Safety Data Sheets (SDS)
Updated: May 5, 2023

This file contains Safety Data Sheets for the products in the EndRot Kit. These are two-component systems. It is imperative that you know whether you need information on the Resin or the Hardener.

If this is a medical emergency, call 911 or your local poison control center. Seek medical attention.

For technical assistance, call System Three Technical Support at 253-333-8118 option 2.

These SDS are provided pursuant to 29 CFR 1910.1200(g).

SAFETY DATA SHEET

1. Product Identification

Product name	Sculpwood Putty Resin, Part A
SDS Number	1600A00
Product type	Epoxy Resin Mixture
Recommended use of the chemical and restrictions on use	Recommended for, but not limited to, the repair of damaged or rotted wood.
Restrictions	None known.
Manufacturer/Supplier information	
Company name	SYSTEM THREE RESINS, INC.
Address	8517 Commerce Place Dr NE Lacey, WA 98516 United States
Telephone	1-253-333-8118
Website	www.systemthree.com
Email	support@systemthree.com
Emergency Contact	CHEMTEL (U.S. and CANADA) 1-800-704-9215 CHEMTEL (Outside the U.S.) – Call Collect accepted +1-360-256-7365

2. Hazard(s) Identification

Classification of substance or mixture/Signal Word

WARNING
Skin Corrosion/Irritation – Category 2
Serious Eye Damage/Eye Irritation – Category 2
Skin Sensitization – Category 1
Specific Target Organ Toxicity (Single Exposure) [Respiratory tract irritation] – Category 3

GHS Label Elements
Hazard Pictograms

Hazard Statements/Classification of substance or mixture

H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary statements

Precautionary Statements
Prevention

P261 Avoid breathing fumes/vapors.
P264 Wash hands and exposed skin thoroughly after handling.
P272 Contaminated work clothes should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear eye protection/face protection. Wear protective gloves.

	P281 Use personal protective equipment as required.
Response	P302 + P352 IF ON SKIN: Wash with plenty of soap and water. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
Storage	P405 Store locked up.
Disposal	P501 Disposal of contents/container to be specified in accordance with regulations.
Hazards not otherwise classified (HNOC)	None known.

3. Composition/Information On Ingredients

Chemical Name	CAS Number	Content (%)
Diglycidyl Ether of Bisphenol A	25068-38-6	50 – 60%
Neopentyl Glycol Diglycidyl Ether	17557-23-2	10-15%
Diglycidyl Ether of Bisphenol F	28064-14-4	3 – 8%

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. Occupational exposure limits, if available, are listed in Section 8.

4. First-Aid Measures

Skin contact	Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. Wash clothing before reuse. Discard items that cannot be decontaminated, including leather articles such as shoes, belts and watchbands. Safety shower should be located in immediate work area.
Eye contact	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Get medical attention. Suitable emergency eye wash facility should be available in work area.
Ingestion	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	No specific treatment.

5. Fire-Fighting Measures

Suitable extinguishing media	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous decomposition products	Decomposition products may include carbon monoxide, carbon dioxide, aldehydes, acids and halogenated compounds. Toxic fumes may be evolved when this product is burned.
Special protective actions for fire-fighters	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk.
Special protective equipment for fire-fighters	Fire fighters should wear appropriate protection equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in a positive pressure mode.
Further information	None.

6. Accidental Release Measures

Personal precautions	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. Proper PPE includes: disposable gloves, eye protection and skin protection.
Emergency procedures	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For nonemergency personnel".
Methods and materials for containment/cleanup	
Small Spill	Stop leak if without risk. Move containers from spill area. Absorb with an inert absorbent material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor. Wash the spill area clean with water and detergent, observing environmental requirements.
Large Spills	Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, watercourses, basements or confined areas. Contain and collect spillage with inert, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Wash the spill area clean with water and detergent, observing environmental requirements. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

7. Handling and Storage

Precautions for safe handling	Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Avoid breathing vapor or mist. Do not swallow. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
Precautions/Recommendations for safe/proper storage	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits	None established.
Appropriate engineering controls	Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
Environmental exposure controls	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
Individual protection measures/Personal protective equipment	
Eye/face protection	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: chemical splash goggles.
Hand protection	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Skin protection	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator

	selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Special instructions for protection and hygiene	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

9. Physical and Chemical Properties

Chemical family	Epoxy resin
Appearance	White Putty
Physical State	
Form	Putty
Color	White
Odor	Characteristic odor
Density (Specific Gravity)	0.72 g/cm^3
Viscosity	450,000 - 500,000 CPS @77°F
pH	N/A
Melting point/freezing point	N/A
Initial boiling point and boiling range	N/A
Flash point	N/A
Evaporation rate	Slower than ether
Flammability (solid, gas)	N/A
Upper/lower flammability limit (by volume)	N/A
Upper flammability limit (by volume)	N/A
Lower flammability limit (by volume)	N/A
Material VOC	N/A
Vapor density	Heavier than air
Relative density	Not determined
Solubility in water	Negligible
Partition coefficient: n-octanol/water	N/A
Auto-ignition temperature	N/A
Decomposition temperature	N/A

10.Stability and Reactivity

Reactivity	Stable under normal conditions.
Chemical Stability	Stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid	Epoxy resins and epoxy resin hardeners react with each other producing heat. They should not be mixed with each other under uncontrolled conditions or in a large mass as the ensuing exothermic reaction may produce heat, smoke and hazardous decomposition products. Caustic soda (sodium hydroxide) can induce vigorous polymerization at temperatures around 200 °C.
Incompatible materials	Strong oxidizing agents, sodium hydroxide, Lewis and mineral acids.
Hazardous decomposition products	Carbon monoxide, carbon dioxide, aldehydes and acids.
Other hazards	None.

11. Toxicological Information

Acute Health Hazard (components) No comprehensive data on product itself.

Component	Result	Species	Dose	Exposure
Diglycidyl Ether of Bisphenol A	LD50 Oral	Rat	11,400 mg/kg	-
	LD50 Dermal	Rat	2,000 mg/m3	4 h
Neopentyl Glycol Diglycidyl Ether	LD50 Oral	Rat	4,500 mg/kg	-
	LD50 Dermal	Rat	>2,000 mg/kg	-

Irritation/Corrosion (components) No information on product itself.

Component	Result	Species	Test	Exposure
Diglycidyl Ether of Bisphenol A	Moderate to severe irritation	Rabbit	Skin	4 h
	Mild irritation	Rabbit	Eye	24 h
Diglycidyl Ether of Bisphenol F	Mild irritant	Rabbit	Skin	-
	Mild irritant	Rabbit	Eye	-

Sensitization No information on product itself.

Mutagenicity No information on product itself.

Carcinogenicity No information on product itself.

Reproductive Toxicity No information on product itself.

Teratogenicity No information on product itself.

Specific target organ toxicity (single exposure) No information on product itself.

Component	Category	Route of exposure	Target organs
Diglycidyl Ether of Bisphenol A	Category 3		Respiratory tract irritation
Neopentyl Glycol Diglycidyl Ether	Category 3		Respiratory tract irritation
Diglycidyl Ether of Bisphenol F	Category 3		Respiratory tract irritation

Specific target organ toxicity (repeated exposure) No information on product itself.

Aspiration hazard No information on product itself.

Potential acute health effects

Eye Contact	Causes serious eye irritation.
Inhalation	May cause respiratory irritation.
Skin Contact	Causes severe skin irritation. May cause an allergic skin reaction.

Ingestion Irritating to the mouth, throat, and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye Contact Adverse symptoms may include the following:
Pain or irritation
Watering
Redness

Inhalation Adverse symptoms may include the following:
Respiratory tract irritation
Coughing

Skin Contact Adverse symptoms may include the following:
Irritation
Pain
Redness

Ingestion No specific data

Delayed and immediate effects and also chronic effects from short and long term exposure Not available.

Potential chronic health effects

General Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Teratogenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates (ATEmix) Not available.

12. Ecological Information

Ecotoxicity No information on the product itself.

Component	Test	Species	Result	Exposure
Diglycidyl Ether of Bisphenol A	LC50	Fish	1.3 mg/l	96 h
	LC50	Daphnia	2.1 mg/l	48 h
Diglycidyl Ether of Bisphenol F	LC50	Fish	1.5 mg/l	96 h
	LC50	Daphnia	1.7 mg/l	48 h
	Chronic NOEC	Daphnia	0.3 mg/l	21 d

Persistence and degradability No information on the product itself.

Component	Test	Period	Result
Diglycidyl Ether of Bisphenol A	OECD 302B	28 d	12%
Diglycidyl Ether of Bisphenol F	OECD 301F Derived	28 d	5%

Bioaccumulative Potential No information on the product itself.

Component	LogPow	BCF	Potential

Diglycidyl Ether of Bisphenol A	2.64 – 3.78	3 – 31	Low
Diglycidyl Ether of Bisphenol F	3.232	31	Low
Neopentyl Glycol Diglycidyl Ether	0.23	-	Low

Mobility in Soil

Soil/water partition coefficient (KOC) No information on product itself.

Other adverse effects No known significant effects or critical hazards.

13. Disposal Considerations

Waste from residues/ unused products The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Product should not be allowed to enter drains, watercourses or the soil; dispose of this material and its containers in a safe way. Contact supplier if guidance is required.

Contaminated packaging Dispose of container and unused contents in accordance with federal, state and local requirements.

14.Transport Information

The data provided in this section is for information only and may not be specific to your package size or mode of transport. You will need to apply the appropriate regulations to properly classify your shipment for transportation.

International Transport Regulations

Regulatory information	UN/NA number	Proper Shipping Name	Classes/*PG	Additional Information
DOT		Non-regulated		
TDG		Non-regulated		
IMO/IMDG	UN3082	Environmentally hazardous substance, liquid, n.o.s. (Bisphenol-A Epichlorohydrin Resin)	Class 9 III	
IATA	UN3082	Environmentally hazardous substance, liquid, n.o.s. (Bisphenol-A Epichlorohydrin Resin)	Class 9 III	

*PG: Packing group

Special precautions for user: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

15. Regulatory Information

UNITED STATES

U.S. Federal Regulations

United States – TSCA 12(b) – Chemical export notification: None Required.
United States – TSCA 5(a)2 – Final significant new use rules: Not Listed.
United States – TSCA 5(a)2 – Proposed significant new use rules: Not Listed.
United States – TSCA 5(e) – Substance consent order: Not listed.

Clean Air Act – Ozone Depleting Substances (ODS)	None.
Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)	None.
California Prop. 65	WARNING: This product can expose you to chemicals including Oxirane, 2-(chloromethyl)- that is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.
EPA SARA 302 Extremely Hazardous Substances	None required.
EPA SARA 302/304/311/312 Hazardous Chemicals	Acute Health Hazard
United States inventory (TSCA 8b)	All components are listed or exempted.

CANADA

WHMIS (Canada)	Class D-2B: Material causing other toxic effects (Toxic).
Canadian NPRI	None required.
CEPA Toxic substances	None required.

INTERNATIONAL REGULATIONS

International Lists	**Australia inventory (AICS):** All components are listed or exempted. **Canada inventory:** All components are listed or exempted. **Korea inventory:** All components are listed or exempted. **Japan inventory:** All components are listed or exempted. **China inventory (IECSC):** All components are listed or exempted. **New Zealand inventory (NZIoC):** All components are listed or exempted. **Philippines inventory (PICCS):** All components are listed or exempted. **Taiwan inventory (CSNN):** All components are listed or exempted.

16. Other Information, Including Date of Preparation or Last Revision

HMIS Rating

Health 2
Flammability 1
Physical Hazard 0

Date of Preparation	March 2, 2023
Date of Last Revision	January 22, 2020
Revision #	6.0
More Information	1-253-333-8118
Prepared by	System Three Resins Inc.

The information contained herein is based on the data available to us and is believed to be correct. However, System Three Resins, Inc. makes no warranty, expressed or implied, regarding the accuracy of these data or the results to be obtained from the use thereof. System Three assumes no responsibility for injury from the use of the product described herein.

SAFETY DATA SHEET

1. Product Identification

Product name	Sculpwood Putty Hardener, Part B
SDS Number	1600B00
Product type	Polyamide Resin Mixture
Recommended use of the chemical and restrictions on use	Recommend for, but not limited to, the restoration and repair of damaged or rotted wood.
Restrictions	None known.
Manufacturer/Supplier information	
Company name	SYSTEM THREE RESINS, INC.
Address	8517 Commerce Place Dr NE Lacey, WA 98516 United States
Telephone	1-253-333-8118
Website	www.systemthree.com
Email	support@systemthree.com
Emergency Contact	CHEMTEL (U.S. and CANADA) 1-800-704-9215 CHEMTEL (Outside the U.S.) – Call Collect accepted +1-360-256-7365

2. Hazard(s) Identification

Classification of substance or mixture/Signal Word

WARNING.
Skin Corrosion/Irritation – Category 2
Serious Eye Damage/Eye Irritation – Category 2
Skin Sensitization – Category 1
Acute Aquatic Toxicity – Category 1
Chronic Aquatic Toxicity – Category 1

GHS Label Elements
Hazard Pictograms

Hazard Statements/Classification of substance or mixture

H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H400 Very toxic to aquatic life.
H413 May cause long lasting harmful effects to aquatic life.

Precautionary statements

Precautionary Statements
Prevention

P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P264 Wash hands and exposed skin thoroughly after handling.
P271 Use only outdoors or in a well ventilated area.
P272 Contaminated work clothes should not be allowed out of the

workplace.
P273 Avoid release to the environment.
P279 Do not eat, drink or smoke when using this product.
P280 Wear eye protection/face protection. Wear protective gloves.
P285 In case of inadequate ventilation wear respiratory protection.

Response

P314 Get medical advice/attention if you feel unwell.
P308 + P313 IF exposed or concerned: Get medical advice/attention.
P302 + P352 IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 IF eye irritation persists: Get medical advice/attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.

Storage

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Disposal

P501 Dispose of contents/container to be specified in accordance with regulations.

Hazards not otherwise classified (HNOC)

None known.

3. Composition/Information On Ingredients

Chemical Name	CAS Number	Content (%)
Polyamide Polymer	Proprietary	15 – 20%
Benzyl Alcohol	100-51-6	15 – 20%
Nonyl Phenol	84852-15-3	5 – 10%
Triethylenetetramine	112-24-3	<2%

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. Occupational exposure limits, if available, are listed in Section 8.

4. First-Aid Measures

Skin contact

Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. Wash clothing before reuse. Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands. Safety shower should be located in immediate work area.

Eye contact

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Get medical attention immediately. Suitable emergency eye wash facility should be available in work area.

Ingestion

Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or

	waistband.
Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	No specific treatment.

5. Fire-Fighting Measures

Suitable extinguishing media	Use an extinguishing agent suitable for the surrounding fire. Alcohol-resistant foam Carbon dioxide (CO_2) Dry chemical, dry sand, limestone powder
Unsuitable extinguishing media	Water (spray or stream).
Specific hazards arising from the chemical	In a fire or if heated, a pressure increase will occur and the container may burst. See also “Products of Combustion” in this section and Section 10.
Hazardous decomposition products	May generate ammonia gas. May generate toxic nitrogen oxide gases. Use of water may result in the formation of very toxic aqueous solutions. Do not allow run-off from firefighting to enter drains or watercourses. Incomplete combustion may form carbon monoxide. Ammonia gas may be liberated at high temperatures. In the case of incomplete combustion, an increased formation of oxides of nitrogen (NOx) is to be expected. Burning produces noxious and toxic fumes.
Special protective actions for fire-fighters	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk.
Special protective equipment for fire-fighters	Fire fighters should wear appropriate protection equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in a positive pressure mode.
Further information	None known.

6. Accidental Release Measures

Personal precautions	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
Emergency procedures	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For nonemergency personnel".
Methods and materials for containment/cleanup	
Small Spill	Stop leak if without risk. Move containers from spill area. Absorb with an inert absorbent material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor. Wash the spill area clean with water and detergent, observing environmental requirements.
Large Spill	Stop leak if without risk. Move containers from spill area. Use spark-proof tools

and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, watercourses, basements or confined areas. Contain and collect spillage with inert, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Wash the spill area clean with water and detergent, observing environmental requirements. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

7. Handling and Storage

Precautions for safe handling

Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Avoid breathing vapor or mist. Do not swallow. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Precautions/Recommendations for safe/proper storage

Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits

List	Components	CAS No.	Type	Value
OARS	Benzyl Alcohol	100-51-6	WEEL	10 ppm
	Triethylenetetramine	112-24-3	WEEL	1 ppm

Appropriate engineering controls

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures/Personal protective equipment

Eye/face protection

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: chemical safety goggles.

Hand protection	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Skin protection	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Special instructions for protection and hygiene	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Discard contaminated leather goods. Ensure that eyewash stations and safety showers are close to the workstation location.

9. Physical and Chemical Properties

Chemical family	Polyamide curing agent
Appearance	Epoxy putty
Physical State	
Form	Solid putty
Color	Tan
Odor	Mild ammonia odor
Density (Specific Gravity)	0.72 g/cm^3
Viscosity	500,000 – 600,000 CPS @77°F
pH	N/A
Melting point/freezing point	N/A
Initial boiling point and boiling range	N/A
Flash point	N/A
Evaporation rate	Slower than ether
Flammability (solid, gas)	N/A
Upper/lower flammability limit (by volume)	N/A
Upper flammability limit (by volume)	N/A
Lower flammability limit (by volume)	N/A
Material VOC	None
Vapor density	Heavier than air

Relative density	Not determined
Solubility in water	Negligible
Partition coefficient: n-octanol/water	N/A
Auto-ignition temperature	N/A
Decomposition temperature	N/A

10.Stability and Reactivity

Reactivity	Stable under normal conditions.
Chemical Stability	Stable
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	Epoxy resins and epoxy resin hardeners react with each other producing heat. They should not be mixed with each other under uncontrolled conditions or in a large mass as the ensuing exothermic reaction may produce heat, smoke and hazardous decomposition products.
Incompatible materials	Organic and mineral acids. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion. Reactive metals (e.g. sodium, calcium, zinc, etc). Product slowly corrodes copper, aluminum, zinc and galvanized surfaces. Materials reactive with hydroxyl compounds. Oxidizing agents, amines, bases and reducing agents. Nitrous acid and other nitrosating agents. CAUTION! N-nitrosamines, many of which are known to be potent carcinogens, may be formed when the product comes in contact with nitrous acid, nitrites or atmospheres with high nitrous oxide concentrations.
Hazardous decomposition products	Organic acid vapors, nitric acid, ammonia, nitrogen and carbon oxides, nitrosamine and aldehydes. Nitrogen oxide can react with water vapors to form corrosive nitric acid.
Other hazards	None known.

11. Toxicological Information

Acute Health Hazard (components) No comprehensive data on product itself.

Component	Result	Species	Dose	Exposure
Nonyl Phenol	LD50 Dermal	Rabbit	2,031 mg/kg	-
	LD50 Oral	Rat	1,412 mg/kg	-
Benzyl Alcohol	LD50 Oral	Rat	1,620 mg/kg	-
Triethylenetetramine	LD50 Oral	Rat	300 – 2,000 mg/kg	-
	LD50 Dermal	Rabbit	1,000 – 2,000 mg/kg	-

Irritation/Corrosion (components) No information on the product itself.

Component	Test	Result	Species
Benzyl Alcohol	OECD 405	Eyes - Irritant	Rabbit
Triethylenetetramine		Severe eye irritation	Rabbit

		Severe skin irritation	Rabbit – 24 h

Sensitization No information on the product itself.

Component	CAS No	Test	Species	Result	Exposure
Triethylenetetramine	112-24-3	Skin	Guinea Pig	Causes burns May cause sensitization by skin contact.	-

Mutagenicity No information on the product itself.

Carcinogenicity No information on the product itself.

Reproductive Toxicity No information on the product itself.

Teratogenicity No information on the product itself.

Specific target organ toxicity (single exposure) No information on the product itself.

Specific target organ toxicity (repeated exposure) No information on the product itself.

Aspiration hazard No information on the product itself.

Potential acute health effects

Eye Contact Causes serious eye irritation.

Inhalation May cause respiratory irritation.

Skin Contact Causes severe skin irritation. May cause a severe allergic reaction.

Ingestion Irritating to mouth, throat, and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye Contact Causes serious eye irritation. Extended exposure may result in irreversible damage to eye tissues. Adverse symptoms may include the following: Pain, irritation, watering, redness or combination of noted symptoms.

Inhalation May cause respiratory irritation. Adverse symptoms may include the following: Respiratory tract irritation, coughing. Severe or extended exposure may induce central nervous system (CNS) effects: headache, nausea, dizziness, confusion, breathing difficulties.

Skin Contact Causes skin irritation. May cause an allergic skin reaction. This material may be a strong skin sensitizer in certain susceptible persons. Once sensitized, most persons are unable to work around amine cured epoxy resins without an allergic reaction. Sensitized persons are not known to have other health problems as a result of sensitization. Adverse symptoms may include the following: Irritation and/or redness. Severe or extended exposure may result in absorption through skin which may induce central nervous system (CNS) effects: headache, nausea, dizziness, confusion, breathing difficulties.

Ingestion Irritating to mouth, throat, and stomach. Adverse symptoms may include the following: Irritation/damage of mucous membranes. May cause central nervous system (CNS) effects: headache, nausea, dizziness, confusion, breathing difficulties.

Delayed and immediate effects and also chronic effects from short and long term exposure No information on the product itself.

Potential chronic health effects

General Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity No significant effects or critical hazards.

Mutagenicity No significant effects or critical hazards.

Teratogenicity No significant effects or critical hazards.

Developmental effects No significant effects or critical hazards.

Fertility effects No significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates (ATEmix)

Route	ATE value
Oral	4539.5 mg/kg
Dermal	10,692.3 mg/kg
Inhalation (vapors)	45.58 mg/l

12. Ecological Information

Ecotoxicity No information on the product itself.

Component	Test	Species	Result	Exposure
Nonyl Phenol	LC50	Fathead minnow	0.128 mg/l	96 h
	EC50	Water Flea	0.0848 – 0.19 mg/l	48 h
Benzyl Alcohol	LC50	Fathead minnow	460 mg/l	96 h
Triethylenetetramine	LC50	Fathead minnow	>100 mg/l	96 h

Persistence and degradability No information on the product itself.

Component	Test	Period	Result
Nonyl Phenol	EPA OPPTS	63 days	100%
	OECD	56 days	50%
	OECD 301B Ready Biodegradability – CO2 Evolution Test	35 days	48.2%
Benzyl Alcohol	Readily biodegradable		

Bioaccumulative Potential No information on the product itself.

Component	LogPow	BCF	Potential
Nonyl Phenol	5.4	740	High
Benzyl Alcohol	1.05	1.37 (calculated)	Low

Mobility in Soil No information on the product itself.

Soil/water partition coefficient (KOC) Data not available.

Other adverse effects No known significant effects or critical hazards.

13. Disposal Considerations

Waste from residues/ unused products The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor.

	Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.
Contaminated packaging	Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

14.Transport Information

The data provided in this section is for information only and may not be specific to your package size or mode of transport. You will need to apply the appropriate regulations to properly classify your shipment for transportation.

International Transport Regulations

Regulatory information	UN/NA number	Proper Shipping Name	Classes/*PG	Additional Information
DOT		Non-regulated		
TDG		Non-regulated		
IMO/IMDG	UN3082	Environmentally hazardous substance, liquid, n.o.s. (Nonyl Phenol)	Class 9 III	Marine pollutant
IATA	UN3082	Environmentally hazardous substance, liquid, n.o.s. (Nonyl Phenol)	Class 9 III	

*PG: Packing group

Special precautions for user:	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

15. Regulatory Information

UNITED STATES

U.S. Federal Regulations	**United States – TSCA 12(b) – Chemical export notification:** None Required. **United States – TSCA 5(a)2 – Final significant new use rules:** Not Listed. **United States – TSCA 5(a)2 – Proposed significant new use rules:** Not Listed. **United States – TSCA 5(e) – Substance consent order:** Not listed.
Clean Air Act – Ozone Depleting Substances (ODS)	This product does not contain nor is it manufactured with ozone depleting substances.
Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)	See table below
Pennsylvania – RTK	Phenol
California Prop. 65	None required.
EPA SARA 302 Extremely Hazardous Substances	None.
EPA SARA 302/304/311/312 Hazardous Chemicals	Acute Health Hazard
SARA 313 Form R – Reporting requirements	See table below

Product Name	Concentration %
Phenol	0 - 1

Product Name	Concentration %

	Phenol			0 - 1	
CERCLA Hazardous substances	**Component**	**%**	**Section 304 CERCLA Hazardous Substance**	**CERCLA Reportable Quantity (Lbs)**	**Product Reportable Quantity (Lbs)**
	Phenol	1	Listed		

United States inventory (TSCA 8b) All components are listed or exempted.

CANADA

WHMIS (Canada) Class D-2B: Material causing other toxic effects (Toxic).

Canadian NPRI None required.

CEPA Toxic substances None required.

INTERNATIONAL REGULATIONS

International Lists

Australia inventory (AICS): All components are listed or exempted.
Canada inventory: All components are listed or exempted.
Korea inventory: All components are listed or exempted.
Japan inventory: All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
New Zealand inventory (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): All components are listed or exempted.
Taiwan inventory (CSNN): All components are listed or exempted.

16. Other Information, Including Date of Preparation or Last Revision

HMIS Rating

Health 2
Flammability 1
Physical Hazard 0

Date of Preparation March 2, 2023

Date of Last Revision January 22, 2020

Revision # 6.0

More Information 1-253-333-8118

Prepared by System Three Resins Inc.

The information contained herein is based on the data available to us and is believed to be correct. However, System Three Resins, Inc. makes no warranty, expressed or implied, regarding the accuracy of these data or the results to be obtained from the use thereof. System Three assumes no responsibility for injury from the use of the product described herein.

SAFETY DATA SHEET

1. Product Identification

Product name	Rot Fix Resin, Part A
SDS Number	1500A00
Product type	Epoxy polymer mixture
Recommended use of the chemical and restrictions on use	Rot repair resin component.
Restrictions	None known.
Manufacturer/Supplier information	
Company name	SYSTEM THREE RESINS, INC.
Address	8517 Commerce Place Dr NE Lacey, WA 98516 United States
Telephone	1-253-333-8118
Website	www.systemthree.com
Email	support@systemthree.com
Emergency Contact	CHEMTEL (U.S. and CANADA) 1-800-704-9215 CHEMTEL (Outside the U.S.) – Call Collect accepted +1-360-256-7365

2. Hazard(s) Identification

Classification of substance or mixture/Signal Word

WARNING
Skin Corrosion/Irritation - Category 2
Serious Eye Damage/Eye Irritation - Category 2
Skin Sensitization - Category 1
Specific Target Organ Toxicity (Single Exposure) [Respiratory tract irritation] – Category 3

GHS Label Elements
Hazard Pictograms

Hazard Statements/Classification of substance or mixture

H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.

Precautionary statements

Precautionary Statements
Prevention

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P264 Wash hands thoroughly after handling.
P272 Contaminated work clothing should not be allowed out of the workplace.

	P280 Wear protective gloves/protective clothing/eye protection/face protection.
Response	P304 + 340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P313 Call a POISON CENTER or doctor/physician if you feel unwell. P302+352+363 IF ON SKIN: Wash with soap and water. Take off contaminated clothing and wash before reuse. P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. P308 + P313 If exposed or concerned: Get medical attention.
Storage	P401 Store at room temperature in a well-ventilated area.
Disposal	P501 Dispose of contents and container in accordance with all local, regional, national and international regulations.
Hazards not otherwise classified (HNOC)	None Available.

3. Composition/Information On Ingredients

Chemical Name	CAS Number	Content (%)
Diglycidyl Ether of Bisphenol A	25068-38-6	40 – 50 %
Alkyl Glycidyl Ether	17557-23-2	35 – 45 %
Benzyl Alcohol	100-51-6	1 – 10 %
Diglycidyl Ether of Bisphenol F	28064-14-4	1 – 10%

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. Occupational exposure limits, if available, are listed in Section 8.

4. First-Aid Measures

Skin contact	Remove contaminated clothing and shoes and wipe excess off skin. Flush skin with water. Follow by washing in soap and water. If irritation occurs, seek medical attention. Do not reuse clothing until cleaned. Contaminated leather articles (shoes) cannot be decontaminated and should be destroyed.
Eye contact	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
Ingestion	Do not induce vomiting unless directed to do so by medical personnel. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately.
Inhalation	Remove victim to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	No specific treatment.

5. Fire-Fighting Measures

Suitable extinguishing media	Alcohol-resistant foam, carbon dioxide (CO_2), dry chemical, water fog.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic to aquatic life with long lasting effects. Fire water contaminated must be contained and prevented from being discharged to any waterway, sewer or drain.
Hazardous decomposition products	Decomposition products may include the following materials: Carbon dioxide Carbon monoxide
Special protective actions for fire-fighters	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
Further information	Do not allow run-off from firefighting to enter drains or water courses. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

6. Accidental Release Measures

Personal precautions	Wear proper personal protective equipment (PPE). Avoid direct contact with material. Proper PPE includes: disposable gloves, eye protection and skin protection.
Emergency procedures	If material is spilled, avoid contact with material. Persons not wearing appropriate protective equipment should leave the area of the spill until cleanup is complete.
Methods and materials for containment/cleanup	Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product.
Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

7. Handling and Storage

Precautions for safe handling	Avoid contact with skin and eyes. Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations. Use personal protective equipment. When using, do not eat, drink or smoke.
Precautions/Recommendations for safe/proper storage	Store epoxy products in temperature stable environment, out of the reach of pets or children. Securely fasten container lids and tops, and prevent products from sitting and below freezing temperatures.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits	Not established.
Appropriate engineering controls	Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
Environmental exposure controls	Use appropriate containment to avoid environmental contamination. Do not allow spill to enter sewers or waterways.
Individual protection measures/Personal protective equipment	
Eye/face protection	Splash-proof goggles or safety spectacles with side shields are recommended. Always wear eye protection when sanding cured epoxy resins to avoid dust in eyes.
Hand protection	Always wear impervious gloves: butyl rubber, nitrile rubber, Neoprene, PVC disposable gloves,
Skin protection	Wear clean, body-covering clothing to avoid skin contact.
Respiratory protection	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Special instructions for protection and hygiene	Wear gloves at all times when handling product, avoid direct contact with skin. When finished using product, dispose of gloves properly and wash hands with warm, soapy water.

9. Physical and Chemical Properties

Chemical family	Epoxy Resin
Appearance	Clear liquid
Physical State	Epoxy polymer mixture
Form	Liquid
Color	Water clear
Odor	Mild
Density (Specific Gravity)	9.31 lb/gal (1.1-1.2)
Viscosity	150 - 200 cps @ 25°C
pH	Not available
Melting point/freezing point	Not available
Initial boiling point and boiling range	Not available
Flash point	Not available
Evaporation rate	Slower than ether
Flammability (solid, gas)	Not available
Upper/lower flammability limit (by volume)	Not available
Material VOC	None
Vapor density	Heavier than air
Relative density	Not determined
Solubility in water	Negligible, in water

Partition coefficient: n-octanol/water	Not available
Auto-ignition temperature	Not available
Decomposition temperature	Not available

10.Stability and Reactivity

Reactivity	No specific test data related to reactivity available for this product.
Chemical Stability	Stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization will not occur.
Conditions to avoid	Epoxy resins and epoxy resin hardeners react with each other producing heat. They should not be mixed with each other under uncontrolled conditions or in large mass as the ensuing exotherm may result in heat and smoke, resulting in hazardous decomposition products.
Incompatible materials	Strong oxidizing and reducing agents. Lewis and mineral acids.
Hazardous decomposition products	Oxides of carbon, aldehydes, and acids.
Other hazards	None known.

11. Toxicological Information

Acute Health Hazard (components) No comprehensive data (ingestion, inhalation, dermal) on mixture (product).

Component	Result	Species	Dose	Exposure
Diglycidyl Ether of Bisphenol A	LD50 Oral	Rat	11,400 mg/kg	-
	LD50 Dermal	Rat	2,000 mg/kg	-
Diglycidyl Ether of Bisphenol F	LD50 Oral	Rat	>2,000 mg/kg	-
	LD50 Dermal	Rat	>2,000 mg/kg	-
Alkyl Glycidyl Ether	LD50 Oral	Rat	4,500 mg/kg	-
	LD50 Dermal	Rabbit	>2,000 mg/kg	-
Benzyl Alcohol	LD50 Oral	Rat	1620 mg/kg	-
	LC50 Inhalation	Rat	>4178 mg/m3	4 h, aerosol

Irritation/Corrosion (components) No information on product itself.

Component	Result	Species	Test	Exposure
Diglycidyl Ether of Bisphenol A	Moderate to severe irritation	Rabbit	Skin	4 h
	Mild irritation	Rabbit	Eye	24 h
Diglycidyl Ether of Bisphenol F	Mild irritant	Rabbit	Skin	-
	Mild irritant	Rabbit	Eye	-
Benzyl Alcohol	Irritant	Rabbit	Eye	-

Sensitization No information on product itself.

Mutagenicity No information on product itself.

Carcinogenicity No information on product itself.

Reproductive Toxicity No information on product itself.

Teratogenicity No information on product itself.

Specific target organ toxicity (single exposure) No information on product itself.

Component	Category	Route of exposure	Target organs
Diglycidyl Ether of Bisphenol A	Category 3	-	Respiratory tract irritation
Diglycidyl Ether of Bisphenol F	Category 3	-	Respiratory tract irritation
Alkyl Glycidyl Ether	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure) No information on product itself.

Aspiration hazard No information on product itself.

Potential acute health effects

Eye Contact Causes serious eye irritation.

Inhalation May cause respiratory irritation.

Skin Contact Causes skin irritation. May cause an allergic skin reaction.

Ingestion Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye Contact Adverse symptoms may include the following:
Pain
Watering
Redness

Inhalation Adverse symptoms may include the following:
Respiratory tract irritation
Coughing

Skin Contact Adverse symptoms may include the following:
Irritation
Redness

Ingestion No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Potential chronic health effects

General Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Teratogenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates (ATEmix) Not available

12. Ecological Information

Ecotoxicity No information on product itself.

Component	Result	Species	Exposure
Diglycidyl Ether of Bisphenol A	Acute LC50 1.3 mg/l	Fish	96 h
	Acute LC50 2.1 mg/l	Daphnia	48 h
Diglycidyl Ether of Bisphenol F	Acute LC50 1.5 mg/l	Fish	96 h
	Acute LC50 1.7 mg/l	Daphnia	48 h
	Chronic NOEC 0.3 mg/l	Daphnia	21 d
Benzyl Alcohol	Acute LC50 460 mg/l	Fish	96 h
	Acute EC50 230 mg/l	Invertebrates	48 h
	Chronic NOEC 310 mg/l	Algae	72 h

Persistence and degradability No information on product itself.

Bioaccumulative Potential No information on product itself.

Component	LogPow	BCF	Potential
Diglycidyl Ether of Bisphenol A	2.64 – 3.78	3 – 31 31.00	low
Diglycidyl Ether of Bisphenol F	3	-	low
Benzyl Alcohol	1.05	1.37 (calculated)	-

Mobility in Soil

Soil/water partition coefficient (KOC) No information on product itself.

Other adverse effects No known significant effects or critical hazards.

13. Disposal Considerations

Waste from residues/ unused products The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Product should not be allowed to enter drains, water courses or the soil; dispose of this material and its containers in a safe way. Contact supplier if guidance is required.

Contaminated packaging Dispose of container and unused contents in accordance with federal, state and local requirements.

14.Transport Information

The data provided in this section is for information only and may not be specific to your package size or mode of transport. You will need to apply the appropriate regulations to properly classify your shipment for transportation.

International Transport Regulations

Regulatory information	UN/NA number	Proper Shipping Name	Classes/*PG	Additional Information
DOT		Non-regulated		
TDG		Non-regulated		

IMO/IMDG	UN3082	Environmentally hazardous substance, liquid, n.o.s. (Bisphenol-A Epichlorohydrin Resin)	Class 9 III
IATA	UN3082	Environmentally hazardous substance, liquid, n.o.s. (Bisphenol-A Epichlorohydrin Resin)	Class 9 III

*PG: Packing group

Special precautions for user: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

15. Regulatory Information

UNITED STATES

U.S. Federal Regulations
United States – TSCA 12(b) – Chemical export notification: None Required.
United States – TSCA 5(a)2 – Final significant new use rules: Not Listed.
United States – TSCA 5(a)2 – Proposed significant new use rules: Not Listed.
United States – TSCA 5(e) – Substance consent order: Not listed.

Clean Air Act – Ozone Depleting Substances (ODS)
This product does not contain nor is it manufactured with ozone depleting substances.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)
None

California Prop. 65
WARNING: This product can expose you to chemicals including Oxirane, 2-(chloromethyl)- that is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

EPA SARA 302 Extremely Hazardous Substances
None required

EPA SARA 302/304/311/312 Hazardous Chemicals
Acute Health Hazard

SARA 313
None required

Form R – Reporting requirements

United States inventory (TSCA 8b)
All components are listed or exempted.

CANADA

WHMIS (Canada)
Class D-2B: Material causing other toxic effects (Toxic).

Canadian NPRI
None required

CEPA Toxic substances
None required

INTERNATIONAL REGULATIONS

International Lists
Australia inventory (AICS): All components are listed or exempted.
Canada inventory: All components are listed or exempted.
Korea inventory: All components are listed or exempted.
Japan inventory: All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
New Zealand inventory (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): All components are listed or exempted.
Taiwan inventory (CSNN): All components are listed or exempted.

16. Other Information, Including Date of Preparation or Last Revision

HMIS Rating

Health 2

Flammability 1
Physical Hazard 0

Date of Preparation	March 2, 2023
Date of Last Revision	January 22, 2020
Revision #	5.0
More Information	1-253-333-8118
Prepared by	System Three Resins Inc.

The information contained herein is based on the data available to us and is believed to be correct. However, System Three Resins, Inc. makes no warranty, expressed or implied, regarding the accuracy of these data or the results to be obtained from the use thereof. System Three assumes no responsibility for injury from the use of the product described herein.

SAFETY DATA SHEET

1. Product Identification

Product name	Rot Fix Hardener, Part B
SDS Number	1500B00
Product type	Amine curing agent.
Recommended use of the chemical and restrictions on use	Rot repair hardener component.
Restrictions	None known.
Manufacturer/Supplier information	
Company name	SYSTEM THREE RESINS, INC.
Address	8517 Commerce Place Dr NE Lacey, WA 98516 United States
Telephone	1-253-333-8118
Website	www.systemthree.com
Email	support@systemthree.com
Emergency Contact	CHEMTEL (U.S. and CANADA) 1-800-704-9215 CHEMTEL (Outside the U.S.) – Call Collect accepted +1-360-256-7365

2. Hazard(s) Identification

Classification of substance or mixture/Signal Word

DANGER
SKIN CORROSION/IRRITATION – Category 2
SERIOUS EYE DAMAGE/EYE IRRITATION – Category 1
RESPIRATORY SENSITIZER – Category 1
SKIN SENSITIZATION – Category 1
GERM CELL MUTAGENICITY – Category 2
REPRODUCTIVE TOXICITY – Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) [Eyes, mucous membrane] – Category 1
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) [Respiratory tract irritation] – Category 2

GHS Label Elements
Hazard Pictograms

Hazard Statements/Classification of substance or mixture

H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H341 Suspected of causing genetic defects.
H361 Suspected of damaging fertility or the unborn child.
H370 Causes damage to organs.

H373 May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

Precautionary Statements

Prevention

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe fumes/vapors.
P261 Avoid breathing fumes/vapors.
P264 Wash hands and exposed skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated clothing should not be allowed out of the workplace.
P280 Wear eye protection/face protection. Wear protective gloves.
P284 [In case of inadequate ventilation] wear respiratory protection.

Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361+ P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P310 Immediately call a POISON CENTER/doctor.

Storage

P405 Store locked up.

Disposal

P501 Disposal of contents/container to be specified in accordance with regulations.

Hazards not otherwise classified (HNOC)

None known.

3. Composition/Information On Ingredients

Chemical Name	CAS Number	Content (%)
Modified polyethylene polyamine adduct	Proprietary	35%
Reaction products of TETA with phenol/formaldehyde	32610-77-8	24%
Benzyl Alcohol	100-51-6	25%
Triethylenetetramine (TETA)	112-24-3	5%
Phenol	108-95-2	2%
Diethylenetriamine	111-40-0	5%
Tetraethylenepentamine	112-57-2	2%
4,4'-Isopropylidenediphenol	80-05-7	2%

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. Occupational exposure limits, if available, are listed in Section 8.

4. First-Aid Measures

Skin contact

Wash off immediately with plenty of water for at least 20 minutes. Immediately remove contaminated clothing, and any extraneous chemical, if

	possible to do so without delay. Take off contaminated clothing and shoes immediately.
Eye contact	Rinse immediately with plenty of water also under the eyelids for at least 20 minutes. Remove contact lenses.
Ingestion	If a person vomits when lying on his back, place him in the recovery position. Prevent aspiration of vomit. Turn victim's head to the side.
Inhalation	If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately. Move to fresh air.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Application of corticosteroid cream has been effective in treating skin irritation.
Specific treatments	No specific treatment.

5. Fire-Fighting Measures

Suitable extinguishing media	Alcohol-resistant foam, carbon dioxide (CO_2), dry chemical, dry sand, limestone powder.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	May generate ammonia gas. May generate toxic nitrogen oxide gases. Incomplete combustion may form carbon monoxide. Downwind personnel must be evacuated. Burning produces noxious and toxic fumes.
Hazardous decomposition products	Decomposition products may include the following materials: Carbon dioxide, carbon monoxide, nitrogen oxides
Special protective actions for fire-fighters	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Special protective equipment for fire-fighters	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
Further information	Do not allow run-off from firefighting to enter drains or water courses. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

6. Accidental Release Measures

Personal precautions	Use self-contained breathing apparatus and chemically protective clothing. Wear suitable protective clothing, gloves and eye/face protection. Evacuate personnel to safe areas.
Emergency procedures	If material is spilled, avoid contact with material. Persons not wearing appropriate protective equipment should leave the area of the spill until cleanup is complete.
Methods and materials for containment/cleanup	Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product.
Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Construct a dike to prevent spreading.

7. Handling and Storage

Precautions for safe handling	Do not use sodium nitrite or other nitrosating agents in formulations containing this product. Suspected cancer-causing nitrosamines could be formed. Emergency showers and eye wash stations should be readily accessible. Adhere to work practice rules established by government regulations. Avoid contact with eyes. Use only in well-ventilated areas. Avoid breathing vapors and/or aerosols. Put on appropriate personal protective equipment (see Section 8). When using, do not eat, drink or smoke.
Precautions/Recommendations for safe/proper storage	Store in steel containers preferably located outdoors, above ground, and surrounded by dikes to contain spills or leaks. Do not store near acids. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits	None established.
Appropriate engineering controls	Provide readily accessible eye wash stations and safety showers. Provide natural ventilation adequate to ensure concentrations are kept below exposure limits.
Environmental exposure controls	Do not allow spill to enter sewers or waterways.
Individual protection measures/Personal protective equipment	
Eye/face protection	Splash-proof goggles or safety spectacles with side shields are recommended. Always wear eye protection when sanding cured epoxy resins to avoid dust in eyes.
Hand protection	Always wear impervious gloves: butyl rubber, nitrile rubber, Neoprene, PVC disposable gloves.
Skin protection	Wear clean, body-covering clothing to avoid skin contact.
Respiratory protection	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Special instructions for protection and hygiene	Discard contaminated leather articles. Provide readily accessible eye wash stations and safety showers. Wash hands at the end of each work shift and before eating, smoking or using the toilet.

9. Physical and Chemical Properties

Chemical family	Amine curing agent
Appearance	Dark liquid
Physical State	
Form	Liquid
Color	Red-orange
Odor	Characteristic amine odor
Density (Specific Gravity)	0.97
Viscosity	300 – 400 CPS @25°C

pH	N/A
Melting point/freezing point	N/A
Initial boiling point and boiling range	N/A
Flash point	N/A
Evaporation rate	Slower than ether
Upper/lower flammability limit (by volume)	N/A
Material VOC	None
Vapor density	Heavier than air
Relative density	N/A
Solubility in water	Negligible
Partition coefficient: n-octanol/water	N/A

10.Stability and Reactivity

Reactivity	Stable under normal conditions.
Chemical Stability	Stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	Epoxy resins and epoxy resin hardeners react with each other producing heat. They should not be mixed with each other under uncontrolled conditions or in a large mass as the ensuing exothermic reaction may result in heat and smoke.
Incompatible materials	Strong oxidizing agents, mineral acids.
Hazardous decomposition products	Irritating and/or toxic fumes and gases may be emitted upon the product's decomposition. Decomposition of this product may emit oxides of carbon and nitrogen.
Other hazards	None known.

11. Toxicological Information

Acute Health Hazard (components) No comprehensive data (ingestion, inhalation, dermal) on mixture (product).

Component	Result	Species	Dose	Exposure
4,4'-Isopropylidenediphenol	Acute LD50 Oral	Rat	3,250 mg/kg	-
	Acute LD50 Dermal	Rabbit	3,000 mg/kg	-
Benzyl Alcohol	Acute LD50 Oral	Rat	1620 mg/kg	-
	Acute LC50 Inhalation	Rat	>4178 mg/m^3	4 h, aerosol
Diethylenetriamine	Acute LD50 Oral	Rat	1,080 mg/kg	-
	Acute LD50 Dermal	Rabbit	675 mg/kg	-
Phenol	Acute LD50 Inhalation	Rat	>900 mg/m^3	-
	Acute LD50 Oral	Rat	340 to 540 mg/kg	-
	Acute LD50 Dermal	Rat	660 mg/kg	-
Tetraethylenepentamine	Acute LD50 Oral	Rat	3,990 mg/kg	-

Triethylentetratmine	Acute LD50 Oral	Rat	2,500 mg/kg	-
	Acute LD50 Dermal	Rabbit	550 mg/kg	-

Irritation/Corrosion (components) No data is available for the product itself.

Component	Result	Species	Test	Exposure
Benzyl Alcohol	Non-irritant	Rabbit	Skin	-
	Irritant	Rabbit	Eyes	-
Diethylenetriamine	Moderate irritant	Rabbit	Skin	-
Phenol	Corrosive	Rabbit	Skin	-
	Corrosive	Rabbit	Eyes	-
Tetraethylenepentamine	Corrosive	Rabbit	Skin	-
	Severe eye irritation	-	Eyes	-
Triethylenetetramine	Severe skin irritation	-	Skin	-
	Severe eye irritation	-	Eyes	-

Sensitization May cause sensitization by skin contact.

Mutagenicity No data is available on the product itself.

Carcinogenicity No data is available on the product itself.

Reproductive Toxicity No data is available on the product itself.

Teratogenicity No data is available on the product itself.

Specific target organ toxicity (single exposure) No data is available on the product itself.

Component	Category	Route of Exposure	Target Organs
Modified polyethylene polyamine adduct	3	-	Respiratory tract irritation
4,4'-Isopropylidenediphenol	3	-	Respiratory tract irritation
	2	-	CNS
Diethylenetriamine	2	-	Eyes, CNS
Tetraethylenepentamine	1	-	Eyes, Mucous membrane

Specific target organ toxicity (repeated exposure) No data is available on the product itself.

Component	Category	Route of Exposure	Target Organs
Modified polyethylene polyamine adduct	1	-	Skin
4,4'-Isopropylidenediphenol	2	-	Bladder, kidneys, liver
Diethylenetriamine	1	-	Kidneys, liver, lungs, skin
Tetraethylenepentamine	1	-	Skin, respiratory tract
	2	-	Kidneys, liver

Aspiration hazard No data is available on the product itself.

Potential acute health effects

Eye Contact Causes serious eye damage.

Inhalation May cause respiratory irritation.

Skin Contact Causes severe skin burns.

Ingestion Harmful if swallowed. May cause burns to mouth, throat, and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye Contact No data is available on the product itself.

Inhalation No data is available on the product itself.

Skin Contact No data is available on the product itself.

Ingestion No data is available on the product itself.

Delayed and immediate effects and also chronic effects from short and long term exposure No data is available on the product itself.

Potential chronic health effects

General Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity No significant effects or critical hazards.

Mutagenicity A component in this product indicate mutagenic activity.

Teratogenicity No significant effects or critical hazards.

Developmental effects No significant effects or critical hazards.

Fertility effects No significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates (ATEmix) Not available.

12. Ecological Information

Ecotoxicity No data is available on the product itself.

Component	Test	Exposure	Species	Result
Benzyl Alcohol	LC50	96 h	Fish	460 mg/l
	EC50	48 h	Invertebrates	230 mg/l
	EC50	72 h	Algae	770 mg/l
Phenol	EC50	48 h	Daphnia	4 – 7 mg/l
Triethylenetetramine	EC50	72 h	Algae	2.5 mg/l
	EC50	48 h	Water flea	31.1 mg/l

Persistence and degradability No data is available on the product itself.

Bioaccumulative Potential No data is available on the product itself.

Component	LogPow	BCF	Potential
4,4'-Isopropylidenediphenol	3.4	73	low
Benzyl Alcohol	1.05	1.3 (calculated)	-
Diethylenetriamine	-1.3	0.65 2.80	low
Phenol	-	-	low

Mobility in Soil No data is available on the product itself.

Soil/water partition coefficient (KOC) No data is available on the product itself.

Other adverse effects No known significant effects or critical hazards.

13. Disposal Considerations

Waste from residues/ unused products	The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.
Contaminated packaging	Dispose of container and unused contents in accordance with federal, state, and local requirements.

14.Transport Information

The data provided in this section is for information only and may not be specific to your package size or mode of transport. You will need to apply the appropriate regulations to properly classify your shipment for transportation.

International Transport Regulations

Regulatory information	**UN/NA number**	**Proper Shipping Name**	**Classes/*PG**	**Additional Information**
DOT		Not Regulated		
TDG		Not Regulated		
IMO/IMDG		Not Regulated		
IATA		Not Regulated		

*PG: Packing group

Special precautions for user:	Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

15. Regulatory Information

UNITED STATES

U.S. Federal Regulations	**United States – TSCA 12(b) – Chemical export notification:** None Required. **United States – TSCA 5(a)2 – Final significant new use rules:** Not Listed. **United States – TSCA 5(a)2 – Proposed significant new use rules:** Not Listed. **United States – TSCA 5(e) – Substance consent order:** Not listed.
Clean Air Act – Ozone Depleting Substances (ODS)	This product does not contain nor is manufactured with ozone depleting substances.
Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)	See table below
Pennsylvania – RTK	Phenol
California Prop. 65	None required.
EPA SARA 302 Extremely Hazardous Substances	None known
EPA SARA 302/304/311/312 Hazardous Chemicals	Acute Health Hazard, Chronic Health Hazard

Product Name	**Concentration %**
Phenol	0 – 1

SARA 313
Form R – Reporting requirements

Product Name	Concentration %
Phenol	0 – 1

CERCLA Hazardous substances

Component	%	Section 304 CERCLA Hazardous Substance	CERCLA Reportable Quantity (Lbs)	Product Reportable Quantity (Lbs)
Phenol	1	Listed		

United States inventory (TSCA 8b) All components are listed or exempted.

CANADA

WHMIS (Canada) Class D-2B: Material causing other toxic effects (Toxic).
Class E: Corrosive material.

Canadian NPRI None required.
CEPA Toxic substances None required.

INTERNATIONAL REGULATIONS

International Lists

Australia inventory (AICS): All components are listed or exempted.
Canada inventory: All components are listed or exempted.
Korea inventory: All components are listed or exempted.
Japan inventory: All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
New Zealand inventory (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): All components are listed or exempted.
Taiwan inventory (CSNN): All components are listed or exempted.

16. Other Information, Including Date of Preparation or Last Revision

HMIS Rating

Health 3
Flammability 1
Physical Hazard 0

Date of Preparation May 5, 2023

Date of Last Revision March 2, 2023

Revision # 7.0

More Information 1-253-333-8118

Prepared by System Three Resins Inc.

The information contained herein is based on the data available to us and is believed to be correct. However, System Three Resins, Inc. makes no warranty, expressed or implied, regarding the accuracy of these data or the results to be obtained from the use thereof. System Three assumes no responsibility for injury from the use of the product described herein.

SAFETY DATA SHEET

1. Product Identification

Product name	Sculpwood Paste Resin, Part A
SDS Number	1610A00
Product type	Epoxy Resin Mixture
Recommended use of the chemical and restrictions on use	Recommended for, but not limited to, the repair of damaged or rotted wood.
Restrictions	None known.
Manufacturer/Supplier information	
Company name	SYSTEM THREE RESINS, INC.
Address	8517 Commerce Place Dr NE Lacey, WA 98516 United States
Telephone	1-253-333-8118
Website	www.systemthree.com
Email	support@systemthree.com
Emergency Contact	CHEMTEL (U.S. and CANADA) 1-800-704-9215 CHEMTEL (Outside the U.S.) – Call Collect accepted +1-360-256-7365

2. Hazard(s) Identification

Classification of substance or mixture/Signal Word

WARNING
Skin Corrosion/Irritation – Category 2
Serious Eye Damage/Eye Irritation – Category 2
Skin Sensitization – Category 1
Specific Target Organ Toxicity (Single Exposure) [Respiratory tract irritation] – Category 3

GHS Label Elements
Hazard Pictograms

Hazard Statements/Classification of substance or mixture

H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary statements

Precautionary Statements
Prevention

P261 Avoid breathing fumes/vapors.
P264 Wash hands and exposed skin thoroughly after handling.
P272 Contaminated work clothes should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear eye protection/face protection. Wear protective gloves.

	P281 Use personal protective equipment as required.
Response	P302 + P352 IF ON SKIN: Wash with plenty of soap and water. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
Storage	P405 Store locked up.
Disposal	P501 Disposal of contents/container to be specified in accordance with regulations.
Hazards not otherwise classified (HNOC)	None known.

3. Composition/Information On Ingredients

Chemical Name	CAS Number	Content (%)
Diglycidyl Ether of Bisphenol A	25068-38-6	50 – 60%
Neopentyl Glycol Diglycidyl Ether	17557-23-2	15 – 20%
Diglycidyl Ether of Bisphenol F	28064-14-4	3 – 8%

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. Occupational exposure limits, if available, are listed in Section 8.

4. First-Aid Measures

Skin contact	Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. Wash clothing before reuse. Discard items that cannot be decontaminated, including leather articles such as shoes, belts and watchbands. Safety shower should be located in immediate work area.
Eye contact	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Get medical attention. Suitable emergency eye wash facility should be available in work area.
Ingestion	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	No specific treatment.

5. Fire-Fighting Measures

Suitable extinguishing media	Use an extinguishing agent suitable for the surrounding fire.
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous decomposition products	Decomposition products may include carbon monoxide, carbon dioxide, aldehydes, acids and halogenated compounds. Toxic fumes may be evolved when this product is burned.
Special protective actions for fire-fighters	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk.
Special protective equipment for fire-fighters	Fire fighters should wear appropriate protection equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in a positive pressure mode.
Further information	None.

6. Accidental Release Measures

Personal precautions	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. Proper PPE includes: disposable gloves, eye protection and skin protection.
Emergency procedures	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For nonemergency personnel".
Methods and materials for containment/cleanup	
Small Spill	Stop leak if without risk. Move containers from spill area. Absorb with an inert absorbent material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor. Wash the spill area clean with water and detergent, observing environmental requirements.
Large Spills	Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, watercourses, basements or confined areas. Contain and collect spillage with inert, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Wash the spill area clean with water and detergent, observing environmental requirements. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

7. Handling and Storage

Precautions for safe handling	Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Avoid breathing vapor or mist. Do not swallow. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
Precautions/Recommendations for safe/proper storage	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits	None established.
Appropriate engineering controls	Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
Environmental exposure controls	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
Individual protection measures/Personal protective equipment	
Eye/face protection	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: chemical splash goggles.
Hand protection	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Skin protection	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator

	selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Special instructions for protection and hygiene	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

9. Physical and Chemical Properties

Chemical family	Epoxy resin
Appearance	Tan Paste
Physical State	
Form	Paste
Color	Tan
Odor	Characteristic odor
Density (Specific Gravity)	0.8 – 0.9 g/cm^3
Viscosity	130,000 CPS @77°F
pH	N/A
Melting point/freezing point	N/A
Initial boiling point and boiling range	N/A
Flash point	N/A
Evaporation rate	Slower than ether
Flammability (solid, gas)	N/A
Upper/lower flammability limit (by volume)	N/A
Upper flammability limit (by volume)	N/A
Lower flammability limit (by volume)	N/A
Material VOC	N/A
Vapor density	Heavier than air
Relative density	Not determined
Solubility in water	Negligible
Partition coefficient: n-octanol/water	N/A
Auto-ignition temperature	N/A
Decomposition temperature	N/A

10.Stability and Reactivity

Reactivity	Stable under normal conditions.
Chemical Stability	Stable.
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid	Epoxy resins and epoxy resin hardeners react with each other producing heat. They should not be mixed with each other under uncontrolled conditions or in a large mass as the ensuing exothermic reaction may produce heat, smoke and hazardous decomposition products. Caustic soda (sodium hydroxide) can induce vigorous polymerization at temperatures around 200 °C.
Incompatible materials	Strong oxidizing agents, sodium hydroxide, Lewis and mineral acids.
Hazardous decomposition products	Carbon monoxide, carbon dioxide, aldehydes and acids.
Other hazards	None.

11. Toxicological Information

Acute Health Hazard (components) No comprehensive data on product itself.

Component	Result	Species	Dose	Exposure
Diglycidyl Ether of Bisphenol A	LD50 Oral	Rat	11,400 mg/kg	-
	LD50 Dermal	Rat	2,000 mg/m3	4 h
Neopentyl Glycol Diglycidyl Ether	LD50 Oral	Rat	4,500 mg/kg	-
	LD50 Dermal	Rat	>2,000 mg/kg	-

Irritation/Corrosion (components) No information on product itself.

Component	Result	Species	Test	Exposure
Diglycidyl Ether of Bisphenol A	Moderate to severe irritation	Rabbit	Skin	4 h
	Mild irritation	Rabbit	Eye	24 h
Diglycidyl Ether of Bisphenol F	Mild irritant	Rabbit	Skin	-
	Mild irritant	Rabbit	Eye	-

Sensitization No information on product itself.

Mutagenicity No information on product itself.

Carcinogenicity No information on product itself.

Reproductive Toxicity No information on product itself.

Teratogenicity No information on product itself.

Specific target organ toxicity (single exposure) No information on product itself.

Component	Category	Route of exposure	Target organs
Diglycidyl Ether of Bisphenol A	Category 3		Respiratory tract irritation
Neopentyl Glycol Diglycidyl Ether	Category 3		Respiratory tract irritation
Diglycidyl Ether of Bisphenol F	Category 3		Respiratory tract irritation

Specific target organ toxicity (repeated exposure) No information on product itself.

Aspiration hazard No information on product itself.

Potential acute health effects

Eye Contact	Causes serious eye irritation.
Inhalation	May cause respiratory irritation.
Skin Contact	Causes severe skin irritation. May cause an allergic skin reaction.

Ingestion Irritating to the mouth, throat, and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye Contact Adverse symptoms may include the following:
Pain or irritation
Watering
Redness

Inhalation Adverse symptoms may include the following:
Respiratory tract irritation
Coughing

Skin Contact Adverse symptoms may include the following:
Irritation
Pain
Redness

Ingestion No specific data

Delayed and immediate effects and also chronic effects from short and long term exposure Not available.

Potential chronic health effects

General Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity No known significant effects or critical hazards.

Mutagenicity No known significant effects or critical hazards.

Teratogenicity No known significant effects or critical hazards.

Developmental effects No known significant effects or critical hazards.

Fertility effects No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates (ATEmix) Not available.

12. Ecological Information

Ecotoxicity No information on the product itself.

Component	Test	Species	Result	Exposure
Diglycidyl Ether of Bisphenol A	LC50	Fish	1.3 mg/l	96 h
	LC50	Daphnia	2.1 mg/l	48 h
Diglycidyl Ether of Bisphenol F	LC50	Fish	1.5 mg/l	96 h
	LC50	Daphnia	1.7 mg/l	48 h
	Chronic NOEC	Daphnia	0.3 mg/l	21 d

Persistence and degradability No information on the product itself.

Component	Test	Period	Result
Diglycidyl Ether of Bisphenol A	OECD 302B	28 d	12%
Diglycidyl Ether of Bisphenol F	OECD 301F Derived	28 d	5%

Bioaccumulative Potential No information on the product itself.

Component	LogPow	BCF	Potential

Diglycidyl Ether of Bisphenol A	2.64 – 3.78	3 – 31	Low
Diglycidyl Ether of Bisphenol F	3.232	31	Low
Neopentyl Glycol Diglycidyl Ether	0.23	-	Low

Mobility in Soil

Soil/water partition coefficient (KOC) No information on product itself.

Other adverse effects No known significant effects or critical hazards.

13. Disposal Considerations

Waste from residues/ unused products The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Product should not be allowed to enter drains, watercourses or the soil; dispose of this material and its containers in a safe way. Contact supplier if guidance is required.

Contaminated packaging Dispose of container and unused contents in accordance with federal, state and local requirements.

14.Transport Information

The data provided in this section is for information only and may not be specific to your package size or mode of transport. You will need to apply the appropriate regulations to properly classify your shipment for transportation.

International Transport Regulations

Regulatory information	UN/NA number	Proper Shipping Name	Classes/*PG	Additional Information
DOT		Non-regulated		
TDG		Non-regulated		
IMO/IMDG	UN3082	Environmentally hazardous substance, liquid, n.o.s. (Bisphenol-A Epichlorohydrin Resin)	Class 9 III	
IATA	UN3082	Environmentally hazardous substance, liquid, n.o.s. (Bisphenol-A Epichlorohydrin Resin)	Class 9 III	

*PG: Packing group

Special precautions for user: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

15. Regulatory Information

UNITED STATES

U.S. Federal Regulations

United States – TSCA 12(b) – Chemical export notification: None Required.
United States – TSCA 5(a)2 – Final significant new use rules: Not Listed.
United States – TSCA 5(a)2 – Proposed significant new use rules: Not Listed.
United States – TSCA 5(e) – Substance consent order: Not listed.

Clean Air Act – Ozone Depleting Substances (ODS)	None.
Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)	None.
California Prop. 65	WARNING: This product can expose you to chemicals including Oxirane, 2-(chloromethyl)- that is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.
EPA SARA 302 Extremely Hazardous Substances	None required.
EPA SARA 302/304/311/312 Hazardous Chemicals	Acute Health Hazard
United States inventory (TSCA 8b)	All components are listed or exempted.

CANADA

WHMIS (Canada)	Class D-2B: Material causing other toxic effects (Toxic).
Canadian NPRI	None required.
CEPA Toxic substances	None required.

INTERNATIONAL REGULATIONS

International Lists	**Australia inventory (AICS):** All components are listed or exempted. **Canada inventory:** All components are listed or exempted. **Korea inventory:** All components are listed or exempted. **Japan inventory:** All components are listed or exempted. **China inventory (IECSC):** All components are listed or exempted. **New Zealand inventory (NZIoC):** All components are listed or exempted. **Philippines inventory (PICCS):** All components are listed or exempted. **Taiwan inventory (CSNN):** All components are listed or exempted.

16. Other Information, Including Date of Preparation or Last Revision

HMIS Rating

Health 2
Flammability 1
Physical Hazard 0

Date of Preparation	March 2, 2023
Date of Last Revision	January 22, 2020
Revision #	6.0
More Information	1-253-333-8118
Prepared by	System Three Resins Inc.

The information contained herein is based on the data available to us and is believed to be correct. However, System Three Resins, Inc. makes no warranty, expressed or implied, regarding the accuracy of these data or the results to be obtained from the use thereof. System Three assumes no responsibility for injury from the use of the product described herein.

SAFETY DATA SHEET

1. Product Identification

Product name	Sculpwood Paste Hardener, Part B
SDS Number	1610B00
Product type	Polyamide Resin Mixture
Recommended use of the chemical and restrictions on use	Recommended for, but not limited to, the repair and restoration of damaged or rotted wood.
Restrictions	None known.
Manufacturer/Supplier information	
Company name	SYSTEM THREE RESINS, INC.
Address	8517 Commerce Place Dr NE Lacey, WA 98516 United States
Telephone	1-253-333-8118
Website	www.systemthree.com
Email	support@systemthree.com
Emergency Contact	CHEMTEL (U.S. and CANADA) 1-800-704-9215 CHEMTEL (Outside the U.S.) – Call Collect accepted +1-360-256-7365

2. Hazard(s) Identification

Classification of substance or mixture/Signal Word

WARNING
Skin Corrosion/Irritation – Category 2
Serious Eye Damage/Eye Irritation – Category 2
Skin Sensitization – Category 1
Acute Aquatic Toxicity – Category 1
Chronic Aquatic Toxicity – Category 1

GHS Label Elements
Hazard Pictograms

Hazard Statements/Classification of substance or mixture

H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H400 Very toxic to aquatic life.
H413 May cause long lasting harmful effects to aquatic life.

Precautionary statements

Precautionary Statements **Prevention**	P202 Do not handle until all safety precautions have been read and understood. P260 Do not breathe dust/fume/gas/mist/vapors/spray. P264 Wash hands and exposed skin thoroughly after handling. P271 Use only outdoors or in a well-ventilated area. P272 Contaminated work clothes should not be allowed out of the workplace. P273 Avoid release to the environment. P279 Do not eat, drink or smoke when using this product. P280 Wear eye protection/face protection. Wear protective gloves. P285 In case of inadequate ventilation wear respiratory protection.
Response	P314 Get medical advice/attention if you feel unwell. P308 + P313 IF exposed or concerned: Get medical advice/attention. P302 + P352 IF ON SKIN: Wash with plenty of water. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 IF eye irritation persists: Get medical advice/attention. P333 + P313 IF skin irritation or rash occurs: Get medical advice/attention. P362 + P364 Take off contaminated clothing and wash it before reuse.
Storage	P403 + P233 Store in a well-ventilated place. Keep container tightly closed. P405 Store locked up.
Disposal	P501 Dispose of contents/container to be specified in accordance with regulations.
Hazards not otherwise classified (HNOC)	None known.

3. Composition/Information On Ingredients

Chemical Name	CAS Number	Content (%)
Polyamide Polymer	Proprietary	40 – 50%
Benzyl Alcohol	100-51-6	10 – 15%
Aliphatic Amines	Proprietary	5 – 10%
Nonyl Phenol	84852-15-3	1 – 5%

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. Occupational exposure limits, if available, are listed in Section 8.

4. First-Aid Measures

Skin contact	Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. Wash clothing before reuse. Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands. Safety shower should be located in immediate work area.
Eye contact	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 minutes. Get medical attention immediately. Suitable emergency eye wash facility should be available in work area.
Ingestion	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or

	are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	No specific treatment.

5. Fire-Fighting Measures

Suitable extinguishing media	Use an extinguishing agent suitable for the surrounding fire. Alcohol-resistant foam Carbon dioxide (CO_2) Dry chemical, dry sand, limestone powder
Unsuitable extinguishing media	Water (spray or stream).
Specific hazards arising from the chemical	In a fire or if heated, a pressure increase will occur and the container may burst. See also “Products of Combustion” in this section and Section 10.
Hazardous decomposition products	May generate ammonia gas. May generate toxic nitrogen oxide gases. Use of water may result in the formation of very toxic aqueous solutions. Do not allow run-off from firefighting to enter drains or watercourses. Incomplete combustion may form carbon monoxide. Ammonia gas may be liberated at high temperatures. In the case of incomplete combustion, an increased formation of oxides of nitrogen (NOx) is to be expected. Burning produces noxious and toxic fumes.
Special protective actions for fire-fighters	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk.
Special protective equipment for fire-fighters	Fire fighters should wear appropriate protection equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in a positive pressure mode.
Further information	None known.

6. Accidental Release Measures

Personal precautions	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
Emergency procedures	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For nonemergency personnel".
Methods and materials for containment/cleanup	
Small Spill	Stop leak if without risk. Move containers from spill area. Absorb with an inert absorbent material and place in an appropriate waste disposal container.

	Dispose of via a licensed waste disposal contractor. Wash the spill area clean with water and detergent, observing environmental requirements.
Large Spill	Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, watercourses, basements or confined areas. Contain and collect spillage with inert, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Wash the spill area clean with water and detergent, observing environmental requirements. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

7. Handling and Storage

Precautions for safe handling	Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Avoid breathing vapor or mist. Do not swallow. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
Precautions/Recommendations for safe/proper storage	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure Controls/Personal Protection

Occupational Exposure Limits	Not established.
Appropriate engineering controls	Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
Environmental exposure controls	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
Individual protection measures/Personal protective equipment	
Eye/face protection	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. Recommended: chemical safety goggles.

Hand protection	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Skin protection	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Special instructions for protection and hygiene	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Discard contaminated leather goods. Ensure that eyewash stations and safety showers are close to the workstation location.

9. Physical and Chemical Properties

Chemical family	Polyamide curing agent
Appearance	White Paste
Physical State	
Form	Paste
Color	Off-white
Odor	Ammonia-like odor
Density (Specific Gravity)	0.7 – 0.8 g/cm^3
Viscosity	30,000 – 40,000 CPS @77°F
pH	N/A
Melting point/freezing point	N/A
Initial boiling point and boiling range	N/A
Flash point	N/A
Evaporation rate	Slower than ether
Flammability (solid, gas)	N/A
Upper/lower flammability limit (by volume)	N/A
Upper flammability limit (by volume)	N/A
Lower flammability limit (by volume)	N/A
Material VOC	None
Vapor density	Heavier than air

Relative density	Not determined
Solubility in water	Negligible
Partition coefficient: n-octanol/water	N/A
Auto-ignition temperature	N/A
Decomposition temperature	N/A

10.Stability and Reactivity

Reactivity	Stable under normal conditions.
Chemical Stability	Stable
Possibility of hazardous reactions	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	Epoxy resins and epoxy resin hardeners react with each other producing heat. They should not be mixed with each other under uncontrolled conditions or in a large mass as the ensuing exothermic reaction may produce heat, smoke and hazardous decomposition products.
Incompatible materials	Organic and mineral acids. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion. Reactive metals (e.g. sodium, calcium, zinc, etc). Product slowly corrodes copper, aluminum, zinc and galvanized surfaces. Materials reactive with hydroxyl compounds. Oxidizing agents, amines, bases and reducing agents. Nitrous acid and other nitrosating agents. CAUTION! N-nitrosamines, many of which are known to be potent carcinogens, may be formed when the product comes in contact with nitrous acid, nitrites or atmospheres with high nitrous oxide concentrations.
Hazardous decomposition products	Organic acid vapors, nitric acid, ammonia, nitrogen and carbon oxides, nitrosamine and aldehydes. Nitrogen oxide can react with water vapors to form corrosive nitric acid.
Other hazards	None known.

11. Toxicological Information

Acute Health Hazard (components) No comprehensive data on product itself.

Component	Result	Species	Dose	Exposure
Nonyl Phenol	LD50 Dermal	Rabbit	2,031 mg/kg	-
	LD50 Oral	Rat	1,412 mg/kg	-
Benzyl Alcohol	LD50 Oral	Rat	1,620 mg/kg	-
Aliphatic Amines	LD50 Oral	Rat	300 – 2,000 mg/kg	-
	LD50 Dermal	Rabbit	1,000 – 2,000 mg/kg	-
	LD50 Oral	Rat	2169 mg/kg	-

Irritation/Corrosion (components) Classifies as non-corrosive to the skin per negative Corrositex Dermal Testing results.

Component	Test	Result	Species	Exposure

Benzyl Alcohol	OECD 405	Eyes - Irritant	Rabbit	-
Aliphatic Amines		Severe eye irritation	Rabbit	-
		Severe skin irritation	Rabbit	24 h
	In vitro	Corrosive	Rabbit	-

Sensitization No information on the product itself.

Component	Test	Species	Result	Exposure
Aliphatic Amines	Skin	Guinea Pig	Causes burns May cause sensitization by skin contact.	-
	Skin	Guinea Pig	Weak sensitizer	-

Mutagenicity No information on the product itself.

Carcinogenicity No information on the product itself.

Reproductive Toxicity No information on the product itself.

Teratogenicity No information on the product itself.

Specific target organ toxicity (single exposure) No information on the product itself.

Specific target organ toxicity (repeated exposure) No information on the product itself.

Aspiration hazard No information on the product itself.

Potential acute health effects

Eye Contact Causes serious eye irritation.

Inhalation May cause respiratory irritation.

Skin Contact Causes severe skin irritation. May cause a severe allergic reaction.

Ingestion Irritating to mouth, throat, and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye Contact Causes serious eye irritation. Extended exposure may result in irreversible damage to eye tissues. Adverse symptoms may include the following: Pain, irritation, watering, redness or combination of noted symptoms.

Inhalation May cause respiratory irritation. Adverse symptoms may include the following: Respiratory tract irritation, coughing. Severe or extended exposure may induce central nervous system (CNS) effects: headache, nausea, dizziness, confusion, breathing difficulties.

Skin Contact Causes skin irritation. May cause an allergic skin reaction. This material may be a strong skin sensitizer in certain susceptible persons. Once sensitized, most persons are unable to work around amine cured epoxy resins without an allergic reaction. Sensitized persons are not known to have other health problems as a result of sensitization. Adverse symptoms may include the following: Irritation and/or redness. Severe or extended exposure may result in absorption through skin which may induce central nervous system (CNS) effects: headache, nausea, dizziness, confusion, breathing difficulties.

Ingestion Irritating to mouth, throat, and stomach. Adverse symptoms may include the following: Irritation/damage of mucous membranes. May cause central nervous system (CNS) effects: headache, nausea, dizziness, confusion, breathing difficulties.

Delayed and immediate effects and also chronic effects from short and long term exposure No information on the product itself.

Potential chronic health effects

General Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity No significant effects or critical hazards.

Mutagenicity No significant effects or critical hazards.

Teratogenicity No significant effects or critical hazards.

Developmental effects No significant effects or critical hazards.

Fertility effects No significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates (ATEmix)

Route	ATE value
Oral	4152.5 mg/kg
Dermal	9010.9 mg/kg
Inhalation (vapors)	50.97 mg/l

12. Ecological Information

Ecotoxicity No information on the product itself.

Component	Test	Species	Result	Exposure
Nonyl Phenol	LC50	Fathead minnow	0.128 mg/l	96 h
	EC50	Water Flea	0.0848 – 0.19 mg/l	48 h
Benzyl Alcohol	LC50	Fathead minnow	460 mg/l	96 h
Aliphatic Amines	LC50	Fathead minnow	>100 mg/l	96 h
	LC50	Rainbow trout	222 mg/l	24 h
	NOEC	Scenedesmus subspicatus	6.25 mg/l	72 h

Persistence and degradability No information on the product itself.

Component	Test	Period	Result
Nonyl Phenol	EPA OPPTS	63 days	100%
	OECD	56 days	50%
	OECD 301B Ready Biodegradability – CO2 Evolution Test	35 days	48.2%
Benzyl Alcohol	Readily biodegradable		

Bioaccumulative Potential No information on the product itself.

Component	LogPow	BCF	Potential
Nonyl Phenol	5.4	740	High
Benzyl Alcohol	1.05	1.37 (calculated)	Low

Mobility in Soil No information on the product itself.

Soil/water partition coefficient (KOC) Data not available.

Other adverse effects No known significant effects or critical hazards.

13. Disposal Considerations

Waste from residues/ unused products The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

Contaminated packaging Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

14.Transport Information

The data provided in this section is for information only and may not be specific to your package size or mode of transport. You will need to apply the appropriate regulations to properly classify your shipment for transportation.

International Transport Regulations

Regulatory information	UN/NA number	Proper Shipping Name	Classes/*PG	Additional Information
DOT		Non-regulated		
TDG		Non-regulated		
IMO/IMDG	UN3082	Environmentally hazardous substance, liquid, n.o.s. (Nonyl Phenol)	Class 9 III	Marine pollutant
IATA	UN3082	Environmentally hazardous substance, liquid, n.o.s. (Nonyl Phenol)	Class 9 III	

*PG: Packing group

Special precautions for user: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

15. Regulatory Information

UNITED STATES

U.S. Federal Regulations

United States – TSCA 12(b) – Chemical export notification: None Required.
United States – TSCA 5(a)2 – Final significant new use rules: Not Listed.
United States – TSCA 5(a)2 – Proposed significant new use rules: Not Listed.
United States – TSCA 5(e) – Substance consent order: Not listed.

Clean Air Act – Ozone Depleting Substances (ODS) This product does not contain nor is it manufactured with ozone depleting substances.

Clean Air Act Section 112(b) Hazardous Air Pollutants (HAPs)

Product Name	Concentration %
Phenol	0 - 1

Pennsylvania – RTK Phenol

California Prop. 65 None required.

EPA SARA 302 Extremely Hazardous Substances None.

EPA SARA 302/304/311/312 Hazardous Chemicals Acute Health Hazard

SARA 313 Form R – Reporting requirements

Product Name	Concentration %
Phenol	0 - 1

CERCLA Hazardous substances

Component	%	Section 304 CERCLA Hazardous Substance	CERCLA Reportable Quantity (Lbs)	Product Reportable Quantity (Lbs)
Phenol	1	Listed		

United States inventory (TSCA 8b) All components are listed or exempted.

CANADA

WHMIS (Canada) Class D-2B: Material causing other toxic effects (Toxic).

Canadian NPRI None required.

CEPA Toxic substances None required.

INTERNATIONAL REGULATIONS

International Lists

Australia inventory (AICS): All components are listed or exempted.
Canada inventory: All components are listed or exempted.
Korea inventory: All components are listed or exempted.
Japan inventory: All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
New Zealand inventory (NZIoC): All components are listed or exempted.
Philippines inventory (PICCS): All components are listed or exempted.
Taiwan inventory (CSNN): All components are listed or exempted.

16. Other Information, Including Date of Preparation or Last Revision

HMIS Rating

Health 2
Flammability 1
Physical Hazard 0

Date of Preparation March 2, 2023

Date of Last Revision January 22, 2020

Revision # 7.0

More Information 1-253-333-8118

Prepared by System Three Resins Inc.

The information contained herein is based on the data available to us and is believed to be correct. However, System Three Resins, Inc. makes no warranty, expressed or implied, regarding the accuracy of these data or the results to be obtained from the use thereof. System Three assumes no responsibility for injury from the use of the product described herein.

SAFETY DATA SHEET

1. Product Identification

Product name	EndRot Borate Powder
SDS Number	9051510
Product type	Disodium octaborate tetrahydrate
Recommended use of the chemical and restrictions on use	Compound for control of wood rot decay and insect infestation of wood
Restrictions	None known.
Manufacturer/Supplier information	
Company name	SYSTEM THREE RESINS, INC.
Address	8517 Commerce Place Dr NE Lacey, WA 98516 United States
Telephone	1-253-333-8118
Website	www.systemthree.com
Email	support@systemthree.com
Emergency Contact	CHEMTEL (U.S. and CANADA) 1-800-704-9215 CHEMTEL (Outside the U.S.) – Call Collect accepted +1-360-256-7365

2. Hazard(s) Identification

Classification of substance or mixture/Signal Word	WARNING Reproductive Toxicity – Category 2
GHS Label Elements **Hazard Pictograms**	
Hazard Statements/Classification of substance or mixture	H361 Suspected of damaging fertility or the unborn child.
Precautionary statements	
Precautionary Statements **Prevention**	P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood. P280 Wear protective gloves/protective clothing/eye protection/face protection.
Response	P308+P313 IF exposed or concerned: Get medical advice/attention.
Storage	P405 Store locked up.
Disposal	P501 Dispose of contents/container in accordance with local regulation.
Hazards not otherwise classified (HNOC)	None known.

3. Composition/Information On Ingredients

Chemical Name	CAS Number	Content (%)
Disodium octaborate tetrahydrate	12280-03-4	>98.0%

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. Occupational exposure limits, if available, are listed in Section 8.

4. First-Aid Measures

Skin contact — No treatment necessary.

Eye contact — Use eye wash fountain or fresh water to cleanse eye. If irritation persists for more than 30 minutes, seek medical attention.

Ingestion — Swallowing small quantities (one teaspoon) will cause no harm to healthy adults. If larger amounts are swallowed, give two glasses of water to drink and seek medical attention.

Inhalation — If symptoms such as nose or throat irritation are observed, remove to fresh air.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician — Supportive care only is required for adult ingestion of less than a few grams of the product. For ingestion of larger amounts, maintain fluid and electrolyte balance and maintain adequate kidney function.

Specific treatments — Gastric lavage is only recommended for heavily exposed, symptomatic patients in whom emesis has not emptied the stomach. Hemodialysis should be reserved for patients with massive acute absorption, especially for patients with compromised renal function. Boron analyses of urine or blood are only useful for verifying exposure and are not useful for evaluating severity or as a guide in treatment.

5. Fire-Fighting Measures

Suitable extinguishing media — Use extinguishing media that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media — None.

Specific hazards arising from the chemical
Hazardous decomposition products — None. The product is not flammable, combustible, or explosive.

Special protective actions for fire-fighters — Not applicable.

Special protective equipment for fire-fighters — Not applicable. The product itself is a flame retardant.

Further information — None known.

6. Accidental Release Measures

Personal precautions — Eye goggles and gloves are not required for normal industrial exposures, but eye protection according to ANSI Z.87.1 or other national standard. Respirators should be considered if environment is excessively dusty.

Emergency procedures — Eye goggles and gloves are not required for normal industrial exposures, but eye protection according to ANSI Z.87.1 or other national standard. Respirators should be considered if environment is excessively dusty.

Methods and materials for containment/cleanup — **Appropriate containment:** Avoid spillage into water and cover drains.
Land spill: Vacuum, shovel or sweep up and place in containers for disposal in accordance with applicable local regulations.

Spillage into water: Where possible, remove any intact containers from the water.

Environmental precautions

The product is a water-soluble white powder that may cause damage to trees or vegetation by root absorption. Avoid contamination of water bodies during clean up and disposal. Advise local water authority that none of the affected water should be used for irrigation or for the abstraction of potable water until dilution returns the boron value to its normal environmental background level or meets local water quality standards.

7. Handling and Storage

Precautions for safe handling

Good housekeeping procedures should be followed to minimize dust generation and accumulation. Avoid spills. Do not eat, drink and smoke in work areas. Wash hands after use. Remove contaminated clothing and protective equipment before entering eating areas.

Precautions/Recommendations for safe/proper storage

No special handling precautions are required, but dry, indoor storage is recommended. To maintain package integrity and it minimize caking of the product, bags should be handled on a first-in first-out basis.

Storage: Ambient
Storage pressure: Atmospheric
Special sensitivity: Moisture (Caking)

8. Exposure Controls/Personal Protection

Occupational Exposure Limits

In the absence of a national OEL, Rio Tinto Borax recommends and applies internally an Occupational Exposure Limit (OEL) of 1 mg B/m^3. To convert product into equivalent boron (B) content, multiply by 0.21.

OSHA/PEL (total dust)	15 mg/m^3	Particulate Not Otherwise Classified or Nuisance Dust
OSHA/PEL (respirable dust)	5 mg/m^3	Particulate Not Otherwise Classified or Nuisance Dust
Cal OSHA/PEL	5 mg/m^3	Particulate Not Otherwise Classified or Nuisance Dust

Appropriate engineering controls

Use local exhaust ventilation to keep airborne concentrations of dust below permissible exposure limits.

Environmental exposure controls

None.

Individual protection measures/Personal protective equipment

Eye/face protection

Eye protection according to ANSI Z.87.1 or other national standards may be warranted if environment is excessively dusty.

Skin protection

Standard work gloves (cotton, canvas or leather) may be warranted if environment is excessively dusty.

Respiratory protection

Where airborne concentrations are expected to exceed exposure limits, respirators should be used.

Special instructions for protection and hygiene

None.

9. Physical and Chemical Properties

Chemical family

Borate powder

Appearance

White, crystalline solid

Physical State	
Form	Solid
Color	White
Odor	Odorless
Density (Specific Gravity)	1.87 @ 22°C
Viscosity	Not applicable
pH	8.3 (3.0% solution); 7.6 (10.0% solution) @ 20°C
Melting point/freezing point	815°C
Initial boiling point and boiling range	Not applicable: melting point 815°C
Flash point	Not applicable: inorganic substance
Evaporation rate	Not applicable: non-volatile
Flammability (solid, gas)	Non-flammable (used as a flame retardant)
Upper/lower flammability limit (by volume)	Not applicable: non-flammable
Material VOC	Not available
Vapor density	Not applicable
Relative density	Not applicable
Solubility in water	223.65 g/L @ 20°C
Partition coefficient: n-octanol/water	Not applicable: inorganic substance
Auto-ignition temperature	Not applicable: not self-heating
Decomposition temperature	Not applicable

10.Stability and Reactivity

Reactivity	None known.
Chemical Stability	Under normal ambient temperatures (-40°C to +40°C), the product is stable.
Possibility of hazardous reactions	Reaction with strong reducing agents such as metal hydrides or alkali metals will generate hydrogen gas which could create an explosive hazard.
Conditions to avoid	Avoid contact with strong reducing agents by storing according to good industrial practice.
Incompatible materials	Strong reducing agents.
Hazardous decomposition products	None.
Other hazards	None.

11. Toxicological Information

Acute Health Hazard	Acute Toxicity (Oral) Category 5 (Hazard statement: H303: May be harmful if swallowed). Poorly absorbed through intact skin. Based on the available data, the classification criteria are not met. Low acute inhalation toxicity. Based on the available data, the classification criteria are not met.

Component	Result	Species	Dose	Exposure
Disodium octaborate tetrahydrate	Acute Oral Toxicity Study – OECD Guidelines 401: LD50 Oral	Rat	2,550 mg/kg	-

	Acute Dermal Toxicity Study – OECD Guideline 402: LD50 Dermal	Rabbit	>2,000 mg/kg	-
	Acute Inhalation Toxicity Study – OECD Guideline 403: LC50 Inhalation	Rat	>2.0 mg/L	-

Irritation/Corrosion

Skin Corrosion/Irritation: No skin irritation. Based on the available data for the hydrated forms of sodium tetraborate, the classification criteria are not met.

Serious Eye Damage: Based on mean scores of ≤ 1, and the effects were fully reversible within 7 days, the classification criteria are not met. Many years of occupational exposure indicate no adverse effects on human eye.

Component	Result	Species	Test	Exposure
Disodium octaborate tetrahydrate	Mean Primary Irritation Score: 0.5.	New Zealand White Rabbit	Primary Dermal Irritation Study – U.S. EPA FIFRA Guidelines	Dose: 0.5g
	Eyes - Not irritating. Induced slight iritis, conjunctivae redness and chemosis, reversible after 4-7 days with a return to near normal by 7 days after exposure.	New Zealand White Rabbit	Eye Irritation Study – similar to OECD Guideline 405	Dose: 0.1g

Sensitization

Not a skin sensitizer. No respiratory sensitization studies have been conducted. There are no data to suggest that boric acid or sodium borates are respiratory sensitizers. Base on the available data, the classification criteria are not met.

Component	Result	Species	Dose	Exposure
Disodium octaborate tetrahydrate	Not a skin sensitizer.	Guinea Pig	0.4g of a 95% w/w mixture in distilled water.	Dermal – Buehler Test OECD Guideline 406

Mutagenicity

Based on the available data, the classification criteria are not met.

Component	Result	Species	Dose	Exposure
Disodium octaborate tetrahydrate	Not mutagenic (based on boric acid).	L5178Y mouse lymphoma, V79 Chinese hamster cells, C3H/10T1/2 cells, hepatocytes, Chinese hamster ovary (CHO cells)	1.0 – 10.0 mg/ml (1000 – 10000 ppm) boric acid	Several in vitro mutagenicity studies have been carried out on boric acid including gene mutation in mammalian cells, unscheduled DNA synthesis, chromosomal aberration and sister chromatid exchange in mammalian cells.

Carcinogenicity

No evidence of carcinogenicity (based on boric acid). Based on the available data, the classification criteria are not met.

Component	Result	Species	Dose	Exposure
Disodium octaborate tetrahydrate	Not carcinogenic.	B6C3F1 mice	446; 1150 mg boric acid/kg bw/day	Oral - OECD 451 equivalent

Reproductive Toxicity

Reproductive Toxicity Category 2 (Hazard statement: H361: Suspected of damaging fertility or the unborn child.)

Component	Result	Species	Dose	Exposure
Disodium octaborate tetrahydrate	NOAEL in rats for effects on fertility in males is 100 mg boric acid.kg bw equivalent to 17.5 mg B/kg bw	Rat	0; 34 (5.9); 100 (17.5); and 336 (58.5) mg boric acid (mg B)/kg bw/day	Oral feeding study – Three generation feeding study, similar to OECD 416 Two-Generation Study

	NOAEL in rats for developmental effects on the fetus including fetal weight loss and minor skeletal variations is 55 mg boric acid/kg bw or 9.6 mg B/kg.	Rat	0; 19 (3.3); 36 (6.3); 55 (9.6); 76 (13.3) and 143 (25) mg boric acid (mg B)/kg bw.	Oral Feeding Study – Prenatal Developmental Toxicity Study of Boric Acid – OECD Guideline 414
	No adverse fertility effects in male workers. Epidemiological studies of human developmental effects have shown an absence of effects in exposed borate workers and populations living in areas with high environmental levels of boron.	Human	A subset of workers was exposed to 125 mg B/day.	Combined oral ingestion and inhalation – Occupational studies evaluating sensitive sperm parameters in highly exposed borate workers. Epidemiological studies evaluating high environmental exposures to boron and developmental effects in humans have been conducted.

Specific target organ toxicity (single exposure) Based on the available data, the classification criteria are not met.

Specific target organ toxicity (repeated exposure) Based on the available data, the classification criteria are not met.

Aspiration hazard Physical form of solid powder indicates no aspiration hazard potential.

Symptoms related to the physical, chemical and toxicological characteristics Products are not intended for ingestion. Small amounts (e.g. a teaspoon) swallowed accidentally are not likely to cause effects. Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. These may include nausea, vomiting, and diarrhea, with delayed effects of skin redness and peeling.

Delayed and immediate effects and also chronic effects from short and long term exposure Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to boric acid and sodium borate dust. Human epidemiological studies indicate no effect on fertility in occupational populations with chronic exposures to borate dust and indicate no effect to a general population with high exposures to borates in the environment.

Numerical measures of toxicity None. This product is a substance.

12. Ecological Information

Ecotoxicity (aquatic and terrestrial, where available) Note that the data values are expressed as boron equivalents. To convert to this product, divide the boron equivalent by 0.21. Studies judged to be unreliable or with insufficient information to evaluate are not included.

Freshwater

Chronic Studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Vales (geometric NOEC/EC10)	References
Algal	4	10 mg B/L (Chlorella pyrenoidosa) to 50 mg B/L (Anacystis nidulans)	3, 4
Higher plants	3	4.0 mg B/L (Phragmites australis) to 60 mg B/L (Lemna minor)	5, 6
Invertebrate and protozoan	7	5.7 mg B/L (Daphnia magna) 32 mg B/L (Chironomus riparius)	7, 8
Fish	6	2.9 mg B/L (Micropterus salmoides) to 17 mg B/L (Carassius auratus)	9
Amphibian	2	29 mg B/L (Rana pipiens) to 41 mg B/L (Bufo fowlen)	9

Results[2]: Based on the complete data set of 22 species, the HC_5 value of the species sensitivity distribution is 4.05 mg B/L.

Acute Studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Vales (geometric NOEC/EC10)	References
Algal	2	10 mg B/L (Chlorella pyrenoidosa) to 28 mg B/L (Selenastrum capricornutum)	3, 10
Invertebrate and protozoan	9	113 mg B/L (Ceriodaphnia dubia) to 1376 mg B/L (Chironomus decorus)	11, 12
Fish	7	80 mg B/L (Pimephales promelas) to 627 mg B/L (Onchorhynchus tschawytscha)	11, 13
Amphibian	2	86 mg B/L (Rana pipiens) to 104 mg B/L (Bufo fowlen)	9

Results[2]: Based on the complete data set from 46 studies with 20 species, the HC_5 value of the species sensitivity distribution is 27.3 mg B/L.

Classification: Based on the acute data for freshwater species, this substance is not classified as hazardous to the environment.

Marine and Estuarine Data

Chronic Studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Vales (geometric NOEC/EC10)	References
Algal	2	5 mg B/L (Emiliana huxleyi) to >100 mg B/L (Agmenellum quadruplicatum, Anacystis marina, Thallassiorsira pseudonana)	4

Results: No data are available for invertebrate or vertebrate species. The results from the freshwater data set are recommended as applicable to marine and estuarine species.

Acute Studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Vales (geometric NOEC/EC10)	References
Invertebrate	3	45 mg B/L (ELitopenaeus vannamei) to 83 mg B/L (Americamysis bahia)	14, 15
Fish	2	74 mg B/L (Limanda limanda) to 600 mg B/L (Oncorhynchus tschawytscha)	13, 16

No data are available for algal species.

Sediment

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Vales (geometric NOEC/EC10)	References
Invertebrate	1	82.4 mg B/L sediment dw (Chironomus riparius)	17, 18

Results: Although limited, the data suggest that sediment organisms are within range of toxicity of aquatic organisms. In addition, the substance will not partition to the sediment, so a sediment/water partitioning approach is justified.

Sewage Treatment Plants (STP)

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Vales (geometric NOEC/EC10)	References
Activated sludge	NA	>17.5 mg B/L to 100 mg B/L	19
Microbes	3	10 mg B/L (Opercularia bimarginata) to 20 mg B/L (Paramecium caudatum)	20

Terrestrial Data

Chronic Studies

Taxonomic Group	Number of Taxa Tested	Range of Endpoint Vales (geometric NOEC/EC10)	References
Plant	28	7.2 mg B/kg dw (Zea mays) to 56 mg B/kg dw (Allium cepa)	21, 22

Invertebrates	9	15.4 mg B/kg dw (Folsomia candida) to 87 mg B/kg dw (Caenorhabditis elegans)	23, 24
Soil micro	3	12 mg B/kg dw (nitrogen mineralization and nitrification test) to 420 mg B/kg dw (soil nitrogen transformation test)	25, 26

Results[2]: Based on the complete data set, the HC_5 value of the species sensitivity distribution is 10.8 mg B/kg dw.

Phytotoxicity: Boron is an essential micronutrient for healthy growth of plants. It can be harmful to boron sensitive plants in higher quantities. Care should be taken to minimize the amount of borate product released to the environment.

Persistence and degradability — Biodegradation is not an applicable endpoint since the product is an inorganic substance.

Bioaccumulative Potential — This product will undergo hydrolysis in water to form undissociated boric acid. Boric acid will not biomagnify through the food chain.
Octanol/Water partition coefficient: Log Pow = -0.7570 @ 25°C (based on boric acid).

Mobility in Soil — The product is soluble in water and is leachable through normal soil. Adsorption to soils or sediments is insignificant.

Other adverse effects — None

13. Disposal Considerations

Waste from residues/ unused products — Local authorities should be consulted about any specific local requirements. Such product should, if possible, be used for an appropriate application.

Contaminated packaging — Product packaging should be recycled where possible.

14.Transport Information

The data provided in this section is for information only and may not be specific to your package size or mode of transport. You will need to apply the appropriate regulations to properly classify your shipment for transportation.

International Transport Regulations

Regulatory information	UN/NA number	Proper Shipping Name	Classes/*PG	Additional Information
DOT		Not regulated		
TDG		Not regulated		
IMO/IMDG		Not regulated		
IATA		Not regulated		

*PG: Packing group

Special precautions for user: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

15. Regulatory Information

Clean Air Act (Montreal Protocol) – Ozone Depleting Substances (ODS) — Not manufactured with and does not contain any Class I or Class II ozone depleting substances.

Regulation (EC) No 689/2008 – Export and Import of Dangerous Chemicals — Not listed.

National Regulations — Ensure all national/local regulations are observed.

USA EPA RCRA	This product is not listed as hazardous waste under any sections of the Resource Conservation and Recovery Act (RCRA) or regulations (40 CFR 261 et seq).
EPA FIFRA	This product is a pesticide registered by the Environmental Protection Agency (EPA Reg. No. 65105-2) and is subject to certain labeling requirements under federal -pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals.
Superfund: CERCLA/SARA	This product is not listed under CERCLA (Comprehensive Environmental Response Compensation and Liability Act) or its 1986 amendments, SARA (Superfund Amendments and Reauthorization Act), including substances listed under Section 313 of SARA, Toxic Chemicals, 42 USC 11023, 40 CFR 372.65, Section 302 of SARA, Extremely Hazardous Substances, 42 USC 11002, 40 CFR 355, or the CERCLA Hazardous Substances list, 42 USC 9604, 40 CFR 302.
Safe Drinking Water Act (SDWA)	This product is not regulated under the SDWA, 42 USC 300g-1, 40 CFR 141 et seq. Consult state and local regulations for possible water quality advisories regarding boron compounds.
Clean Water Act (CWA) (Federal Water Pollution Control Act)	33 USC 1251 et seq. a) This product is not itself a discharge covered by any water quality criteria of Section 304 of the CWA, 33 USC 1314. b) It is not on the Section 307 List of Priority Pollutants, 33 USC 1317, 40 CFR 129. c) It is not on the Section 311 List of Hazardous Substances, 33 USC 1321, 40 CFR 116.
Pest Management Regulatory Agency	Registration No. 33244
Chemical Inventory Listing	**U.S. EPA TSCA Inventory:** All components are listed or exempted. **Australia inventory (AICS):** All components are listed or exempted. **Canada inventory (DSL):** All components are listed or exempted. **South Korea inventory (KECI):** All components are listed or exempted. **Japan inventory (METI & ISHL):** All components are listed or exempted. **China inventory (IECSC):** All components are listed or exempted. **New Zealand inventory (NZIoC):** All components are listed or exempted. **Philippines inventory (PICCS):** All components are listed or exempted. **Taiwan inventory (CSNN):** All components are listed or exempted.

16. Other Information, Including Date of Preparation or Last Revision

HMIS Rating

Health 1
Flammability 0
Physical Hazard 0

Date of Preparation	January 24, 2020
Date of Last Revision	September 16, 2019
Revision #	4.0
More Information	1-253-333-8118
Prepared by	System Three Resins Inc.

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