SAFETY DATA SHEET

1. Product Identification

Product name	T-88 Adhesive Hardener, Part B
SDS Number	1100B00
Product type	Polyamide Mixture
Recommended use of the chemical and restrictions on use	Directed at, but not limited to, the adhesion of similar and dissimilar substrates.
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
Skin Sensitization – Category 1
Toxic to Reproduction [Fertility, Unborn child] – Category 2
Specific Target Organ Toxicity (Single Exposure) [eyes] – Category 1
Specific Target Organ Toxicity (Single Exposure) [Respiratory tract irritation] – Category 3
Specific Target Organ Toxicity (Repeated Exposure) [skin, respiratory tract, kidneys, liver] – Category 1
Aquatic Hazard (Acute) – Category 1
Aquatic Hazard (Long-term) – Category 1

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.
H335	May cause respiratory irritation.
H361	Suspected of damaging fertility or the unborn child.
H370	Causes damage to organs: (eyes)

H372 Causes damage to organs through prolonged or repeated exposure: (skin, respiratory tract, kidneys, liver)
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

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 vapor.
P261 Avoid breathing vapor.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink, or smoke when using this product.
P271 Use only outdoors or in well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves. Wear eye or face 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.
P310 Immediately call a POISON CENTER or physician.
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
P342 + P311 If experiencing respiratory symptoms: Call a POISON Center or physician.
P362 + P354 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.

Storage

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

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 (%)
Polyamide Polymer Mixture	Proprietary	70 – 80%
Nonyl Phenol	84852-15-3	10 – 15%
Tris-2,4,6-(dimethylaminomethyl)phenol	90-72-2	1 – 10%
Triethylenetetramine	112-24-3	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

Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical

	attention. If necessary, call a poison center or physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse.
Eye contact	Flush with water for 15 minutes holding eye lids open. Check for and remove any contact lenses. Get medical attention. If necessary, call a poison center or physician.
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 in 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 necessary, call a poison center or physician. 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 collar, tie, belt, or waistband.
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	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Specific treatments	Treat symptoms as they appear.

5. Fire-Fighting Measures

Suitable extinguishing media	Alcohol resistant foam, carbon dioxide, dry chemical, dry sand, limestone powder.
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. Ammonia gas may be liberated at high temperatures. In case of incomplete combustion an increased formation of oxides of nitrogen (NOx) is to be expected.
Hazardous decomposition products	Carbon oxides, 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	Use personal protective equipment. Wear self-contained breathing apparatus.
Further information	None known.

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 spill at source, dike area to prevent spreading, pump liquid to salvage tank or drum. Remaining liquid may be taken up on clay, diatomaceous earth, sawdust or other absorbent, and shoveled into disposal container.
Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

7. Handling and Storage

Precautions for safe handling	Always wear protective, disposable gloves when handling epoxy hardeners to prevent exposure. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate.
Precautions/Recommendations for safe/proper storage	Store epoxy hardeners 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	None established.
Appropriate engineering controls	If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local 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 glasses with side shields are recommended. Always wear eye protection when sanding cured epoxy to avoid dust in eyes.
Hand protection	Always wear impervious gloves, neoprene, vinyl or rubber.
Skin protection	Wear clean, body-covering clothing to avoid skin contact.
Respiratory protection	Use a NIOSH-approved respiratory device when sanding cured epoxy to prevent dust in lungs.
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	Polyamide
Appearance	Amber colored liquid
Physical State	
Form	Liquid
Color	Amber
Odor	Mild ammonia
Density (Specific Gravity)	0.95 – 0.97

Viscosity	25,000 – 30,000 CPS @77°F
pH	Not available
Melting point/freezing point	Not available
Initial boiling point and boiling range	Not applicable
Flash point	Not available
Evaporation rate	Slower than ether
Flammability (solid, gas)	Not available
Upper/lower flammability limit (by volume)	Not available
Upper flammability limit (by volume)	Not available
Lower flammability limit (by volume)	Not available
Material VOC	None
Vapor density	Heavier than air
Relative density	Not available
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	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. 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 (ingestion, inhalation, dermal) on mixture (product).

Component	Result	Species	Dose	Exposure
Nonyl Phenol	LD50 Dermal	Rabbit	2,031 mg/kg	-
	LD50 Oral	Rat	1,412 mg/kg	-

Tris-2,4,6-(dimethylaminomethyl)phenol	LD50 Oral	Rat	2,169 mg/kg	-
Triethylenetetramine	LD50 Oral	Rat	2,500 mg/kg	-

Irritation/Corrosion (components) Classifies as non-corrosive per negative Corrositex Dermal Testing. Classifies as Serious eye damage Category 1 per GHS calculations of additivity.

Component	Result	Species	Test	Exposure
Tris-2,4,6-(dimethylaminomethyl)phenol	Skin – Corrosive	Rabbit	In vitro test	-
	Eyes – Severe Irritant	Rabbit	-	-
Triethylenetetramine	Eyes – Moderate irritant	Rabbit	-	24 hrs
	Skin – Severe irritant	Rabbit	-	24 hrs
	Eyes – Severe irritant	Rabbit	-	-

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
Polyamide Polymer Mixture	Category 3		Respiratory tract irritation
Triethylenetetramine	Category 1		Eyes

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

Component	Category	Route of exposure	Target organs
Polyamide Polymer Mixture	Category 2		Skin
Triethylenetetramine	Category 1		Respiratory tract
	Category 2		Skin, Liver, Kidneys

Aspiration hazard No information on product itself.

Potential acute health effects

Eye Contact Causes serious eye damage.

Inhalation May cause respiratory irritation. May cause allergic skin reaction. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Skin Contact Causes severe burns. 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 Reduced fetal weight Increase in fetal deaths Skeletal malformations
Skin Contact	Adverse symptoms may include the following: Pain or irritation Redness Blistering may occur Reduced fetal weight Increase in fetal deaths Skeletal malformations
Ingestion	Adverse symptoms may include the following: Stomach pains Reduced fetal weight Increase in fetal deaths Skeletal malformations

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

Potential chronic health effects

General	Causes damage to organs through prolonged or repeated exposure: 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	Suspected of damaging the unborn child.
Developmental effects	No known significant effects or critical hazards.
Fertility effects	Suspected of damaging fertility.

Numerical measures of toxicity

Acute toxicity estimates (ATEmix)

Route	ATE value
Oral	3,435.7 mg/kg
Dermal	N/A
Inhalation (vapors)	N/A

12. Ecological Information

Ecotoxicity

Component	Results	Species	Exposure
Nonyl Phenol	Acute EC50 – 950 mg/l	Bacteria	3 h static
	Acute EC50 – 0.085 mg/l	Daphnia	48 h static
	Acute LC50 – 0.05 mg/l	Fish	96 h static
Triethylenetetramine	Acute LC50 – 33,900 µg/l Fresh water	Aquatic invertebrates. Water flea	48 h
	Acute EC50 – 3,700 µg/l Fresh water	Aquatic plants – Green algae	96 h

Persistence and degradability No information on product itself.

Bioaccumulative Potential

Component	LogPow	BCF	Potential
Nonyl Phenol	-1.48	-	low
Triethylenetetramine	-1.66 - -1.4	-	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. 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		Not regulated		
TDG		Not regulated		
IMO/IMDG	UN3082	Environmentally hazardous substances, liquid, n.o.s. (Nonyl Phenol)	Class 9 III	Marine Pollutant
IATA	UN3082	Environmentally hazardous substances, 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, Chronic 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).
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 2
Flammability 1
Physical Hazard 0

Date of Preparation March 3, 2023

Date of Last Revision January 7, 2020

Revision # 5.0

More Information 1-253-333-8118

Prepared by System Three Resins Inc.

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