 °C
Water solubility:	No data
Surface tension:	No data
Log octanol/water partition coefficient:	No data
Autoignition temperature:	Not applicable
Ignition temperature:	Approx. 335 °C at 1,013 hPa (DIN 51794)
Decomposition temperature:	No data
Heat of combustion:	No data
Dynamic viscosity:	Approx. 1,000 mPa·s at 25 °C
Kinematic viscosity:	No data
Explosive properties:	No data

Dust explosion class:	No data
Oxidizing properties:	No data

10. Stability and Reactivity

10.1 Reactivity

No information available.

10.2 Chemical stability

No information available.

10.3 Possibility of hazardous reactions

No information available.

10.4 Conditions to avoid

No information available.

10.5 Incompatible materials

No information available.

10.6 Hazardous decomposition products

No hazardous decomposition products if stored and handled properly.

11. Toxicological Information

Refer to the following data:

11.1 Toxicological Effects

Acute Toxicity – Oral

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

LD50 (rat): > 2,000 mg/kg

Method: Directive 67/548/EEC, Annex V, B.1

Acute Toxicity – Dermal

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

LD50 (rat): > 2,000 mg/kg

Acute Toxicity – Inhalation

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

LC50 (rat, male/female): > 4.224 mg/L, 4h

Test atmosphere: Dust/mist

Method: OECD Test Guideline 403

Evaluation: No acute inhalation toxicity for this substance or mixture.

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Primary Skin Irritation

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

Species: Rabbit

Result: Slight irritation

Classification: Not a skin irritant

Method: OECD Test Guideline 404

Primary Eye Irritation

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

Species: Rabbit

Result: Slight irritation

Classification: Not an eye irritant

Method: OECD Test Guideline 405

Skin Sensitization

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

Magnusson/Kligmann (maximization test)

Species: Guinea pig

Result: Positive

Classification: May cause skin allergy (Subcategory 1B)

Method: OECD Test Guideline 406

Respiratory Sensitization

No data available.

Subacute, Subchronic, and Delayed Toxicity

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

NOAEL: 1,000 mg/kg

Route: Subacute oral toxicity

Species: Rat

Dose levels (graded): 0, 40, 200, 1,000 mg/kg

Method: OECD Test Guideline 407

Carcinogenicity

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

No available toxicological studies on this product.

Reproductive Toxicity / Fertility

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

NOAEL (parents, general toxicity): 200 mg/kg

NOAEL (parents, fertility): 1,000 mg/kg

NOAEL (offspring): 1,000 mg/kg

Test type: Two-generation study

Species: Rat, male/female

Route: Oral

Dose levels (graded): 0, 40, 200, 1,000 mg/kg

Method: OECD Test Guideline 416

Developmental Toxicity / Teratogenicity

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

NOAEL (teratogenicity): 1,000 mg/kg

NOAEL (maternal toxicity): 1,000 mg/kg

NOAEL (developmental toxicity): 1,000 mg/kg

Species: Rat, female

Route: Oral

Dose levels (graded): 0, 100, 300, 1,000 mg/kg

Method: OECD Test Guideline 414

In Vitro Genotoxicity

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

Test type: Ames test

Result: No evidence of mutagenic potential.

Method: OECD Test Guideline 471

Test type: In vitro chromosomal aberration test

Result: Negative

Method: OECD Test Guideline 473

In Vivo Genotoxicity

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

Test type: Micronucleus test

Species: Mouse

Result: Negative

Method: OECD Test Guideline 474

STOT (Single Exposure)

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

Based on available data, classification criteria are not met.

STOT (Repeated Exposure)

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

Based on available data, classification criteria are not met.

Aspiration Hazard

Aspartic acid, N,N'-[methylenebis(2-methyl-4,1-cyclohexanediyl)]bis-1,1',4,4'-tetraethyl ester

Based on available data, classification criteria are not met.

CMR Assessment

Carcinogenicity: Based on available data, classification criteria are not met.

Mutagenicity: No mutagenic effects observed in in vitro and in vivo tests. The substance is not classified as mutagenic.

Teratogenicity: Based on available data, classification criteria are not met.

Reproductive Toxicity/Fertility: Based on available data, classification criteria are not met.

Toxicological Assessment

Acute Effects: Based on available data, classification criteria are not met.

Allergenic Effects: Skin contact may cause sensitization.

Repeated Dose Toxicity: Based on available data, classification criteria are not met.

Part 12: Ecological Information

Do not release into drains, wastewater, or soil.

Refer to the following data:

12.1 Toxicity

Acute Fish Toxicity

LC50 (Zebra fish, 96h): 66 mg/L

Method: OECD Test Guideline 203

Chronic Fish Toxicity

No data available.

Acute Daphnia Toxicity

EC50 (Daphnia magna, 48h): 88.6 mg/L

Chronic Daphnia Toxicity

NOEC (reproduction, Daphnia magna, 21d): 0.013 mg/L

Method: EEC Directive 67/548/EEC, Annex V, C20

Acute Algae Toxicity

ErC50 (Scenedesmus subspicatus, 72h): 113 mg/L

Method: Directive 67/548/EEC, Annex V, C3

Acute Bacterial Toxicity

EC50 (Activated sludge, 3h): 3,110 mg/L

Method: ISO 8192-1986 E

Toxicity to Soil Organisms

NOEC (mortality, Eisenia fetida, 14d): $\geq 1,000$ mg/kg

Method: OECD Test Guideline 207

Toxicity to Terrestrial Plants

NOEC (emergence, Avena sativa, 14d): ≥ 100 mg/kg

Method: OECD Test Guideline 208

NOEC (emergence, Allium cepa, 14d): ≥ 100 mg/kg

NOEC (emergence, Brassica napus, 14d): ≥ 100 mg/kg

Ecotoxicity Assessment

Acute (short-term) aquatic hazard: Harmful to aquatic life.

Long-term aquatic hazard: Very toxic to aquatic life with long-lasting effects.

Impact on wastewater treatment: No negative effect due to low bacterial toxicity.

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12.2 Persistence and Degradability

Biodegradability

OECD 301F: 13% in 28 days (Not readily biodegradable)

- **OECD 302C:** 6% in 28 days (Not inherently biodegradable)

Hydrolysis Stability

- **Half-life (pH 4, 25°C):** 655 h
 - **Half-life (pH 7, 25°C):** 25.4 h
 - **Half-life (pH 9, 25°C):** 16.8 h
- Method: OECD Test Guideline 111

Volatility (Henry's Law Constant)

Calculated value: $0.24 \text{ Pa} \cdot \text{m}^3/\text{mol}$

This substance is slightly volatile in water.

12.3 Bioaccumulation

Bioaccumulation Factor (BCF): Estimated 8,228

Rapidly hydrolyzes in water; does not bioaccumulate in aquatic organisms.

12.4 Mobility in Soil

Log K_{oc}: 4.2–5.1

Method: EEC Method C.19

12.5 PBT and vPvB Assessment

No data available.

12.6 Other Adverse Effects

No data available.

Disposal Considerations

Acute toxicity, oral:

Aspartic acid: N,N'-(methylene di-4,1-cyclohexanediamine)bis-1,1',4,4'-tetraethyl ester Median lethal dose (LD₅₀) Rat: > 2,000 mg/kg

Method: EEC guideline 67/548/EEC, Appendix V, B1.

Acute toxicity, dermal:

Aspartic acid, N,N'-(methylene di-4,1-cyclohexanediamine)bis-1,1',4,4'-tetraethyl ester Median lethal dose (LD₅₀) Rat: > 2,000 mg/kg

Method: EEC guideline 67/548/EEC, Appendix V, B3.

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Acute toxicity, inhalation:

Aspartic acid: N,N'-(methylene di-4,1-cyclohexanediamine)bis-1,1',4,4'-tetraethyl ester Median lethal concentration (LC50) Rat: > 4,224 mg/m³, 4 h

Method: OECD Test Guideline 403

Primary skin irritation:

Aspartic acid: N,N'-(methylene di-4,1-cyclohexane-diyl)bis-1,1',4,4'-tetraethyl ester

Result: Slight irritation

Method: OECD Test Guideline 404

Sensitization:

Aspartic acid: N,N'-(methylene di-4,1-cyclohexane-diyl)bis-1,1',4,4'-tetraethyl ester Skin sensitization according to Magnusson/Kligmann (Maximisation Test)

Method: OECD Test Guideline 406

Respiratory sensitization

No toxicological studies are available for this product.

Subacute, chronic, and delayed toxicity:

Aspartic acid, N,N'-(methylenedi-4,1-cyclohexanediyl)bis-1,1',4,4'-tetraethyl ester

Route of application: Subacute oral toxicity

Species: Rat

Dose level (graded): 0-40-200-1,000 mg/kg NOAEL: 1,000 mg/kg

Method: OECD Test Guideline 407

Carcinogenicity:

Aspartic acid, N,N'-(methylenedi-4,1-cyclohexanediyl)bis-1,1',4,4'-tetraethyl ester

No toxicological studies are available for this product.

Reproductive toxicity/Fertility:

Aspartic acid, N,N'-(methylenedi-4,1-cyclohexanediyl)bis-1,1',4,4'-tetraethyl ester

No toxicological studies are available for this product.

Teratogenicity/Embryotoxicity:

Aspartic acid, N,N'-(methylenedi-4,1-cyclohexanediyl)bis-1,1',4,4'-tetraethyl ester

No toxicological studies are available for this product.

In vitro genotoxicity:

Aspartic acid, N,N'-(methylenedi-4,1-cyclohexanediyl)bis-1,1',4,4'-tetraethyl ester

Salmonella/microsome assay (Ames test):

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Result: No evidence of mutagenicity.

Method: OECD Test Guideline 471

In vitro chromosome aberration test

Result: Negative

Method: OECD Test Guideline 473

In vivo genotoxicity:

Aspartic acid, N,N'-(methylenedi-4,1-cyclohexanediyl)bis-1,1',4,4'-tetraethyl ester

Micronucleus test:

Species: Mouse

Result: Negative

Method: OECD TG 474

Toxicological Evaluation:

Aspartic acid, N,N'-(methylenedi-4,1-cyclohexanediyl)bis-1,1',4,4'-tetraethyl ester

Acute Effects: Based on available data, classification criteria are not met.

Skin Sensitization: May cause skin allergy upon contact.

Repeated Dose Toxicity: Based on available data, classification criteria are not met.

CMR Assessment:

Aspartic acid, N,N'-(methylenedi-4,1-cyclohexanediyl)bis-1,1',4,4'-tetraethyl ester

Carcinogenicity: Based on available data, classification criteria are not met.

Mutagenicity: In vitro and in vivo tests showed no mutagenic effects. Based on this data, the substance is not classified as mutagenic.

Developmental/Teratogenic Toxicity: Based on available data, classification criteria are not met.

Reproductive Toxicity/Fertility: Based on available data, classification criteria are not met.

STOT Assessment (Single Exposure):

Aspartic acid, N,N'-(methylenedi-4,1-cyclohexanediyl)bis-1,1',4,4'-tetraethyl ester

This substance or mixture is not classified as a specific target organ toxicant upon single exposure.

STOT Assessment (Repeated Exposure):

Aspartic acid, N,N'-(methylenedi-4,1-cyclohexanediyl)bis-1,1',4,4'-tetraethyl ester

This substance or mixture is not classified as a specific target organ toxicant upon repeated exposure.

Additional Information:

Aspartic acid, N,N'-(methylenedi-4,1-cyclohexanediyl)bis-1,1',4,4'-tetraethyl ester

Aspiration Hazard: Based on available data, classification criteria are not met.

12. Ecological Information

This material is not known as biodegradable

13. Disposal considerations

Disposal must comply with applicable international, national, and local regulations.

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Within the European Union, waste disposal shall be carried out in accordance with the appropriate provisions of the European Waste Catalogue (EWC).

13.1 Waste Treatment Methods

Empty containers as completely as possible (e.g., by pouring, scraping, or draining until "drop-free").

Dispose of via appropriate collection points under existing chemical industry recycling schemes.

Containers should be recycled in accordance with national legislation and environmental regulations.

Do not dispose of waste via wastewater systems.

14. Transportation information

Road Transport

14.1 UN Number or ID No.: Not dangerous goods

14.2 UN Proper Shipping Name: Not dangerous goods

14.3 Transport Hazard Class: Not dangerous goods

14.4 Packing Group: Not dangerous goods

14.5 Environmental Hazard: Not dangerous goods

IATA (Air Transport)

14.1 UN Number or ID No.: Not dangerous goods

14.2 UN Proper Shipping Name: Not dangerous goods

14.3 Transport Hazard Class: Not dangerous goods

14.4 Packing Group: Not dangerous goods

14.5 Environmental Hazard: Not dangerous goods

IMDG (Maritime Transport)

14.1 UN Number or ID No.: Not dangerous goods

14.2 UN Proper Shipping Name: Not dangerous goods

14.3 Transport Hazard Class: Not dangerous goods

14.4 Packing Group: Not dangerous goods

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14.5 Marine Pollutant (Yes/No): Not dangerous goods

14.6 Special Precautions: Refer to Sections 6-8

Additional Information: Not dangerous goods. Keep dry. Keep away from foodstuffs, acids, and bases.

14.7 Marine Bulk Transport under IMO Instruments: We do not transport products in bulk.

15. Regulatory information

15.1 Safety, Health, and Environmental Regulations for Substances or Mixtures

Occupational Disease Prevention Law: Refer to Section 8

Implementation Measures for Safe Use Permits of Hazardous Chemicals: Comply as required

List of Highly Toxic Substances: Not applicable

Catalog of Key Supervised Hazardous Chemicals: Not applicable

Catalog of Toxic Chemicals Subject to Strict Import/Export Restrictions in China: Not applicable

Catalog of Hazardous Chemicals (Listed/Meeting 70% Principle): Not applicable

Identification of Major Hazard Installations for Hazardous Chemicals (GB 18218): Not applicable

Inventory of Existing Chemical Substances in China: Listed or exempt

Highly Toxic Chemicals: This product is not classified as highly toxic

Catalog of Explosive Precursors (2017 Edition): This product is not classified as an explosive precursor

Administrative Provisions on the Import and Export of Precursor Chemicals: This product does not fall under these provisions

Other Regulations

Complies with the following regulatory requirements:

Regulations on the Safety Management of Hazardous Chemicals (State Council Decree No. 591)

GB/T 16483 - Safety Data Sheet for Chemical Products - Content and Order of Sections

GB 13690 - General Rules for Classification and Hazard Communication of Chemicals

GB 30000.2-29 - Standards for Classification and Labelling of Chemicals

GB 15258 - Preparation Specifications for Safety Labels of Chemicals

Note: Operations involving hazardous substances must comply with existing national regulations.

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16. Other information

Revision notes

Issue date: January 10, 2022

Revision Date: December 24, 2024

17. Further Information

For more health and safety information, please contact the Health and Safety Officer. The details provided above are based on our current understanding; however, these terms do not guarantee that the properties of each product will remain consistent and should not be treated as binding contractual terms. The terms outlined here are not exhaustive and are meant to serve as general guidance only.

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