

MATERIAL SAFETY DATA SHEET



Bayer MaterialScience

Bayer MaterialScience LLC
Product Safety & Regulatory Affairs
100 Bayer Road
Pittsburgh, PA 15205-9741
USA

TRANSPORTATION EMERGENCY

CALL CHEMTREC: (800) 424-9300
INTERNATIONAL: (703) 527-3887

NON-TRANSPORTATION

Bayer Emergency Phone: (412) 923-1800
Bayer Information Phone: (800) 662-2927

1. Product and Company Identification

Product Name: PFAZ 322
Material Number: 3048318
Chemical Family: Polyfunctional Aziridine
Chemical Name: 1-Aziridinepropanoic acid, 2-methyl-,2-ethyl-2-((3-(2-methyl-1-aziridinyl)-1-oxopropoxy)methyl)-1,3- propanediyl ester
Synonyms: Aziridine Polymer

2. Hazards Identification

Emergency Overview

WARNING! Color: Amber, Light **Form:** Liquid **Odor:** Slight, Amine.
Ground containers and equipment before transferring to avoid static sparks. Use cold water spray to cool fire-exposed containers to minimize the risk of rupture. Toxic gases/fumes are given off during burning or thermal decomposition and may cause allergic skin and respiratory reaction. Causes respiratory tract irritation. May be harmful if inhaled. Causes skin irritation. May cause allergic skin reaction. Causes eye irritation. May be harmful if swallowed.

Potential Health Effects

Primary Routes of Entry: Skin Contact, Eye Contact, Ingestion, Inhalation

Medical Conditions Aggravated by Exposure: Eyes, Skin disorders, Respiratory disorders, Skin Allergies

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE

Inhalation

Acute Inhalation

For Product: PFAZ 322

Causes respiratory tract irritation with symptoms of coughing, sore throat and runny nose.

Chronic Inhalation

For Product: PFAZ 322

Material Name: PFAZ 322

Article Number: 3048318

Prolonged or repeated exposure may result in adverse respiratory effects including cough, tightness of chest and shortness of breath.

Skin

Acute Skin

For Product: PFAZ 322

Causes irritation with symptoms of reddening, itching, and swelling. May cause allergic skin reaction with symptoms of reddening, itching, swelling, and rash.

For Component: Polyfunctional aziridine

May cause slight irritation. May cause sensitization of susceptible persons.

Chronic Skin

For Product: PFAZ 322

Prolonged contact can cause reddening, swelling, rash, and, in some cases, skin sensitization.

Eye

Acute Eye

For Product: PFAZ 322

Causes irritation with symptoms of reddening, tearing, stinging, and swelling.

For Component: Polyfunctional aziridine

Causes irritation with symptoms of reddening, tearing, stinging, and swelling. May cause corneal injury.

Chronic Eye

For Product: PFAZ 322

Prolonged vapor contact may cause conjunctivitis.

Ingestion

Acute Ingestion

For Product: PFAZ 322

Symptoms of ingestion may include abdominal pain, nausea, vomiting, and diarrhea.

For Component: Polyfunctional aziridine

Slightly toxic by ingestion.

Carcinogenic Effects

For Product: PFAZ 322

Monomeric aziridines (ethyleneimine and propyleneimine) used to produce polyfunctional aziridine crosslinkers have shown positive genotoxic activity in all animal and bacterial systems tested and are known animal carcinogens, with unknown relevance to humans. Animal and bacterial studies on the crosslinker show a similar pattern of genotoxicity. Bioavailability of the crosslinker is less than the monomer, however, care should be taken to avoid exposure.

Carcinogenicity:

No Carcinogenic substances as defined by IARC, NTP and/or OSHA

3. Composition/Information on Ingredients

Hazardous Components

Weight %

>=95%

<=0.01%

Components

Polyfunctional aziridine

Aziridine, 2-methyl-

CAS-No.

64265-57-2

75-55-8

4. First Aid Measures

Eye Contact

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Use lukewarm water if possible. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Call a physician immediately.

Skin Contact

In case of skin contact, wash affected areas with soap and water. Immediately remove contaminated clothing and shoes. Get medical attention. Wash clothing and shoes before reuse.

Inhalation

If inhaled, remove to fresh air. If breathing is difficult, give oxygen. Get medical attention.

Ingestion

Do not induce vomiting. If conscious, give 2 glasses of water. Get immediate medical attention. Never give anything by mouth to an unconscious person.

5. Fire-Fighting Measures

Suitable Extinguishing Media: All extinguishing media are suitable., water spray for large fires.

Special Fire Fighting Procedures

Firefighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes. Use cold water spray to cool fire-exposed containers to minimize risk of rupture. Do not spray fire directly.

Unusual Fire/Explosion Hazards

Toxic and irritating gases/fumes may be given off during burning or thermal decomposition. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flashback.

6. Accidental release measures

Spill and Leak Procedures

Cleanup personnel must use appropriate personal protective equipment. Evacuate and keep unnecessary people out of spill area. Remove all sources of ignition, including flames, heat, and sparks. Ventilate area to remove vapors or dust. Dike or dam spilled material and control further spillage, if possible. Cover spill with inert material (e. g., dry sand or earth) and collect for proper disposal. Wash spill area with soap and water.

7. Handling and Storage

Storage Temperature:

minimum: 1.67 °C (35 °F)
maximum: 15.56 °C (60 °F)

Storage Period

24 Months: Recommended

Handling/Storage Precautions

Do not get in eyes. Do not get on skin or clothing. Do not taste or swallow. Avoid inhalation of vapour or mist. Proper ventilation and appropriate personal protective equipment should be used when handling & processing this product. Store in a dry place away from excessive heat in original or similar containers. Containers should be kept tightly closed to prevent contamination. Ground and bond containers and equipment before transferring to avoid static sparks.

Further Info on Storage Conditions

Do not expose to direct sunlight. Protect from freezing. Avoid acidic conditions. Avoid contact with moisture/water.

8. Exposure Controls / Personal Protection

Aziridine, 2-methyl- (75-55-8)

US. ACGIH Threshold Limit Values

Time Weighted Average (TWA): 2 ppm

US. ACGIH Threshold Limit Values

Skin designation: Can be absorbed through the skin.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

PEL: 2 ppm, 5 mg/m³

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Skin designation: Can be absorbed through the skin.

US. ACGIH Threshold Limit Values

Hazard Designation: Group A3 Confirmed animal carcinogen with unknown relevance to humans.

Industrial Hygiene/Ventilation Measures

General dilution and local exhaust as necessary to control airborne vapors, mists, dusts and thermal decomposition products below appropriate airborne concentration standards/guidelines. Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination. Curing ovens must be ventilated to prevent the build up of explosive atmospheres and to prevent off gases from entering the work place.

Respiratory Protection

A supplied air respirator with a full facepiece or hood that is operated in a positive pressure, pressure-demand, or continuous flow mode is mandatory during spray application or whenever airborne concentrations are unknown. An air purifying respirator with organic vapor cartridge may be worn in non-spray applications where airborne concentrations of aziridine monomer are known to be above the PEL or TLV but less than 10 times the PEL or TLV. Use fresh cartridge at the beginning of each work shift.

Hand Protection

Permeation resistant gloves., Neoprene gloves, Butyl rubber gloves., Nitrile rubber gloves.

Eye Protection

Chemical resistant goggles must be worn., Chemical safety goggles in combination with a full face shield if a splash hazard exists.

Skin and body protection

Permeation resistant clothing and foot protection.

Additional Protective Measures

Employees should wash their hands and face before eating, drinking, or using tobacco products. Educate and train employees in the safe use and handling of this product. Emergency showers and eye wash stations

should be available.

9. Physical and chemical properties

Form:	Liquid
Color:	Amber, Light
Odor:	Slight, Amine
pH:	9 - 10
Freezing Point:	< -5 °C (< 23 °F)
Boiling Point/Range:	Not Established
Flash Point:	138 °C (280.4 °F) (Pensky-Martens Closed Cup (ASTM D-93))
Lower Explosion Limit:	Not Established
Upper Explosion Limit:	Not Established
Evaporation Rate:	Greater than 1
Vapor Pressure:	0.00023 mmHg @ 20 °C (68 °F)
Specific Gravity:	1.10 @ 20 °C (68 °F)
Solubility in Water:	Partially soluble
Autoignition Temperature:	Not Established
Decomposition Temperature:	Not established
Viscosity, Dynamic:	no data available
Viscosity, Kinematic:	no data available

10. Stability and Reactivity

Hazardous Reactions

Exothermic reaction with strong acids.

Stability

Stable under normal conditions.

Materials to avoid

Oxidizing agents, Anhydrides, Acids, Water

Conditions to avoid

Direct heating, dirt, chemical contamination, sunlight, UV or ionising radiation. Protect from freezing. Avoid acidic conditions. Avoid contact with moisture / water.

Hazardous decomposition products

By Fire and Thermal Decomposition: Carbon oxides, nitrogen oxides (NO_x), other aliphatic fragments which have not been determined

11. Toxicological Information

Toxicity Data for PFAZ 322

Toxicity Note

Toxicity data is based on a similar product.

Acute Oral Toxicity

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

Skin Irritation

rabbit, Slightly irritating

Eye Irritation

rabbit, Severely irritating

Sensitization

dermal: sensitizer (guinea pig, Magnusson/Kligmann (Maximization Test))

Mutagenicity

Genetic Toxicity in Vitro:

Ames: positive (Salmonella typhimurium)

Toxicity Data for Polyfunctional aziridine**Acute Inhalation Toxicity**

LC50: 252 mg/m³, aerosol, 4 h (rat, Male/Female)

Mutagenicity

Genetic Toxicity in Vitro:

Chromosome aberration test: positive (Chinese hamster V79 cell line, Metabolic Activation: with/without)

Genetic Toxicity in Vivo:

Micronucleus Assay: positive (mouse, male, intraperitoneal)

Toxicity Data for Aziridine, 2-methyl-**Acute Oral Toxicity**

LD50: 19 mg/kg (Rat)

Acute Inhalation Toxicity

LClo: 500 ppm, 4 hrs (Rat)

Acute dermal toxicity

LD50: 43 mg/kg (Guinea pig)

Eye Irritation

rabbit, Severely irritating

Mutagenicity

Genetic Toxicity in Vitro:

Ames: positive (Salmonella typhimurium, Metabolic Activation: with/without)

In vitro tests have shown mutagenic effects.

Genetic Toxicity in Vivo:

Unscheduled DNA synthesis: positive (mouse,)

Drosophila SLRL test: (Drosophila melanogaster)

Carcinogenicity

Rat, Male/Female, oral, 28 weeks, daily

positive

12. Ecological Information**Ecological Data for Aziridine, 2-methyl-****Bioaccumulation**

Does not bioaccumulate.

13. Disposal considerations

Waste Disposal Method

Waste disposal should be in accordance with existing federal, state and local environmental control laws.

Empty Container Precautions

Recondition or dispose of empty container in accordance with governmental regulations. Do not reuse empty container without proper cleaning. Label precautions also apply to this container when empty. Empty containers retain product residue (dust, liquid, vapor and/or gases) and can be dangerous.

14. Transportation information

Land transport (DOT)

Proper Shipping Name: Environmentally hazardous substances, liquid, n.o.s. (contains Aziridine, 2-methyl-)
Hazard Class or Division: 9
UN/NA Number: UN3082
Packaging Group: III
Hazard Label(s): Class 9

RSPA/DOT Regulated Components:

Aziridine, 2-methyl-

Reportable Quantity: 10,000 lb

Sea transport (IMDG)

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains Aziridine, 2-methyl-)
Hazard Class or Division: 9
UN-No: UN3082
Packaging Group: III
Hazard Label(s): Miscellaneous

Air transport (ICAO/IATA)

Proper Shipping Name: Environmentally hazardous substance, liquid, n.o.s. (contains Aziridine, 2-methyl-)
Hazard Class or Division: 9
UN-No: UN3082
Packaging Group: III
Hazard Label(s): Miscellaneous

Additional Transportation Information

When in individual containers of less than the Product RQ, this material ships as non-regulated.

15. Regulatory Information

United States Federal Regulations

OSHA Hazcom Standard Rating: Hazardous

US. Toxic Substances Control Act: Listed on the TSCA Inventory.

US. EPA CERCLA Hazardous Substances (40 CFR 302):

Components

None

SARA Section 311/312 Hazard Categories:

Acute Health Hazard, Chronic Health Hazard, Reactivity Hazard

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A):

Components

None

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required:

Components

None

US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261):

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

State Right-To-Know Information

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists:

<u>Weight %</u>	<u>Components</u>	<u>CAS-No.</u>
>=95%	Polyfunctional aziridine	64265-57-2

Pennsylvania Right to Know Special Hazard Substance List:

<u>Weight %</u>	<u>Components</u>	<u>CAS-No.</u>
<=0.01%	Aziridine, 2-methyl-	75-55-8

California Prop. 65:

Warning! This product contains chemical(s) known to the State of California to be Carcinogenic.

<u>Weight %</u>	<u>Components</u>	<u>CAS-No.</u>
<=0.01%	Aziridine, 2-methyl-	75-55-8

16. Other Information

NFPA 704M Rating

Health	3
Flammability	1
Reactivity	1
Other	

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

HMIS Rating

Health	3*
Flammability	1
Physical Hazard	1

0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe

* = Chronic Health Hazard

Bayer MaterialScience LLC's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. HMIS and NFPA ratings are provided by Bayer MaterialScience LLC as a customer service.

Contact Person: Product Safety Department
Telephone: (412) 777-2835
MSDS Number: R302983
Version Date: 01/18/2005
Report Version: 1.1

This information is furnished without warranty, express or implied. This information is believed to be accurate to the best knowledge of Bayer MaterialScience LLC. The information in this MSDS relates only to the specific material designated herein. Bayer MaterialScience LLC (BMS) assumes no legal responsibility for use of or reliance upon the information in this MSDS.