

SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:..... WEST SYSTEM® G/flex® 650 Part A Resin
APPLICABLE PRODUCT CODES: 650A, 650-CR, 650-ER
CHEMICAL FAMILY:..... Epoxy resin mixture.
INTENDED PRODUCT USES:..... Epoxy resin.
PRODUCT RESTRICTIONS:..... None identified.
SDS VERSION: 650A-2022a

MANUFACTURER:
Gougeon Brothers, Inc.
100 Patterson Ave.
Bay City, MI 48706, U.S.A.
Phone: 866-937-8797 or 989-684-7286
www.westsystem.com

EMERGENCY TELEPHONE NUMBERS (24 HRS):
Transportation
CHEMTREC: 800-424-9300 (U.S.)
703-527-3887 (International)
Non-transportation
Poison Hotline: 800-222-1222

2. HAZARDS IDENTIFICATION

Classification of Substance or Mixture

Skin corrosion/irritation, Category 2
Skin sensitizer, Category 1
Eye damage/irritation, Category 2A
Chronic aquatic toxicity, Category 2

Label Elements

Hazard Pictogram(s):



Signal Word:
WARNING

Hazard Statements:
H315 Causes skin irritation
H317 May cause an allergic skin reaction
H319 Causes serious eye irritation
H411 Toxic to aquatic life with long lasting effects

Precautionary Statements:

Prevention

P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
P264 Wash hands thoroughly after handling.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

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 attention/advice.
P337 + P313 If eye irritation persists: Get medical attention/advice.
P362 + P364 Take off contaminated clothing and wash it before re-use.
P391 Collect spillage.

Disposal

P501 Dispose of contents/container in accordance with local, regional and international regulations.

Other Hazards

None known.

3. COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS

INGREDIENT NAME	CAS #	CONCENTRATION (%)
Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers	25085-99-8	65-85
Phenol-Formaldehyde Polymer Glycidyl Ether	28064-14-4	10-30

The exact chemical identity and/or exact percentage (concentration) of each ingredient may be held as confidential business information (CBI). Any ingredient not disclosed in this section may have been determined not to be hazardous to health or the environment, or it may be present at a level below its disclosure threshold.

4. FIRST AID MEASURES

FIRST AID FOR EYES:..... SYMPTOMS: Causes serious irritation and redness. RESPONSE: Flush immediately with water for at least 15 minutes. Remove contact lenses if present and easy to do. Consult a physician as precautionary measure.

FIRST AID FOR SKIN:..... SYMPTOMS: Causes skin irritation. May cause allergic skin reaction and sensitization. RESPONSE: Remove contaminated clothing. Wipe excess from skin. Apply waterless skin cleaner and then wash with soap and water. Consult a physician if effects occur.

FIRST AID FOR INHALATION:..... SYMPTOMS: Not a likely route of exposure under normal conditions of use. RESPONSE: Remove to fresh air if respiratory irritation occurs and keep comfortable for breathing.

FIRST AID FOR INGESTION:..... SYMPTOMS: No acute adverse health effects expected from amounts ingested under normal conditions of use. RESPONSE: Seek medical attention if a significant amount is ingested.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA:..... SUITABLE: Foam, carbon dioxide (CO₂), dry chemical. NON-SUITABLE: Direct water stream.

FIRE AND EXPLOSION HAZARDS:..... During a fire, smoke may contain the original materials in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include, but are not limited to: phenolics, carbon monoxide, and carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES:..... Wear a self-contained breathing apparatus and complete full-body personal protective equipment. Closed containers may rupture (due to buildup of pressure) when exposed to extreme heat.

6. ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES:..... Keep unnecessary and unprotected personnel from entering area. Use appropriate safety and personal protective equipment as indicated in Section 8.

MITIGATION AND CLEAN UP PROCEDURES:..... Stop leak without additional risk. Isolate area. Dike and absorb with inert material (e.g., sand) and collect in a suitable, closed container. Warm, soapy water or non-flammable, safe solvent may be used to clean residual.

ENVIRONMENTAL PRECAUTIONS:..... Prevent from entering into soil, ditches, sewers, waterways and groundwater. See Section 12 for environmental impact information.

7. HANDLING AND STORAGE

STORAGE TEMPERATURE (min./max.):..... 40°F (4°C) / 120°F (49°C)

STORAGE:..... Store in cool, dry place. Store in tightly sealed containers to prevent moisture absorption and loss of volatiles. Excessive heat over long periods of time will degrade the resin.

HANDLING PRECAUTIONS:..... Avoid all skin and eye contact. Wash thoroughly after handling. Launder contaminated clothing before reuse. Avoid inhalation of vapors from heated product. Precautionary steps should be taken when curing product in large quantities. When mixed with epoxy curing agents this product causes an exothermic, which in large masses, can produce enough heat to damage or ignite surrounding materials and emit fumes and vapors that vary widely in composition and toxicity.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:..... Use with adequate general ventilation and/or local ventilation to keep exposures below established limits.

EYE PROTECTION GUIDELINES:..... Safety glasses with side shields or chemical splash goggles.

SKIN PROTECTION GUIDELINES:..... Wear liquid-proof, chemical resistant gloves (nitrile-butyl rubber, neoprene, butyl rubber or natural rubber) and full body-covering clothing.

RESPIRATORY PROTECTION GUIDELINES:..... When ventilation cannot be made adequate enough to keep exposures below established limits, use a NIOSH approved respirator with an organic vapor cartridge, or organic vapor cartridge + P100 particulate filter, depending on specific workplace conditions. Consult with your respirator and cartridge supplier to ensure proper selection of respirator and cartridge based on ingredients listed in Section 3 and specific workplace conditions. Use and select a respirator according to the guidelines established in OSHA 1910.134 or other applicable respiratory protection standard.

ADDITIONAL PROTECTIVE MEASURES:..... Practice good caution and personal cleanliness to avoid skin and eye contact. Avoid skin contact when removing gloves and other protective equipment. Wash thoroughly after handling. Generally speaking, working

WEST SYSTEM® G/flex® 650 Part A Resin

cleanly and following basic precautionary measures will greatly minimize the potential for harmful exposure to this product under normal use conditions.

OCCUPATIONAL EXPOSURE LIMITS: Exposure limits may not be established for this product as a whole. For established exposure limits of specific ingredients in this product, or other available exposure limit information, refer to the table below.

Ingredient Name	CAS#	Exposure Limit Information
Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers	25085-99-8	No data available.
Phenol-Formaldehyde Polymer Glycidyl Ether	28064-14-4	No data available.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM: Viscous liquid.
COLOR: Colorless.
ODOR: Mild.
ODOR THRESHOLD: No data available
pH: No data available
MELTING POINT / FREEZING POINT No data available
BOILING POINT (760mm/Hg): > 400°F (204°C) Estimated based on ingredient data.
FLASH POINT: >200°F (93°C) Based on ASTM D92 test results from similar product.
AUTO IGNITION TEMPERATURE No data available
LOWER EXPLOSIVE LIMIT (LEL) No data available
UPPER EXPLOSIVE LIMIT (UEL) No data available
VAPOR PRESSURE No data available
SPECIFIC GRAVITY/DENSITY (water = 1) 1.17
BULK DENSITY 9.75 lbs./gal. (1.17 kg/L)
VAPOR DENSITY (air = 1) < 1 mmHg @ 20°C. Estimated based on ingredient data.
EVAPORATION RATE (Butyl Acetate = 1) No data available
WATER SOLUBILITY (% BY WT.) No data available
PARTITION COEFFICIENT, n-OCTANOL/WATER (log Pow) No data available
KINEMATIC VISCOSITY: > 10000 mm²/s @ 20°C
DECOMPOSITION TEMPERATURE: No data available.
% VOLATILE BY WEIGHT: ASTM D 2369-07 was used to determine the Volatile Content of mixed epoxy resin and hardener. Refer to the hardener SDS for information about the total volatile content of the resin/hardener system.

10. STABILITY AND REACTIVITY

STABILITY: Product is stable at normal temperatures and pressures.
REACTIVITY/HAZARDOUS REACTIONS: Product will not react by itself. A mass of more than one pound of product plus an aliphatic amine will cause irreversible polymerization with significant heat buildup. Strong acids, bases, amines and mercaptans can cause polymerization.
INCOMPATIBILITIES: Strong acids, bases, amines and mercaptans can cause polymerization. External heating or self-heating could result in rapid temperature increase and pressure build up. If such a condition were to occur in a drum, the drum could expand and rupture violently.
CONDITIONS TO AVOID: Avoid excessive heat.
DECOMPOSITION PRODUCTS: Carbon monoxide, carbon dioxide and phenolics may be produced during uncontrolled exothermic reactions or when otherwise heated to decomposition.

11. TOXICOLOGICAL AND HAZARD ENDPOINT INFORMATION

Component Name	CAS#	LD ₅₀ Oral	LD ₅₀ Dermal	LC ₅₀ Inhalation
Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers	25085-99-8	>15,000 mg/kg (rat)	>23,000 mg/kg (rabbit)	No data
Phenol-Formaldehyde Polymer Glycidyl Ether	28064-14-4	>2000 mg/kg	2000 mg/kg	No data

ACUTE TOXICITY: No specific toxicity data exists for this mixture. Classification is based on acute toxicity estimation methods using ingredient data.
 Oral: Not classified. Does not meet acute oral toxicity criteria.
 Dermal: Not classified. Does not meet acute dermal toxicity criteria.
 Inhalation: Not classified. Does not meet acute inhalation toxicity criteria. If product is heated, vapors generated can cause headache, nausea, dizziness and possible respiratory irritation if inhaled in high concentrations.

SKIN CORROSION / IRRITATION: Causes skin irritation – Category 2.
SERIOUS EYE DAMAGE / IRRITATION: Causes serious eye irritation. Category 2A.

RESPIRATORY SENSITIZATION:..... Not classified. Does not meet criteria for respiratory sensitizer. Repeated exposure to high vapor concentrations may cause irritation of pre-existing lung allergies and increase the chance of developing allergy symptoms to this product.

SKIN SENSITIZATION:..... May cause allergic skin reaction. Category 1.

REPRODUCTIVE TOXICITY:..... Not classified. Diglycidyl ether bisphenol-A, in animal studies, has been shown not to interfere with reproduction. Diglycidyl ether bisphenol-A did not cause birth defects or other adverse effects on the fetus when pregnant rabbits were exposed by skin contact, the most likely route of exposure, or when pregnant rats or rabbits were exposed orally.

MUTAGENICITY:..... Not classified. Does not meet criteria for germ cell mutagenicity.

Diglycidyl ether bisphenol-A in animal mutagenicity studies were negative. In vitro mutagenicity tests were negative in some cases and positive in others.

CARCINOGENICITY:..... Not classified. Does not meet criteria for carcinogenicity.

Many studies have been conducted to assess the potential carcinogenicity of diglycidyl ether of bisphenol-A. Although some weak evidence of carcinogenicity has been reported in animals, when all of the data are considered, the weight of evidence does not show that Diglycidyl ether bisphenol-A is carcinogenic. Indeed, the most recent review of the available data by the International Agency for Research on Cancer (IARC) has concluded that Diglycidyl ether bisphenol-A is not classified as a carcinogen.

Epichlorohydrin, an impurity in this product (<5 ppm) has been reported to produce cancer in laboratory animals and to produce mutagenic changes in bacteria and cultured human cells. It has been established by the International Agency for Research on Cancer (IARC) as a probable human carcinogen (Group 2A) based on the following conclusions: human evidence – inadequate; animal evidence – sufficient. It has been classified as an anticipated human carcinogen by the National Toxicology Program (NTP). Note: It is unlikely that normal use of this product would result in measurable exposure concentrations to this substance.

SPECIFIC TARGET ORGAN TOXICITY (Single Exposure):..... Not classified. Does not meet STOT SE criteria.

SPECIFIC TARGET ORGAN TOXICITY (Repeated Exposure): Not classified. Does not meet STOT RE criteria.

ASPIRATION HAZARD: Not classified. Does not meet aspiration toxicity criteria.

OTHER HEALTH HAZARD INFORMATION:..... None known.

12. ECOLOGICAL INFORMATION

ACUTE AQUATIC TOXICITY:..... No specific test data available for the mixture. Calculated Estimate: Does not meet acute aquatic toxicity requirements.

CHRONIC AQUATIC TOXICITY: No specific test data available for the mixture. Calculated Estimate: Aquatic Chronic Category 2.

PERSISTENCE AND BIODEGRADABILITY: No specific test data available for the mixture.

MOBILITY IN SOIL: No specific test data available for the mixture.

ADDITIONAL ECOTOXICITY INFORMATION:..... In the liquid, uncured state, this product may be harmful to aquatic life long lasting effects. Prevent release to the environment, sewers and natural waters.

Ingredient	CAS#	Ecotoxicity Classification Information
Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers	25085-99-8	Aquatic Chronic Cat. 2
Phenol-Formaldehyde Polymer Glycidyl Ether	28064-14-4	Aquatic Chronic Cat. 2

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:..... Evaluation of this product using RCRA criteria shows that it is not a hazardous waste, either by listing or characteristics, in its purchased form. It is the responsibility of the user to determine proper disposal methods.

Incinerate, recycle (fuel blending) or reclaim may be preferred methods when conducted in accordance with federal, state and local regulations.

14. TRANSPORTATION INFORMATION

US DOT

UN NUMBER: Not regulated.
 SHIPPING NAME: Not applicable.
 TECHNICAL SHIPPING NAME: Not applicable.
 HAZARD CLASS: Not applicable.
 PACKING GROUP: Not applicable.

ICAO/IATA

UN NUMBER: UN 3082.
 SHIPPING NAME: Environmentally hazardous substance, liquid, n.o.s.
 TECHNICAL SHIPPING NAME: Epoxy Resin.
 HAZARD CLASS: Class 9.
 PACKING GROUP: PG III.
 MARINE POLLUTANT: Yes

IMDG

UN NUMBER: UN 3082.
 SHIPPING NAME: Environmentally hazardous substance, liquid, n.o.s.
 TECHNICAL SHIPPING NAME: Epoxy Resin.
 HAZARD CLASS: Class 9.
 PACKING GROUP: PG III.
 EmS Number: F-A, S-F
 MARINE POLLUTANT Yes

15. REGULATORY INFORMATION

COUNTRY	INVENTORY LIST	STATUS
United States	TSCA	All ingredients are listed or otherwise compliant.
Europe	EINECS or ELINCS	All ingredients are listed or otherwise compliant.
Canada	CEPA (DSL/NDSL)	All ingredients are listed or otherwise compliant.
Australia	AICS	All ingredients are listed or otherwise compliant.
Japan	ENCS	All ingredients are listed or otherwise compliant.
South Korea	KECI	All ingredients are listed or otherwise compliant.
China	IECSC	All ingredients are listed or otherwise compliant.
Philippines	PICCS	All ingredients are listed or otherwise compliant.
New Zealand	NZIoC	All ingredients are listed or otherwise compliant.

US EPA TSCA Requirements: No data available.

Canada WHMIS Confidential Business Information (CBI): No data available.

US EPA SARA TITLE III Reporting and Notification Requirements:

Subject to Section 302 (TPQ) No data available.
 Subject to Section 304 (RQ) No data available.
 Subject to Section 311 or 312 Refer to the health and physical classifications in section 2.
 Subject to Section 313 No data available.

STATE REGULATORY INFORMATION:

Chemicals listed below may be specifically regulated by individual states. For details on state regulatory requirements you should contact the appropriate state agency.

COMPONENT NAME

/CAS NUMBER

Epichlorohydrin
 106-89-8

< 15ppm

STATE CODE

¹CA

¹. These substances are known to the state of California to cause cancer or reproductive harm, or both.

16. OTHER INFORMATION

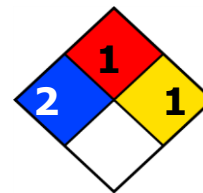
REASON FOR ISSUE: Approval date change.
 PREPARED BY: Gougeon Brothers, Inc.
 SDS CONTACT: safety@gougeon.com
 TITLE: Health, Safety & Environmental Manager
 APPROVAL DATE: January 3, 2022
 SUPERSEDES DATE: January 15, 2019
 SDS VERSION: 650A-2022a

OTHER HAZARD INFORMATION AND RATING SYSTEMS:

HMIS® RATING

NFPA® 704 CODES

HEALTH:	2
FLAMMABILITY:	1
PHYSICAL HAZARD:	1
PERSONAL PROTECTION:	



Approximate HMIS and NFPA Risk Ratings Legend:
0 = Low or None; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe

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SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:..... WEST SYSTEM® G/flex® 650 Part B Hardener
APPLICABLE PRODUCT CODES: 650B, 650-CH, 650-EH
CHEMICAL FAMILY:..... Rubber modified-polyamine mixture.
INTENDED PRODUCT USES:..... Curing agent for epoxy resins.
PRODUCT RESTRICTIONS: None identified.
SDS VERSION: 650B-2022a

MANUFACTURER:
Gougeon Brothers, Inc.
100 Patterson Ave.
Bay City, MI 48706, U.S.A.
Phone: 866-937-8797 or 989-684-7286
www.westsystem.com

EMERGENCY TELEPHONE NUMBERS (24 HRS):
Transportation
CHEMTREC: 800-424-9300 (U.S.)
703-527-3887 (International)
Non-transportation
Poison Hotline: 800-222-1222

2. HAZARDS IDENTIFICATION

Classification of Substance or Mixture

Skin corrosion/irritation, Category 2
Skin sensitizer, Category 1
Eye damage/irritation, Category 1

Label Elements

Hazard Pictogram(s):



Signal Word:
DANGER

Hazard Statements:

H315 Causes skin irritation
H317 May cause an allergic skin reaction
H318 Causes serious eye damage

Precautionary Statements:

Prevention

P261 Avoid breathing dust/fumes/gas/mists/vapors/spray
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

P302 + P352 IF ON SKIN: Wash with plenty of water and soap.
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 attention/advice
P337 + P313 If eye irritation persists: Get medical attention/advice
P362 + P364 Take off contaminated clothing and wash it before reuse

Disposal

P501 Dispose of contents and container according to local, state, national and international regulations

Other Hazards

None known.

3. COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS

INGREDIENT NAME	CAS #	CONCENTRATION (%)
2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated	68683-29-4	30-60
Non-hazardous	Not Available	10-30
Triethylenetetramine	112-24-3	5-10

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Benzene-1,3-dimethanamine	1477-55-0	3-7
Phenol, 2,4,6-tris[(dimethylamino)methyl] reaction products with triethylenetetramine	1101788-77-5	1-5
Tris-2, 4, 6-(dimethylaminomethyl) phenol	90-72-2	1-5
Aminoethylpiperazine	140-31-8	1-5
Tetraethylenepentamine	112-57-2	1-5

The exact chemical identity and/or exact percentage (concentration) of each ingredient may be held as a trade secret. Any ingredient not disclosed may have been determined not to pose a health or environmental hazard, or may only be present in concentrations that do not require disclosure. Refer to Section 15 for additional information regarding a CBI claim.

4. FIRST AID MEASURES

FIRST AID FOR EYES:..... SYMPTOMS: Causes eye burns and eye damage. RESPONSE: Flush immediately with water for at least 15 minutes. Remove contact lenses if present and easy to do. Immediately call a POISON CONTROL CENTER or doctor.

FIRST AID FOR SKIN:..... SYMPTOMS: May cause skin burns, redness and irritation. May cause allergic skin reaction and sensitization. RESPONSE: Immediately wash skin with soap and water. Seek medical advice if effects develop and persist.

FIRST AID FOR INHALATION:..... SYMPTOMS: Can cause respiratory irritation and possible central nervous system effects. RESPONSE: Remove to fresh air if effects occur and keep comfortable for breathing. Seek medical assistance if effects develop and persist.

FIRST AID FOR INGESTION:..... SYMPTOMS: May cause gastrointestinal irritation or ulceration. RESPONSE: Rinse mouth with water. DO NOT induce vomiting. If vomiting should occur, keep airway clear. Immediately call POISON CONTROL CENTER or doctor.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: SUITABLE: Foam, carbon dioxide (CO₂), dry chemical. NON-SUITABLE: Direct water stream.

FIRE AND EXPLOSION HAZARDS: During a fire, smoke may contain the original materials in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include, but are not limited to: oxides of nitrogen, oxides of carbon, volatile amines, ammonia, nitric acid, aldehydes, nitrosamines. When mixed with sawdust, wood chips, or other cellulosic material, spontaneous combustion can occur under certain conditions. Heat is generated as the air oxidizes the amine. If the heat is not dissipated quickly enough, it can ignite the sawdust.

SPECIAL FIRE FIGHTING PROCEDURES: This product is not considered a fire hazard, but will burn if ignited. Hot vapor or mists may be susceptible to spontaneous combustion when mixed with air. Ignition temperatures decreases with vapor volume and vapor/air contact time, and are influence by pressure changes. Therefore, ignition may occur below published ignition temperatures. Use of this product in processes involving elevated temperatures, vacuum (if subject to sudden ingress of air), or sudden escape of vapor or mist, etc., must be thoroughly evaluated to ensure a safe operation. Use full-body protective gear and a self-contained breathing apparatus. Use of water may generate toxic aqueous solutions. Do not allow water run-off from fighting fire to enter drains or other water courses.

6. ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES: Keep unnecessary and unprotected personnel from entering area. Use appropriate safety and personal protective equipment as indicated in Section 8.

MITIGATION AND CLEAN UP PROCEDURES: Stop leak without additional risk. Isolate area. Dike and absorb with inert material (e.g., sand) and collect in a suitable, closed container. Do not use sawdust, wood chips or other cellulosic materials to absorb the spill, as the possibility for spontaneous combustion exists. Warm, soapy water may be used to clean residual.

ENVIRONMENTAL PRECAUTIONS:..... Prevent from entering into soil, ditches, sewers, waterways and groundwater. See Section 12 for environmental impact information.

7. HANDLING AND STORAGE

STORAGE TEMPERATURE (min./max.): 40°F (4°C) / 90°F (32°C).

STORAGE:..... Store in cool, dry place away from high temperatures and moisture. Keep container tightly closed. Store in a secure location with restricted access or store locked up. Store away from incompatible materials and conditions listed in Section 10.

HANDLING PRECAUTIONS: Use with adequate ventilation. Do not breathe vapors or mists from heated material. Avoid exposure to concentrated vapors. Avoid skin and eye contact. Wash thoroughly after handling. When mixed with epoxy resin

WEST SYSTEM® G/flex® 650 Part B Hardener

this product causes an exothermic reaction, which in large masses, can produce enough heat to damage or ignite surrounding materials and emit fumes and vapors that vary widely in composition and toxicity.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Use with adequate general ventilation and/or local ventilation to keep exposures below established limits.

EYE PROTECTION GUIDELINES: Chemical splash-proof goggles or face shield.

SKIN PROTECTION GUIDELINES: Wear liquid-proof, chemical resistant gloves (nitrile-butyl rubber, neoprene, butyl rubber or natural rubber) and full body-covering clothing.

RESPIRATORY PROTECTION GUIDELINES: When ventilation cannot be made adequate enough to keep exposures below established limits, use a NIOSH approved respirator with an organic vapor cartridge, organic vapor cartridge + P100, or a multi-contaminant cartridge, depending on specific workplace conditions. Consult with your respirator and cartridge supplier to ensure proper selection of respirator and cartridge based on ingredients listed in Section 3 and specific workplace conditions. Use and select a respirator according the guidelines established in OSHA 1910.134 or other applicable respiratory protection standard.

ADDITIONAL PROTECTIVE MEASURES: Use where there is immediate access to safety shower and emergency eye wash. Wash thoroughly after use. Contact lens should not be worn when working with this material. Generally speaking, working cleanly and following basic precautionary measures will greatly minimize the potential for harmful exposure to this product under normal use conditions.

OCCUPATIONAL EXPOSURE LIMITS: Exposure limits may not be established for this product as a whole. For established exposure limits of specific ingredients in this product, or other available exposure limit information, refer to the table below.

Ingredient Name	CAS#	Exposure Limit Information
2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated	68683-29-4	No data available
Non-hazardous	Not Available	No data available
Triethylenetetramine	112-24-3	AIHA WEEL: 1 ppm ; 6 mg/ m3; Absorbed via skin 0.1 mg/m3 SKIN, Ceiling NIOSH; OSHA Z1A
Benzene-1,3-dimethanamine	1477-55-0	Remarks: potential for skin absorption
Phenol, 2,4,6-tris[(dimethylamino)methyl] reaction products with triethylenetetramine	1101788-77-5	(Reference Triethylenetetramine, CAS# 112-24-3) AIHA WEEL: 1 ppm ; 6 mg/ m3; Absorbed via skin
Tris-2, 4, 6-(dimethylaminomethyl) phenol	90-72-2	No data available
Aminoethylpiperazine	140-31-8	No data available
Tetraethylenepentamine	112-57-2	AIHA WEEL: 1 ppm ; 5 mg/ m3; SKIN, DSEN

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL FORM: Viscous liquid.
COLOR: Caramel colored.
ODOR: Amine-like odor
ODOR THRESHOLD: No data available.
pH: 10.96
MELTING POINT / FREEZING POINT: No data available.
BOILING POINT (760mm/Hg): No data available.
FLASH POINT: > 300°F(149°C) estimated based similar product.
AUTO IGNITION TEMPERATURE: No data available.
LOWER EXPLOSIVE LIMIT (LEL): No data available.
UPPER EXPLOSIVE LIMIT (UEL): No data available.
VAPOR PRESSURE: No data available.
SPECIFIC GRAVITY/DENSITY (water = 1): 0.97
BULK DENSITY: 8.08 lbs./gal. (0.97 kg/L)
VAPOR DENSITY (air = 1): No data available.
EVAPORATION RATE (Butyl Acetate = 1): No data available.
WATER SOLUBILITY (% BY WT.): No data available.
PARTITION COEFFICIENT, n-OCTANOL/WATER (log Pow): No data available.
KINEMATIC VISCOSITY: 19,587 (mm²/s @ 20°C)
DECOMPOSITION TEMPERATURE: No data available
% VOLATILE BY WEIGHT: ASTM 2369-07 was used to determine the Volatile Matter Content of mixed epoxy resin and hardener. The combined VOC content for the resin and hardener system is listed below.

<u>Resin/Hardener</u>	VOC Content	
	(g/L)	(lbs/gal)
650A/650B.....	8.6	0.07

10. STABILITY AND REACTIVITY

STABILITY: Product is stable at normal temperatures and pressures.

REACTIVITY/HAZARDOUS REACTIONS:..... Product will not react by itself. A mass of more than one pound of product mixed with an epoxy resin will cause irreversible polymerization with significant heat buildup. Strong acids can cause polymerization.

INCOMPATIBILITIES: Avoid acids, oxidizing materials, halogenated organic compounds (e.g., methylene chloride). External heating or self-heating could result in rapid temperature increase and pressure build up. If such a condition were to occur in a drum, the drum could expand and rupture violently.

CONDITIONS TO AVOID: Avoid excessive heat, ignition sources.

DECOMPOSITION PRODUCTS: Very toxic fumes and gases when burned or otherwise heated to decomposition. Decomposition products may include, but not limited to: oxides of carbon, oxides of nitrogen, volatile amines, ammonia, nitric acid, nitrosamines.

11. TOXICOLOGICAL INFORMATION

Ingredient Name	CAS#	LD ₅₀ Oral	LD ₅₀ Dermal	LC ₅₀ Inhalation
2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperazinyl)ethyl]amino]butyl-terminated	68683-29-4	>15,400 mg/kg	>3000 mg/kg	No data available
Non-hazardous	Not Available	No data available	No data available	No data available
Triethylenetetramine	112-24-3	1716 mg/kg 980 mg/kg	1465 mg/kg 2000 mg/kg	No data 1.34 mg/l 4h mist / aerosol
Benzene-1,3-dimethanamine	1477-55-0			
Phenol, 2,4,6-tris[(dimethylamino)methyl] reaction products with triethylenetetramine	1101788-77-5	1716 mg/kg (reference Triethylenetetramine)	1465 mg/kg	No data
Tris-2, 4, 6-(dimethylaminomethyl) phenol	90-72-2	2169 mg/kg	No data available	No data available
Aminoethylpiperazine	140-31-8	2097 mg/kg	866 mg/kg	No data
Tetraethylenepentamine	112-57-2	2140 - 3990 mg/kg	660-1260 mg/kg	No data

ACUTE TOXICITY: No specific toxicity data exists for this mixture. Classification is based on acute toxicity estimation methods using ingredient data.

Oral: Not classified. Based on available data product does not meet acute dermal toxicity classification criteria. Ingestion may result in gastrointestinal tract discomfort.

Dermal: Not classified. Based on available data product does not meet acute dermal toxicity classification criteria.

Inhalation: Not classified. Based on available data product does not meet acute inhalation toxicity classification criteria.

SKIN CORROSION / IRRITATION: Category 2. Causes skin irritation. In vivo tests indicate this product is not corrosive to skin tissue; however, a component in this product is classified as a 1B corrosive.

SERIOUS EYE DAMAGE / IRRITATION: Category 1. Causes serious eye damage.

RESPIRATORY SENSITIZATION: Not classified. Based on available data this product does not meet classification criteria.

SKIN SENSITIZATION: Category 1. May cause allergic skin reaction.

REPRODUCTIVE TOXICITY: Not classified. Based on available data this product does not meet classification criteria.

MUTAGENICITY: Not classified. Based on available data this product does not meet classification criteria. A component in this product, aminoethylpiperazine (CAS# 140-31-8), showed positive mutagenic effects in Sister Chromatid Exchange in *in-vitro* testing, but showed no mutagenic activity in the Ames test, mouse lymphoma (*in vitro*), or *in-vivo* micronucleus test (mice) assays.

CARCINOGENICITY: Not classified. Based on available data this product does not meet classification criteria.

SPECIFIC TARGET ORGAN TOXICITY (Single Exposure): No classified. Based on available data this product does not meet classification criteria. However, it is anticipated that inhalation of concentrated vapors or fumes from heated product may cause irritation to the respiratory track and central nervous system effects.

SPECIFIC TARGET ORGAN TOXICITY (Repeated Exposure): Not classified. Based on available data this product does not meet classification criteria.

ASPIRATION HAZARD: Not classified. Based on available data this product does not meet classification criteria.

OTHER HEALTH HAZARD INFORMATION: None known.

12. ECOLOGICAL INFORMATION

ACUTE AQUATIC TOXICITY:..... No specific test data available for the mixture. Calculated Estimate: Not classified. Does not meet acute aquatic toxicity classification criteria. Avoid release to the environment.

CHRONIC AQUATIC TOXICITY: No specific test data available for the mixture. Calculated Estimate: Not classified. Does not meet chronic aquatic toxicity classification criteria. Avoid release to the environment.

PERSISTENCE AND BIODEGRADABILITY: No specific test data available for the mixture.

MOBILITY IN SOIL: No specific test data available for the mixture.

ADDITIONAL ECOTOXICITY INFORMATION:..... In the liquid, uncured state, this product may be harmful to aquatic life. Prevent release to the environment, sewers and natural waters.

Ingredient	CAS#	Ecotoxicity Classification Information
2-Propenenitrile, polymer with 1,3-butadiene, 1-cyano-1-methyl-4-oxo-4-[[2-(1-piperaziny)ethyl]amino]butyl-terminated	68683-29-4	No data available
Non-hazardous	Not Available	No data available
Triethylenetetramine	112-24-3	Aquatic Chronic Cat. 3
Benzene-1,3-dimethanamine	1477-55-0	Acute Aquatic Cat. 3; Chronic Aquatic Cat. 3
Phenol, 2,4,6-tris[(dimethylamino)methyl] reaction products with triethylenetetramine	1101788-77-5	(Reference Triethylenetetramine); Aquatic Chronic Cat. 3
Tris-2, 4, 6-(dimethylaminomethyl) phenol	90-72-2	Acute Aquatic 3; Chronic Aquatic Cat. 3
Aminoethylpiperazine	140-31-8	Acute Aquatic Cat. 3; Chronic Aquatic Cat. 3
Tetraethylenepentamine	112-57-2	Aquatic Acute Cat. 2; Aquatic Chronic Cat. 2

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:..... Evaluation of this product using RCRA criteria shows that it is not a hazardous waste, either by listing or characteristics, in its purchased form. It is the responsibility of the user to determine proper disposal methods.

Incinerate, recycle (fuel blending) or reclaim may be preferred methods when conducted in accordance with federal, state and local regulations.

14. TRANSPORTATION INFORMATION

US DOT

UN NUMBER: Not regulated.
 SHIPPING NAME: Not applicable.
 TECHNICAL SHIPPING NAME: Not applicable.
 HAZARD CLASS: Not applicable.
 PACKING GROUP: Not applicable.
 MARINE POLLUTANT: Not applicable.

CANADA TDG

UN NUMBER: Not regulated.
 SHIPPING NAME: Not applicable.
 TECHNICAL SHIPPING NAME: Not applicable.
 HAZARD CLASS: Not applicable.
 PACKING GROUP: Not applicable.
 MARINE POLLUTANT: Not applicable.

IMDG

UN NUMBER: Not regulated.
 SHIPPING NAME: Not applicable.
 TECHNICAL SHIPPING NAME: Not applicable.
 HAZARD CLASS: Not applicable.
 PACKING GROUP: Not applicable.
 EmS Number: Not applicable.
 MARINE POLLUTANT Not applicable.

ICAO/IATA

UN NUMBER: Not regulated.
 SHIPPING NAME: Not applicable.
 TECHNICAL SHIPPING NAME: Not applicable.
 HAZARD CLASS: Not applicable.
 PACKING GROUP: Not applicable.
 MARINE POLLUTANT: Not applicable.

15. REGULATORY INFORMATION

WEST SYSTEM® G/flex® 650 Part B Hardener

COUNTRY	INVENTORY LIST	STATUS
United States	TSCA	All ingredients are listed or otherwise compliant.
Europe	EINECS or ELINCS	No data available on CAS# 1101788-77-5. All other ingredients are listed or otherwise compliant.
Canada	CEPA (DSL/NDSL)	CAS# 1101788-77-5 listed on NDSL only. All other ingredients are listed or otherwise compliant.
Australia	AICS	No data available on CAS# 1101788-77-5. All ingredients are listed or otherwise compliant.
Japan	ENCS	No data available on CAS# 1101788-77-5. All ingredients are listed or otherwise compliant.
South Korea	KECI	No data available on CAS# 1101788-77-5. All ingredients are listed or otherwise compliant.
China	IECSC	All ingredients are listed or otherwise compliant. Notification registration complete for CAS# 1101788-77-5.
Philippines	PICCS	No data available on CAS# 1101788-77-5. All ingredients are listed or otherwise compliant.

US EPA TSCA Requirements:..... No data available.

Canada WHMIS Confidential Business Information (CBI):..... No data available.

US EPA SARA TITLE III Reporting and Notification Requirements:

- Subject to Section 302 (TPQ)..... No data available.
- Subject to Section 304 (RQ)..... No data available.
- Subject to Section 311 or 312 Refer to health and physical hazards in Section 2.
- Subject to Section 313 No data available.

US STATE REGULATORY INFORMATION:

The following chemicals may be specifically regulated by individual states. For details on state regulatory requirements you should contact the appropriate state agency.

**COMPONENT NAME
/CAS NUMBER**

STATE CODE

Tris-2, 4, 6-(dimethylaminomethyl) phenol 90-72-2	PA, NJ
Triethylenetetramine 112-14-3	PA, MA, NJ
Tetraethylenepentamine 112-57-2	PA, MA, NJ
Benzene-1,3-dimethanamine 1477-55-0	MA, PA, NJ
Aminoethylepiperazine 140-31-8	MA, PA, NJ

16. OTHER INFORMATION

REASON FOR ISSUE:..... Update to Section 15.
 PREPARED BY:..... Gougeon Brothers, Inc.
 SDS CONTACT:..... safety@gougeon.com
 TITLE:..... Health, Safety & Environmental Manager
 APPROVAL DATE:..... January 3, 2022
 SUPERSEDES DATE:..... January 15, 2019
 SDS VERSION:..... 650B-2022a

OTHER HAZARD INFORMATION AND RATING SYSTEMS:

HMIS® RATING

HEALTH:	3
FLAMMABILITY:	1
PHYSICAL HAZARD:	0
PERSONAL PROTECTION:	

NFPA® 704 CODES



Approximate HMIS and NFPA Risk Ratings Legend:
 0 = Low or None; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe

WEST SYSTEM® G/flex® 650 Part B Hardener

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