

MATERIAL SAFETY DATA SHEET



BaySystems NorthAmerica

Baysystems North America
Product Safety & Regulatory Affairs
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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: PSI - RS245 - 25
Material Number: 6664377
Chemical Family: Polyol System

2. Hazards Identification

Emergency Overview

WARNING! Color: Amber, Brown **Form:** liquid **Odor:** slight, Ether, Amine.
May cause eye, skin, and respiratory tract irritation. Use cold water spray to cool fire-exposed containers to minimize the risk of rupture. Vapor reduces oxygen available for breathing. May cause allergic respiratory reaction. May cause allergic skin reaction. May cause a temporary fogging of the eyes. May affect nervous system. May cause irregular heartbeat. May cause liver damage. May cause kidney damage.

Potential Health Effects

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

Medical Conditions Aggravated by Exposure: Eye disorders, Respiratory disorders, Skin disorders

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE

Inhalation

Acute Inhalation

For Component: Aromatic Amino Polyol

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

For Component: Polymer

Inhalation is unlikely due to the low vapor pressure. If misted or handled at elevated temperatures, high concentrations may cause respiratory tract irritation.

For Component: Hydrofluorocarbon

May cause respiratory tract irritation with symptoms of coughing, sore throat and runny nose. May induce

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cardiac arrhythmia (irregular heartbeat) in some individuals. Vapor can reduce oxygen available for breathing.

For Component: Glycol

Inhalation is unlikely due to the low vapor pressure. If misted or handled at elevated temperatures, high concentrations may cause respiratory tract irritation.

For Component: Dimethylethanolamine

Causes respiratory tract irritation with symptoms of coughing, sore throat and runny nose. May cause allergic respiratory reaction with symptoms of coughing, wheezing, shortness of breath, bronchospasm, and reduced lung function.

Chronic Inhalation

For Component: Dimethylethanolamine

May cause pulmonary edema with symptoms of breathing difficulty and tightness of chest.

Skin

Acute Skin

For Component: Aromatic Amino Polyol

May cause irritation with symptoms of reddening and itching.

For Component: Polymer

Causes irritation with symptoms of reddening, itching, and swelling.

For Component: Hydrofluorocarbon

Slightly toxic by skin absorption. May cause slight irritation.

For Component: Chlorinated Phosphate Ester

Not expected to be irritating.

For Component: Glycol

Not expected to be irritating.

For Component: Dimethylethanolamine

May cause allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Corrosive with symptoms of reddening, itching, swelling, burning and possible permanent damage. Moderately toxic by skin absorption.

Eye

Acute Eye

For Component: Aromatic Amino Polyol

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

For Component: Polymer

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

For Component: Hydrofluorocarbon

May cause slight irritation.

For Component: Chlorinated Phosphate Ester

Not expected to be irritating.

For Component: Glycol

May cause slight irritation.

For Component: Dimethylethanolamine

Corrosive with symptoms of reddening, tearing, swelling, burning and possible permanent damage. Vapors

can cause temporary corneal edema with symptoms of blurred vision or the appearance of halos around bright objects.

Ingestion

Acute Ingestion

For Component: Polymer

Symptoms of ingestion may include abdominal pain, nausea, vomiting, and diarrhea. May be harmful if swallowed.

For Component: Chlorinated Phosphate Ester

May be harmful if swallowed. Symptoms of ingestion may include abdominal pain, nausea, vomiting, and diarrhea.

For Component: Glycol

May cause nervous system effects which can include symptoms of dizziness, incoordination, headache, numbness, and/or confusion. The oral toxicity is greater in humans than in laboratory animals.

For Component: Dimethylethanolamine

May be harmful if swallowed. May cause digestive tract burns.

Chronic Ingestion

For Component: Chlorinated Phosphate Ester

May cause liver damage. May cause kidney damage.

For Component: Glycol

May cause kidney damage. Repeated excessive exposures may cause liver or kidney effects. Chronic overexposure to this product may cause effects as noted under acute overexposure. If ingested the individual should be observed for signs of numbness, incoordination, headache, and confusion.

General Effects of Exposure

Acute Effects of Exposure

For Component: Polymer

Gases and fumes evolved during the thermal processing or decomposition of this material may irritate the eyes, skin or respiratory tract.

Carcinogenicity:

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

3. Composition/Information on Ingredients

Hazardous Components

<u>Weight %</u>	<u>Components</u>	<u>CAS-No.</u>
15 - 25%	Aromatic Amino Polyol	CAS# is a trade secret
15 - 25%	Polymer	CAS# is a trade secret
7 - 13%	Hydrofluorocarbon	460-73-1
5 - 10%	Chlorinated Phosphate Ester	CAS# is a trade secret
3 - 7%	Brominated Flame Retardant	CAS# is a trade secret
1 - 5%	Glycol	CAS# is a trade secret
<=2%	Dimethylethanolamine	108-01-0

4. First Aid Measures

Eye Contact

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In case of contact, flush eyes with plenty of lukewarm water. Get medical attention if irritation develops.

Skin Contact

In case of skin contact, wash affected areas with soap and water. Immediately remove contaminated clothing and shoes. Get medical attention if irritation develops.

Inhalation

If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration using a pocket mask type resuscitator. Get medical attention.

Ingestion

If ingested, do not induce vomiting unless directed to do so by medical personnel. Get medical attention.

5. Fire-Fighting Measures

Suitable Extinguishing Media: carbon dioxide (CO₂), dry chemical, foam, 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.

6. Accidental release measures

Spill and Leak Procedures

Cover spill with inert material (e. g., dry sand or earth) and collect for proper disposal. Use appropriate personal protective equipment during clean up. Evacuate and keep unnecessary people out of spill area.

7. Handling and Storage

Storage Temperature:

minimum: 7 °C (44.6 °F)
maximum: 29 °C (84.2 °F)

Storage Period

6 Months

Handling/Storage Precautions

Handle in accordance with good industrial hygiene and safety practices. Wash thoroughly after handling. Keep container closed when not in use. Material is hygroscopic and may absorb small amounts of atmospheric moisture. If contamination with isocyanates is suspected, do not reseal containers. Avoid contact with eyes. Avoid contact with skin or clothing. Do not breathe vapours/dust.

8. Exposure Controls / Personal Protection

Country specific exposure limits have not been established or are not applicable

Industrial Hygiene/Ventilation Measures

Use local and general exhaust ventilation to control levels of exposure.

Respiratory Protection

In case of insufficient ventilation wear suitable respiratory equipment.

Hand Protection

Permeation resistant gloves.

Eye Protection

Chemical safety goggles or safety glasses with side-shields.

Skin and body protection

Wear cloth work clothing including long pants and long-sleeved shirts.

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.

9. Physical and chemical properties

Form:	liquid
Color:	Amber, Brown
Odor:	slight, Ether, Amine
Flash Point:	> 93.33 °C (> 200 °F)
Vapor Pressure:	1,227 hPa
Specific Gravity:	1.14
Solubility in Water:	Partially soluble
Bulk Density:	approximately 9.5 lb/gal

10. Stability and Reactivity

Hazardous Reactions

Hazardous polymerization does not occur.

Stability

Stable

Materials to avoid

oxidizing agents, Isocyanates

Hazardous decomposition products

By Fire: Carbon Dioxide; Carbon Monoxide; other aliphatic fragments which have not been determined

11. Toxicological Information

Toxicity Data for Aromatic Amino Polyol

Acute Oral Toxicity

LD50: 2,120 mg/kg (rat)

Acute dermal toxicity

LD50: > 2,000 mg/kg (rabbit)
Estimated Value

Skin Irritation

rabbit, Moderately irritating

Eye Irritation

rabbit, Severely irritating

Toxicity Data for Polymer

Acute Oral Toxicity

LD50: approximately 1,000 - 3,000 mg/kg (rat)

Acute Inhalation Toxicity

LC50: approximately > 200 mg/l, 1 hrs (rat)

Acute dermal toxicity

LD50: approximately > 2,000 mg/kg (rabbit)

Toxicity Data for Polyether Polyol

Acute Oral Toxicity

LD50: > 5,000 mg/kg (Rat)

Acute Inhalation Toxicity

LC0: 2516 mg/m³, 6 hrs (Rat)

Acute dermal toxicity

LD50: > 5,000 mg/kg (rabbit)

Eye Irritation

rabbit, No eye irritation

Mutagenicity

Genetic Toxicity in Vitro:

Ames: negative

Genetic Toxicity in Vivo:

negative (Drosophila melanogaster,)

Developmental Toxicity/Teratogenicity

rat, female, oral, gestation, NOAEL (teratogenicity): 10,000 mg/kg,

No Teratogenic effects observed at doses tested.

Toxicity Data for Hydrofluorocarbon

Acute Inhalation Toxicity

LC50: >200,000 ppm, 4 h (Rat)

Acute dermal toxicity

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

Skin Irritation

rabbit, Non-irritating

Eye Irritation

rabbit, Mild eye irritation

Sensitization

non-sensitizer (Dog)

Repeated Dose Toxicity

28 d, inhalation: NOAEL: 50,000 ppm, (Rat)

90 d, Inhalation: NOAEL: 2000 ppm, (Rat)

Mutagenicity

Genetic Toxicity in Vitro:

Cytogenetic assay: ambiguous (human lymphocytes, Metabolic Activation: with/without)

Ames: negative (Metabolic Activation: with/without)

Genetic Toxicity in Vivo:

Micronucleus Assay: negative (mouse)

Developmental Toxicity/Teratogenicity

No Teratogenic effects observed at doses tested.

Toxicity Data for Chlorinated Phosphate Ester**Acute Oral Toxicity**

LD50: 632 mg/kg (Rat)

Acute Inhalation Toxicity

LC50: > 17,800 mg/l, aerosol, 1 hrs (rat, Male/Female)

Acute dermal toxicity

LD50: > 5,000 mg/kg (rabbit, Male/Female)

Skin Irritation

Human, Patch Test, No skin irritation

rabbit, No skin irritation

Eye Irritation

rabbit, Draize, Exposure Time: 24 hrs, Mild eye irritation

rabbit, No eye irritation

Sensitization

dermal: non-sensitizer (guinea pig, Maximisation Test (GPMT))

dermal: non-sensitizer (Human, Patch Test)

Repeated Dose Toxicity

90 Days, oral: NOAEL: 36 mg/kg, (Rat, male)

Mutagenicity

Genetic Toxicity in Vitro:

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

Positive and negative results were reported.

Mammalian cell - gene mutation assay: positive (Mouse lymphoma cells (L5178Y/TK), Metabolic Activation: with)

Positive and negative results were reported.

Toxicity to Reproduction/Fertility

Other method, inhalation, daily, (rat, male)

Reproductive effects have been observed in animal studies.

Developmental Toxicity/Teratogenicity

rat, female, oral, gestation, daily, NOAEL (teratogenicity): > 1%, NOAEL (maternal): > 1%

No Teratogenic effects observed at doses tested. No fetotoxicity observed at doses tested.

Toxicity Data for Glycol

Acute Oral Toxicity

LD50: > 5,000 mg/kg (Rat)

Lowest lethal dose: 1 ml/kg (Human)

Acute dermal toxicity

LD50: 11.2 l/kg (rabbit)

Skin Irritation

rabbit, Exposure Time: 4 hrs, Non-irritating

rabbit, Draize, Slightly irritating

Eye Irritation

rabbit, Draize, Slightly irritating

Repeated Dose Toxicity

90 Days, Oral: NOAEL: 200 mg/kg, (Rat,)

6 months, Inhalation: NOAEL: < 0.02 mg/l, (rat,)

Mutagenicity

Genetic Toxicity in Vitro:

Ames: Negative results were reported in various in vitro studies. (Salmonella typhimurium, Metabolic Activation: with/without)

Genetic Toxicity in Vivo:

Cytogenetic assay: positive (hamster,)

Cytogenetic assay: negative (hamster,)

Toxicity to Reproduction/Fertility

One generation study, oral, (mouse) NOAEL (parental): 3.5%,

Fertility and mating indices were decreased. The survival and growth rates were reduced.

Developmental Toxicity/Teratogenicity

mouse, oral, NOAEL (maternal): 1,250 mg/kg,

Fetotoxicity seen only with maternal toxicity.

Toxicity Data for Dimethylethanolamine**Acute Oral Toxicity**

LD50: 2,000 mg/kg (Rat)

Acute Inhalation Toxicity

LC50: 6.1 mg/l, (Rat)

Acute dermal toxicity

LD50: 1,220 - 3,135 mg/kg (rabbit)

Skin Irritation

rabbit, Draize, Mild skin irritation

rabbit, OECD Guideline for Testing of Chemicals, No. 404, Exposure Time: 1 hrs, Corrosive

Eye Irritation

rabbit, Draize, Corrosive

Sensitization

dermal: sensitizer (mouse, Mouse local lymphoma assay)

Repeated Dose Toxicity

90 Days, inhalation: NOAEL: 24 ppm, (Rat, Male/Female, 6 hrs/day 5 days/week)

Irritation to lungs and nasal cavity. Reduced body weight gain.

Mutagenicity

Genetic Toxicity in Vitro:
(Salmonella typhimurium, Metabolic Activation: with/without)
Genetic Toxicity in Vivo:
Micronucleus Assay: (mouse, Male/Female, intraperitoneal)

Carcinogenicity

mouse, females, oral, 123 weeks,
negative

Toxicity to Reproduction/Fertility

inhalation, daily, (Rat, Female) NOAEL (parental): 10 ppm, NOAEL (F2): 100 ppm
No effects on Reproductive parameters observed at doses tested.

Developmental Toxicity/Teratogenicity

rat, female, inhalation, gestation, NOAEL (teratogenicity): 100 ppm, NOAEL (maternal): 10 ppm
No Teratogenic effects observed at doses tested. No fetotoxicity observed at doses tested.

12. Ecological Information**Ecological Data for Polyether Polyol****Biological Oxygen Demand (BOD)**

5 Days, 6 %
20 Days, 77 %

Chemical Oxygen Demand (COD)

1.84 mg/g

Acute and Prolonged Toxicity to Fish

LC50: > 10,000 mg/l (Fathead minnow (*Pimephales promelas*), 96 hrs)

Acute Toxicity to Aquatic Invertebrates

EC50: > 10,000 mg/l (Water flea (*Daphnia magna*), 48 hrs)

Toxicity to Microorganisms

> 5,000 mg/l, (16 hrs)

Ecological Data for Hydrofluorocarbon**Acute and Prolonged Toxicity to Fish**

LC50: > 97.9 mg/l (Rainbow trout (*Salmo gairdneri*), 48 h)

Acute Toxicity to Aquatic Invertebrates

EC50: 81.8 mg/l (Water flea (*Daphnia magna*), 96 h)

Ecological Data for Chlorinated Phosphate Ester**Biodegradation**

Aerobic, 0 %, Exposure time: 28 Days, Not readily biodegradable.

Bioaccumulation

Carp, Exposure time: 42 Days, approximately 0.8 - 2.8 BCF

Acute and Prolonged Toxicity to Fish

LC50: approximately 84 mg/l (Bluegill (*Lepomis macrochirus*), 96 hrs)

LC50: 51 mg/l (Fathead minnow (*Pimephales promelas*), 96 hrs)
LC50: 30 mg/l (Guppy (*Poecilia reticulata*), 96 hrs)

Acute Toxicity to Aquatic Invertebrates

EC50: approximately 131 mg/l (Water flea (*Daphnia magna*), 48 hrs)

Toxicity to Aquatic Plants

EC50: 45 mg/l, End Point: biomass (Green algae (*Scenedesmus subspicatus*), 72 hrs)
EC50: 41 - 55 mg/l, End Point: biomass (Green algae (*Selenastrum capricornutum*), 96 h)

Toxicity to Microorganisms

EC50: 295 mg/l, (Photobacterium phosphoreum, 30 min)
EC50: 784 mg/l, (Activated sludge microorganisms, 3 hrs)

Ecological Data for Glycol

Biological Oxygen Demand (BOD)

5 Days, 4 %
20 Days, 53 %

Acute and Prolonged Toxicity to Fish

LC50: > 10,000 mg/l (Fathead minnow (*Pimephales promelas*), 48 hrs)
LC0: > 1,000 mg/l (Bluegill (*Lepomis macrochirus*), 96 h)

Acute Toxicity to Aquatic Invertebrates

EC50: > 10,000 mg/l (Water flea (*Daphnia magna*), 24 hrs)

Toxicity to Aquatic Plants

NOEC: 100 mg/l, End Point: growth (*selenastrum capricornutum*, 7 d)

Toxicity to Microorganisms

> 10,000 mg/l, (Other bacteria)

Ecological Data for Dimethylethanolamine

Biodegradation

aerobic, > 90 %, Exposure time: 13 Days, Readily biodegradable.

Biological Oxygen Demand (BOD)

285 O₂/g

Chemical Oxygen Demand (COD)

485 O₂/g

Acute and Prolonged Toxicity to Fish

LC50: 81 mg/l (Fathead minnow (*Pimephales promelas*), 96 h)
LC50: 100 - 220 mg/l (Golden orfe (*Leuciscus idus*), 96 h)

Acute Toxicity to Aquatic Invertebrates

EC50: 98 mg/l (Water flea (*Daphnia magna*), 48 h)

Toxicity to Aquatic Plants

EC50: 35 mg/l, (Green algae (*Scenedesmus subspicatus*), 72 h)

Toxicity to Microorganisms

EC50: > 8,000 mg/l, (*Pseudomonas putida*, 71 hrs)

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.

14. Transportation information

Land transport (DOT)

Non-Regulated

Sea transport (IMDG)

Non-Regulated

Air transport (ICAO/IATA)

Proper Shipping Name: Aviation regulated liquid, n.o.s. (contains Hydrofluorocarbon)
Hazard Class or Division: 9
UN-No: UN3334
Packaging Group:
Hazard Label(s): Miscellaneous

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

**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>
15 - 25%	Aromatic Amino Polyol	CAS# is a trade secret
15 - 25%	Polymer	CAS# is a trade secret
>=1%	Polyester Polyol	CAS# is a trade secret
>=1%	Polyether Polyol	CAS# is a trade secret
7 - 13%	Hydrofluorocarbon	460-73-1
5 - 10%	Chlorinated Phosphate Ester	CAS# is a trade secret
1 - 5%	Glycol	CAS# is a trade secret
<=2%	Dimethylethanolamine	108-01-0

MA Right to Know Extraordinarily Hazardous Substance List:

<u>Weight %</u>	<u>Components</u>	<u>CAS-No.</u>
<20 ppm	Formaldehyde	50-00-0
<20 ppm	Ethylene Oxide	75-21-8

California Prop. 65:

Warning! This product contains chemical(s) known to the State of California to be Carcinogenic. - Developmental toxin. - Female reproductive toxin.

<u>Weight %</u>	<u>Components</u>	<u>CAS-No.</u>
<20 ppm	Formaldehyde	50-00-0
<75 ppm	Toluene	108-88-3
<20 ppm	Ethylene Oxide	75-21-8

16. Other Information

NFPA 704M Rating

Health	2
Flammability	1
Reactivity	0
Other	

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

HMIS Rating

Health	2*
Flammability	1
Physical Hazard	0

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

* = Chronic Health Hazard

The method of hazard communication for Baysystems North America is comprised of Product Labels and Material Safety Data Sheets. HMIS and NFPA ratings are provided by Baysystems North America as a customer service.

Contact Person: Product Safety Department
Telephone: (412) 777-2835
MSDS Number: 000000005992
Version Date: 02/02/2006
Report Version: 1.3

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