



SAFETY DATA SHEET

1. Identification

FortiSystems
16601 Central Green Blvd., Ste. 100
Houston, TX 77032

TRANSPORTATION EMERGENCY

CALL: 833-840-2777

INTERNATIONAL: 833-840-2777

NON-TRANSPORTATION

Emergency Phone:

832-922-2926

Information Phone:

833-840-2777

Product Name: Forticell 2.0
Chemical Family: Polyol System
Use: Cured Spray Foam Insulation

2. Hazards Identification

GHS Classification

Health: 0
Flammability: 1
Reactivity: 0

GHS Label Elements

Hazard pictograms:

Signal word: Danger

Hazard statements: Causes skin irritation.
Causes serious eye damage.
Vapors can cause temporary corneal edema with symptoms of blurred vision or the appearance of halos around bright objects.

Precautionary statements:

Prevention:

Wash skin and face thoroughly after handling.
Wear eye and face protection.
Wear protective gloves.

Response:

IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a doctor or emergency medical facility (i.e., 911).
IF ON SKIN: Wash with plenty of soap and water.

If skin irritation occurs: Get medical attention.
Take off contaminated clothing and wash before reuse.

3. Composition/Information on Ingredients

Hazardous Components

<u>Weight Percent</u>	<u>Components</u>	<u>CAS-No.</u>	<u>Classification</u>
40 - 70%	Polyurethane Polymer	CAS# is a trade secret	Acute toxicity Category 4 Oral. Skin irritation Category 2. Serious eye damage Category 1.
1 - 5%	Triethanolamine	CAS# is a trade secret	Eye irritation Category 2B. Simple Asphyxiant.
3 - 10%	Chlorinated Phosphate Ester	CAS# is a trade secret	Acute toxicity Category 4 Oral. Eye irritation Category 2B.
1 - 5%	Polyether Polyol	CAS# is a trade secret	Skin irritation Category 2. Eye irritation Category 2A.
1 - 5%	Catalyst	CAS# is a trade secret	Flammable liquids Category 3. Acute toxicity Category 4 Oral. Acute toxicity Category 3 Inhalation. Acute toxicity Category 4 Dermal. Skin corrosion Category 1A. Serious eye damage Category 1. HNO ₂ - Halo vision. Flammable liquids Category 3.
1 - 10%	Hydrofluorocarbons	CAS# 460-73-1	

The specific chemical identity and/or exact percentage of component(s) have been withheld as a trade secret.

4. First Aid Measures

Most Important Symptom(s)/Effect(s)

Acute: Causes serious eye damage with symptoms of eye burns, corneal injury, and possible blindness., Causes skin irritation with symptoms of reddening, itching, and swelling., Vapor can reduce oxygen available for breathing., Vapors can cause temporary corneal edema with symptoms of blurred vision or the appearance of halos around bright objects.

Eye Contact

In case of contact, flush eyes with plenty of lukewarm water. 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 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. Firefighting Measures

Suitable Extinguishing Media: Carbon dioxide (CO₂), Dry chemical, Foam, water spray for large fires.

Unsuitable Extinguishing Media: High volume water jet

Fire Fighting Procedure

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 the risk of rupture.

Hazardous Decomposition Products

By Fire: ; Carbon Dioxide; Carbon Monoxide Hydrogen cyanide, Nitrogen oxides (NO_x), Amines, Hydrogen chloride gas, Hydrogen fluoride, Carbonyl halides, Oxides of phosphorus, Other hazardous decomposition products may be formed.

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

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.

Storage Period:

6 Months

Storage Temperature

Minimum: 21.11 °C (70 °F)

Maximum: 26.67 °C (80 °F)

Storage Conditions

Store materials between 70°F to 80°F (21°C to 27°C) in a dry and well ventilated area for a minimum of 48 hours prior to application of material. The transit temperature range is 32°F to 100°F (0°C to 38°C). The pressure in sealed containers can increase under the influence of heat. Protect against heat and direct sunlight.

Substances to Avoid

Oxidizing agents, Isocyanates

8. Exposure Controls/Personal Protection**Exposure Limits**

Any component which is listed in section 3 and is not listed in this section does not have a known ACGIH TLV, OSHA PEL or supplier recommended occupational exposure limit.

Personal protective equipment

Avoid contact with skin, eyes and clothing.

Industrial Hygiene/Ventilation Measures

When handling this product, ventilation of the work area is recommended.

Respiratory Protection

In case of insufficient ventilation, wear suitable respiratory equipment., In spray applications, an organic vapor/particulate respirator or air supplied unit is necessary.

Hand Protection

When this product is sprayed in combination with polymeric MDI ("A" side), fabric gloves coated in nitrile, neoprene, butyl or PVC are recommended. When handling liquid product, nitrile, neoprene, butyl or PVC gloves are recommended.

Eye Protection

Chemical resistant goggles must be worn.

Skin Protection

Wear as appropriate:, disposable one-piece overall with integral hood, Impervious protective clothing.

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

State of Matter: liquid
Color: Amber, Brown
Odor: slight, Ether, Amine
Odor Threshold: No Data Available

pH:	7-10
Freezing Point:	No Data Available
Setting Point:	No Data Available
Melting Point:	No Data Available
Boiling Point:	No Data Available
Flash Point:	>120° C / 248° F
Evaporation Rate:	No Data Available
Lower explosion limit:	No Data Available
Upper Explosion Limit:	No Data Available
Vapor Pressure:	No Data Available
Vapor Density:	>5
Density:	No Data Available
Relative Vapor Density:	1.15 – 1.3
Specific Gravity:	1.06
Solubility in Water:	Partially soluble
Partition Coefficient: n-octanol/water:	No Data Available
Auto-ignition Temperature:	No Data Available
Decomposition Temperature:	No Data Available
Dynamic Viscosity:	No Data Available
Kinematic Viscosity:	No Data Available
Bulk Density:	No Data Available

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; Hydrogen cyanide, Nitrogen oxides (NOx), Amines, Hydrogen chloride gas, Hydrogen fluoride, Carbonyl halides, Oxides of phosphorus, Other hazardous decomposition products may be formed.

11. Toxicological Information

Likely Routes of Exposure:

Skin Contact
Eye Contact
Inhalation

Health Effects and Symptoms

Acute: Causes serious eye damage with symptoms of eye burns, corneal injury, and possible blindness., Causes skin irritation with symptoms of reddening, itching, and swelling., Vapor can reduce oxygen available for breathing., Vapors can cause temporary corneal edema with symptoms of blurred vision or the appearance of halos around bright objects.

Chronic: Not expected to cause adverse chronic health effects.

Toxicity Data for: FORTICELL WALL-2.0

No data available for this product.

Please find the data available for the components.

Acute Oral Toxicity

Acute toxicity estimate: 2159 mg/kg (Calculation method)

Acute Dermal Toxicity

Acute toxicity estimate: > 5000 mg/kg (Calculation method)

Toxicity Data for: Polymer

Toxicity Note

Toxicity data is based on a similar product.

Acute Oral Toxicity

LD50: 1500 mg/kg (rat)

Acute Dermal Toxicity

LD50: 1230 mg/kg (rabbit)

Toxicity Data for: Hydrofluorocarbon

Acute Inhalation Toxicity

LC50: > 200000 ppm, 4 h, gas (rat)

Acute Dermal Toxicity

LD50: > 2000 mg/kg (rabbit)

Skin Irritation

Non-irritating

Eye Irritation

rabbit, Mild eye irritation

Sensitization

Skin sensitisation:: non-sensitizer

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)

negative

Developmental Toxicity/Teratogenicity

No Teratogenic effects observed at doses tested.

Toxicity Data for: Chlorinated Phosphate Ester

Acute Oral Toxicity

LD50: $\geq$ 1150 mg/kg (rat)

Acute Inhalation Toxicity

LC50: $>$ 7.14 mg/l, 4 h, dust/mist (rat, male/female)

Skin Irritation

human skin, Patch Test, Non-irritating

human skin, Patch Test, Non-irritating

Eye Irritation

rabbit, OECD Test Guideline 405, Exposure Time: 24 h, Slightly irritating

Sensitization

dermal: non-sensitizer (Guinea pig, Maximization Test)

dermal: non-sensitizer (Human, Patch Test)

Repeated Dose Toxicity

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

13 weeks, oral: NOAEL: 2500 ppm, LOAEL: 800 ppm, (Rat, male, daily)

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.

Genetic Toxicity in Vivo:

Micronucleus test: negative (Mouse, male/female, intraperitoneal)
negative

Toxicity to Reproduction/Fertility

Other method, inhalation, daily, (rat, male) Reproductive effects have been observed in animal studies. Two-generation study, (feeding study) oral, daily, (rat, male/female) NOAEL (parental): 85 mg/kg,

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. rat, female, oral, gestation, NOAEL (teratogenicity): 1,000 mg/kg,
NOAEL (maternal): 1,000 mg/kg,

Toxicity Data for: Polyether Polyol

Toxicity Note

No data available for this component.

Acute Oral Toxicity

no data available

Toxicity Data for: Tertiary Amine

Acute Oral Toxicity

LD50: 1182.7 mg/kg (rat, male/female) (OECD Test Guideline 401)

LD50: 1203.2 mg/kg (rat, male) (OECD Test Guideline 401)

LD50: 1220.1 mg/kg (rat, female) (OECD Test Guideline 401)

Acute Inhalation Toxicity

LC50: 1641 ppm, 4 h, vapour (rat) (OECD Test Guideline 403)

Acute Dermal Toxicity

LD50: 1370 mg/kg (rabbit)

Skin Irritation

rabbit, OECD Test Guideline 404, Exposure Time: 4 h, Corrosive

Eye Irritation

rabbit, Draize, Corrosive

Sensitization

dermal: sensitizer (Mouse, Mouse local lymphoma assay)

Respiratory sensitization: negative (Human)

Buehler Test: non-sensitizer (Guinea pig)

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:

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

Genetic Toxicity in Vivo:

In vivo micronucleus test: negative (Mouse, male/female, intraperitoneal)
negative

Carcinogenicity

Mouse, females, oral, 123 weeksnegative

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.Fertility Screening, Oral, daily, (rat)

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.

Other Relevant Toxicity Information

May cause irritation of respiratory tract.

Toxicity Data for: Tertiary Amine

Acute Dermal Toxicity

LD50: 1919 mg/kg (rabbit)

Skin Irritation

rabbit, Severely irritating

Eye Irritation

severe irritant

Mutagenicity

Genetic Toxicity in Vitro:

Ames test: negative

Toxicity Data for: Tertiary Amine

Acute Oral Toxicity

LD50: 1630 mg/kg (rat)

Acute Inhalation Toxicity

LC50: 308 mg/l, 4 h, vapour (rat)

4 hour test is calculated.

LC50: 290 ppm, 6 h, vapour (rat)

Acute Dermal Toxicity

LD50: 234.92 mg/kg (rabbit)

Skin Irritation

Severely irritating

Eye Irritation

severe irritant

Other Relevant Toxicity Information

May cause irritation of respiratory tract.

Carcinogenicity:

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

12. Ecological Information

Ecological Data for: FORTICELL 2.0

No data available for this product. Please find the data available for the components.

Ecological Data for Polymer

Additional Ecotoxicological Remarks

No data available for this component.

Ecological Data for Hydrofluorocarbon

Acute and Prolonged Toxicity to Fish

LC50: > 81.8 mg/l (Rainbow trout (*Salmo gairdneri*), 48 h)

Acute Toxicity to Aquatic Invertebrates

EC50: > 97.9 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

Cyprinus carpio (Carp), Exposure time: 42 Days, ca. 0.8 - 2.8 BCF

Acute and Prolonged Toxicity to Fish

LC50: ca. 84 mg/l (Bluegill (*Lepomis macrochirus*), 96 h)

LC50: 51 mg/l (Fathead minnow (*Pimephales promelas*), 96 h)

LC50: 30 mg/l (Guppy (*Poecilia reticulata*), 96 h)

Acute Toxicity to Aquatic Invertebrates

EC50: ca. 131 mg/l (Water flea (*Daphnia magna*), 48 h)

Toxicity to Aquatic Plants

EC50: 45 mg/l, End Point: biomass (Green algae (*Scenedesmus subspicatus*), 72 h)

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 h)

Ecological Data for Tertiary Amine**Biodegradation**

aerobic, > 90 %, Exposure time: 13 Days, i.e. readily biodegradable

Biochemical 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 h)

Ecological Data for Tertiary Amine
Additional Ecotoxicological Remarks
No data available for this component.

Ecological Data for Tertiary Amine
Biodegradation
Not readily biodegradable.

Acute and Prolonged Toxicity to Fish
LC50: 220 mg/l (Golden orfe (*Leuciscus idus*), 96 h)

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 number:	UN3334
Packaging Group:	III
Hazard Label(s):	MISCELLANEOUS

15. Regulatory Information

United States Federal Regulations
US. Toxic Substances Control Act: Listed on the TSCA Inventory.

No substances are subject to TSCA 12(b) export notification requirements.

US. EPA CERCLA Hazardous Substances (40 CFR 302) Components:
None

SARA Section 311/312 Hazard Categories:
Acute 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):**

Under RCRA, it is the responsibility of the person who generates a solid waste, as defined in 40 CFR 261.2, to determine if that waste is a hazardous waste.

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 SDS 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 percent</u>	<u>Components</u>	<u>CAS-No.</u>
30 - 60%	Polymer	CAS# is a trade secret
>=1%	Polyester Polyol	CAS# is a trade secret
>=1%	Polyether Polyol	CAS# is a trade secret
5 - 10%	Hydrofluorocarbon	CAS# is a trade secret
3 - 7%	Chlorinated Phosphate Ester	CAS# is a trade secret
>=1%	Brominated Aromatic Polyalcohol	CAS# is a trade secret
1 - 5%	Polyether Polyol	CAS# is a trade secret
1 - 5%	Tertiary Amine	CAS# is a trade secret
0.1 - 1%	Tertiary Amine	CAS# is a trade secret
0.1 - 1%	Tertiary Amine	CAS# is a trade secret

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

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
1 - 5%	Tertiary Amine	CAS# is a trade secret
0.1 - 1%	Ethylene Glycol	107-21-1

Pennsylvania Right to Know Special Hazard Substance List:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
<0.1%	Formaldehyde	50-00-0
<0.1%	1,4-Dioxane	123-91-1

Massachusetts Right to Know Extraordinarily Hazardous Substance List:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
<0.1%	Formaldehyde	50-00-0
<0.1%	1,4-Dioxane	123-91-1

California Prop. 65:

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

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
------------------------------	--------------------------	-----------------------

CFATS (Chemical Facility Anti-Terrorism Standards) Chemicals

To the best of our knowledge, this product does not contain Appendix A Chemicals of Interest (COI), at or above the Screening Threshold Quantity (STQ), as defined by the Department of Homeland Security Chemical Facility Anti-terrorism Standard (CFATS, 6 CFR Part 27).

Based on information provided by our suppliers, this product is considered "DRC Conflict Free" as defined by the SEC Conflict Minerals Final Rule (Release No. 34-67716; File No. S7-40-10; Date: 2012-08-22).

16. Other Information

The method of hazard communication for FortiSystems is comprised of product labels and safety data sheets. Safety data sheets for all of our products and general product declarations are available for download at www.forti-systems.com.

Contact:	Product Safety Department
Telephone:	800-575-8966
SDS Number:	112000031324
Version Date:	06/06/2016
SDS Version:	4.0

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

|| Changes since the last version are highlighted in the margin. This version replaces all previous versions.