1. Product and Company Identification

Product Name: BAYSEAL 2.0
Material Number: 6725023
Chemical Family: Polyol System

2. Hazards Identification

Emergency Overview

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 a temporary fogging of the eyes. May affect nervous system. May
cause irregular heartbeat. May cause kidney damage. May cause liver 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: Hydrofluorocarbon
May cause respiratory tract irritation with symptoms of coughing, sore throat and runny nose. May induce
cardiac arrhythmia (irregular heartbeat) in some individuals. Vapor can reduce oxygen available for
breathing.

For Component: Chlorinated Phosphate Ester
May cause respiratory tract irritation with symptoms of coughing, sore throat and runny nose.

For Component: Ethylene Glycol
Causes respiratory tract irritation with symptoms of coughing, sore throat and runny nose. Inhalation of the
glycol component is unlikely due to the low vapor pressure. If misted or handled at elevated temperatures, high concentrations can produce irritation and/or difficulty breathing. May cause nervous system effects which can include symptoms of dizziness, incoordination, headache, numbness, and/or confusion. May induce cardiac arrhythmia (irregular heartbeat) in some individuals.

For Component: Tertiary Amine
May cause pulmonary edema with symptoms of breathing difficulty and tightness of chest.

Skin
Acute Skin
For Component: Hydrofluorocarbon
Slightly toxic by skin absorption. May cause slight irritation.

For Component: Chlorinated Phosphate Ester
May cause slight irritation.

For Component: Tertiary Amine
Corrosive with symptoms of reddening, itching, swelling, burning and possible permanent damage.

For Component: Ethylene Glycol
If sufficient amounts are absorbed, systemic toxicity may occur with symptoms similar to those described in acute inhalation. May cause slight irritation.

For Component: Tertiary Amine
Toxic by skin absorption.

Chronic Skin
For Component: Tertiary Amine
Repeated and prolonged contact may cause an allergic skin reaction in sensitive individuals.

Eye
Acute Eye
For Component: Hydrofluorocarbon
May cause slight irritation.

For Component: Chlorinated Phosphate Ester
Not expected to be irritating.

For Component: Tertiary Amine
Corrosive with symptoms of reddening, tearing, swelling, burning and possible permanent damage.

For Component: Ethylene Glycol
May cause slight irritation.

For Component: Tertiary Amine
Corrosive with symptoms of reddening, tearing, swelling, burning and possible permanent damage.

Chronic Eye
For Component: Tertiary Amine
Prolonged vapor contact may cause conjunctivitis.

Ingestion
Acute Ingestion
For Component: Chlorinated Phosphate Ester
May be harmful if swallowed. Symptoms of ingestion may include abdominal pain, nausea, vomiting, and diarrhea. Moderately toxic by ingestion.
For Component: Ethylene Glycol
May be fatal if swallowed. Symptoms of ingestion may include abdominal pain, nausea, vomiting, and diarrhea. May cause nervous system effects which can include symptoms of dizziness, incoordination, headache, numbness, and/or confusion.

For Component: Tertiary Amine
Corrosive to the digestive tract with symptoms of burning and ulceration.

Chronic Ingestion
For Component: Chlorinated Phosphate Ester
May cause liver damage. May cause kidney damage.

For Component: Ethylene Glycol
May cause blood disorders. May cause brain damage. May cause kidney damage. May cause liver damage. May cause lung damage.

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

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Weight %</th>
<th>Components</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 20%</td>
<td>Hydrofluorocarbon</td>
<td>460-73-1</td>
</tr>
<tr>
<td>7 - 13%</td>
<td>Chlorinated Phosphate Ester</td>
<td>CAS# is a trade secret</td>
</tr>
<tr>
<td>3 - 7%</td>
<td>Brominated Flame Retardant</td>
<td>CAS# is a trade secret</td>
</tr>
<tr>
<td>3 - 7%</td>
<td>Tertiary Amine</td>
<td>CAS# is a trade secret</td>
</tr>
<tr>
<td>1 - 5%</td>
<td>Ethylene Glycol</td>
<td>107-21-1</td>
</tr>
<tr>
<td>1 - 5%</td>
<td>Tertiary Amine</td>
<td>CAS# is a trade secret</td>
</tr>
</tbody>
</table>

4. First Aid Measures

Eye Contact
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

Ethylene Glycol (107-21-1)
US. ACGIH Threshold Limit Values
- Ceiling Limit Value: 100 mg/m3 (Aerosol.)
US. ACGIH Threshold Limit Values
- Hazard Designation: Group A4 Not classifiable as a human carcinogen.

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.

<table>
<thead>
<tr>
<th><strong>9. Physical and chemical properties</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form:</strong> liquid</td>
</tr>
<tr>
<td><strong>Color:</strong> Amber, Brown</td>
</tr>
<tr>
<td><strong>Odor:</strong> slight, Ether, Amine</td>
</tr>
<tr>
<td><strong>pH:</strong> 9.6</td>
</tr>
<tr>
<td><strong>Freezing Point:</strong> Not Established</td>
</tr>
<tr>
<td><strong>Boiling Point/Range:</strong> Not Established</td>
</tr>
<tr>
<td><strong>Flash Point:</strong> &gt; 93.33 °C (&gt; 200 °F)</td>
</tr>
<tr>
<td><strong>Vapor Pressure:</strong> Not Established</td>
</tr>
<tr>
<td><strong>Specific Gravity:</strong> Not Established</td>
</tr>
<tr>
<td><strong>Solubility in Water:</strong> Partially soluble</td>
</tr>
<tr>
<td><strong>Bulk Density:</strong> Not Established</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>10. Stability and Reactivity</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hazardous Reactions</strong></td>
</tr>
<tr>
<td>Hazardous polymerization does not occur.</td>
</tr>
<tr>
<td><strong>Stability</strong></td>
</tr>
<tr>
<td>Stable</td>
</tr>
<tr>
<td><strong>Materials to avoid</strong></td>
</tr>
<tr>
<td>oxidizing agents, Isocyanates</td>
</tr>
<tr>
<td><strong>Hazardous decomposition products</strong></td>
</tr>
<tr>
<td>By Fire: Carbon Dioxide; Carbon Monoxide; other aliphatic fragments which have not been determined</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>11. Toxicological Information</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Toxicity Data for Hydrofluorocarbon</strong></td>
</tr>
<tr>
<td><strong>Acute Inhalation Toxicity</strong></td>
</tr>
<tr>
<td>LC50: &gt;200,000 ppm, 4 h (Rat)</td>
</tr>
<tr>
<td><strong>Acute dermal toxicity</strong></td>
</tr>
<tr>
<td>LD50: &gt; 2,000 mg/kg (Rat)</td>
</tr>
<tr>
<td><strong>Skin Irritation</strong></td>
</tr>
<tr>
<td>rabbit, Non-irritating</td>
</tr>
<tr>
<td><strong>Eye Irritation</strong></td>
</tr>
<tr>
<td>rabbit, Mild eye irritation</td>
</tr>
<tr>
<td><strong>Sensitization</strong></td>
</tr>
<tr>
<td>non-sensitizer (Dog)</td>
</tr>
<tr>
<td><strong>Repeated Dose Toxicity</strong></td>
</tr>
</tbody>
</table>
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 Tertiary Amine**

**Acute Oral Toxicity**
LD50: 2,000 - 5,000 mg/kg (rat)
**Acute dermal toxicity**  
LD50: 1,000 - 2,000 mg/kg (rabbit)

**Skin Irritation**  
rabbit, Corrosive

**Eye Irritation**  
rabbit, Corrosive

**Toxicity Data for Ethylene Glycol**

**Acute Oral Toxicity**  
LD50: 4,700 mg/kg (Rat)

**Acute Inhalation Toxicity**  
LC50: > 200 mg/m3, 2 hrs (rat)

**Acute dermal toxicity**  
LD50: 10,600 mg/kg (rabbit)

**Skin Irritation**  
rabbit, Draize Test, Slightly irritating

**Eye Irritation**  
rabbit, Draize Test, Slightly irritating

**Repeated Dose Toxicity**  
16 Weeks, Inhalation: NOAEL: 3.49 mg/l, (Rat, Male/Female, daily)

**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:  
Dominant Lethal Assay: negative (rat, male, oral)  
Drosophila SLRL test: positive (Drosophila melanogaster, )  
Micronucleus Assay: negative (mouse, )

**Carcinogenicity**  
rat, oral, 2 years, daily  
Did not show carcinogenic effects in animal experiments.  
mouse, dermal, lifetime, daily  
negative

**Toxicity to Reproduction/Fertility**  
Fertility Screening, oral, (mouse, Male/Female) NOAEL (parental): 2,500 mg/kg, NOAEL (F1): > 750 mg/kg.  
No effects on Reproductive parameters observed at doses tested.  
Three generation study, oral, daily, (rat) NOAEL (parental): > 1,000 mg/kg, NOAEL (F1): > 1,000 mg/kg, NOAEL (F2): > 1,000 mg/kg.

**Developmental Toxicity/Teratogenicity**  
rabbit, female, dermal, NOAEL (teratogenicity): approximately 2,000 mg/kg, NOAEL (maternal): > 1,000 mg/kg.  
Fetotoxicity has been observed in animal studies. Teratogenic effects have been observed in animal studies.  
Rat, female, oral, NOAEL (teratogenicity): < 500 mg/kg, NOAEL (maternal): 1,000 mg/kg.
Fetotoxicity has been observed in animal studies. Teratogenic effects have been observed in animal studies.

**Toxicity Data for Tertiary Amine**

**Acute Oral Toxicity**
LD50: 3,250 uL/kg (Rat)
LD50: 2,800 mg/kg (Rat)

**Acute dermal toxicity**
LD50: > 1,000 mg/kg (rabbit)

**Skin Irritation**
rabbit, Corrosive

12. Ecological Information

**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 Ethylene Glycol**

**Biodegradation**
Aerobic, > 40 %, Exposure time: 20 Days

**Biological Oxygen Demand (BOD)**
5 Days, 0.78 - 1.81 g/g

**Chemical Oxygen Demand (COD)**
1.19 - 1.29 g/g
Theoretical Biological Oxygen Demand (ThBOD)
1.26 - 1.29 g/g

Bioaccumulation
Golden orfe, Exposure time: 3 Days, 10 BCF

Acute and Prolonged Toxicity to Fish
41,000 mg/l (Coho salmon, silver salmon (Oncorhynchus kisutch), 96 hrs)
LC50: 49,000 - 57,000 mg/l (Fathead minnow (Pimephales promelas), 96 hrs)
LC50: 18,500 mg/l (Rainbow trout (Salmo gairdneri), 96 hrs)

Acute Toxicity to Aquatic Invertebrates
EC50: 46,300 - 57,600 mg/l (Water flea (Daphnia magna), 48 hrs)
EC50: 13,900 - 29,700 mg/l (Ceriodaphnia sp, 48 hrs)

Toxicity to Aquatic Plants
EC50: 6,500 - 13,000 mg/l, End Point: growth (Green algae (Selenastrum capricornutum), 96 hrs)

Toxicity to Microorganisms
EC50: 10,000 mg/l, (Pseudomonas putida, 16 hrs)
EC50: 621 mg/l, (Photobacterium phosphoreum, 30 min)

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: 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
Ethylene Glycol Reportable quantity: 5,000 lbs

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
Ethylene Glycol

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:

<table>
<thead>
<tr>
<th>Weight %</th>
<th>Components</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;=1%</td>
<td>Polyester Polyol</td>
<td>10 - 20% Hydrofluorocarbon 460-73-1</td>
</tr>
<tr>
<td></td>
<td>Chlorinated Phosphate Ester CAS# is a trade secret</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Brominated Flame Retardant CAS# is a trade secret</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tertiary Amine CAS# is a trade secret</td>
<td></td>
</tr>
<tr>
<td>1 - 5%</td>
<td>Ethylene Glycol 107-21-1</td>
<td></td>
</tr>
</tbody>
</table>

New Jersey Environmental Hazardous Substances List and/or New Jersey RTK Special Hazardous Substances Lists:

<table>
<thead>
<tr>
<th>Weight %</th>
<th>Components</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 5%</td>
<td>Ethylene Glycol 107-21-1</td>
<td></td>
</tr>
</tbody>
</table>

Pennsylvania Right to Know Special Hazard Substance List:

<table>
<thead>
<tr>
<th>Weight %</th>
<th>Components</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.075%</td>
<td>1.4-Dioxane 123-91-1</td>
<td></td>
</tr>
</tbody>
</table>

MA Right to Know Extraordinarily Hazardous Substance List:

<table>
<thead>
<tr>
<th>Weight %</th>
<th>Components</th>
<th>CAS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;0.075%</td>
<td>1.4-Dioxane 123-91-1</td>
<td></td>
</tr>
</tbody>
</table>
California Prop. 65:
Warning! This product contains chemical(s) known to the State of California to be Carcinogenic.

Weight %  | Components  | CAS-No.
---|---|---
<0.075%  | 1,4-Dioxane  | 123-91-1
<15 ppb  | Formaldehyde  | 50-00-0

16. Other Information

**NFPA 704M Rating**

<table>
<thead>
<tr>
<th>NFPA</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>2</td>
</tr>
<tr>
<td>Flammability</td>
<td>1</td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

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

**HMIS Rating**

<table>
<thead>
<tr>
<th>HMIS</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>2*</td>
</tr>
<tr>
<td>Flammability</td>
<td>1</td>
</tr>
<tr>
<td>Physical Hazard</td>
<td>0</td>
</tr>
</tbody>
</table>

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: 000000006390
Version Date: 02/06/2007
Report Version: 1.7

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