




Safety Data Sheet

RFC 2112 Part A

Section 1. Identification

Product Identifier	RFC 2112 Part A		
Synonyms	Epoxy resin		
Manufacturer Stock Numbers	27033		
Recommended use	Epoxy Resin		
Uses advised against	Can react vigorously with strong oxidizing agents, strong Lewis or mineral acids. In reactions with many curing agents, considerable heat is released.		
Manufacturer Contact Address	Resin Formulators 18027 Bishop Avenue Carson, CA, 90746 USA		
	Phone	Emergency Phone	Fax
	(310) 204-6159	(800) 424-9300 CHEMTREC	(310) 202-7247
	Email	Website	
	sales@evroberts.com	http://www.evroberts.com	

Section 2. Hazards Identification

Classification	ACUTE TOXICITY - DERMAL - Category 5 ACUTE TOXICITY - INHALATION - Category 4 ACUTE TOXICITY - ORAL - Category 4 EYE DAMAGE/IRRITATION - Category 2A
Signal Word	Warning
Pictogram	

Hazard Statements	Causes serious eye irritation Harmful if inhaled Harmful if swallowed May be harmful in contact with skin
Precautionary Statements	
Response	Call a poison center/doctor/ ... /if you feel unwell. If eye irritation persists: Get medical advice/attention. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If inhaled: Remove person to fresh air and keep comfortable for breathing. If swallowed: Call a poison center/doctor/ ... / if you feel unwell. Rinse mouth.
Prevention	Avoid breathing dust/fume/gas/mist/ vapors/spray. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Wash ...thoroughly after handling. Wear eye protection/face protection.
Storage	N/A
Disposal	Dispose of contents/container to ...
Ingredients of unknown toxicity	0%
Hazards not Otherwise Classified	
Over-exposure signs/symptoms	
Inhalation	Based on the presence of n-butyl glycidyl ether, product is presumed to cause irritation to the nose, throat and respiratory tract. Based on the presence of n-butyl glycidyl ether, product may produce CNS depression, as evidenced by headaches, tremor (shaking of the hands or other body parts), drowsiness, convulsions, hypnosis, or anesthesia (can't feel anything).
Skin or eyes	Based on product testing product is moderately irritating to the eyes.
Skin Contact	Based on product testing, product is mildly irritation to the skin. Prolonged or repeated liquid contact can result in defatting and drying the skin which may result in skin irritation and dermatitis. Based on product testing, product may cause skin sensitization, (a rash or discoloration of the skin that becomes more pronounced with additional exposure, and can become a serious medical problem that can require the removal of the sensitive individual from the environment of the sensitizing agent).
Ingestion	Based on product testing, product is slightly toxic. Based on the presence of n-butyl glycidyl ether, product may produce CNS depression, such as is evidence by headaches, tremor (shaking of the hands or other body parts), drowsiness, convulsions, hypnosis, or anesthesia (can't fell anything).
Potential Health Effects	----- Health Effects or Risks from Exposure. Acute: See section 5. Chronic: Dermatitis and sensitization as evidenced by rash, itching, and even open lesions and sores. -----

Section 3. Ingredients

CAS	Ingredient Name	Weight %
25068-38-6	Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane	43.5 %
7631-86-9	Fumed Silica	50 %
2426-08-6	Oxirane, (butoxymethyl)-	6.7 %

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-Aid Measures

Eye	Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician. Get immediate medical attention.
Skin Contact	Immediately remove contaminated clothing or shoes. Wipe excess from skin and flush with plenty of water for at least 15 minutes. Use soap if available or follow by washing with soap and water. Do not reuse clothing until thoroughly cleaned. Get medical attention. Contaminated leather articles, including shoes, cannot be decontaminated and should be destroyed. If irritation occurs, get medical attention.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion	Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. Get medical attention.
Notes To Physician	If more than 2.0 ml per kg has been ingested and vomiting has not occurred, emesis should be induced with supervision. If symptoms such as a loss of gag reflex, convulsions or unconsciousness occur before emesis, gastric lavage should be considered following intubation with a cuffed endotracheal tube.
Chronic Health Hazard, General	This product's ingredients are NOT found in the lists below: OSHA NTP IARC
Medical Conditions Aggravated by Exposure	Pre-existing skin allergies may increase the chance of developing increased allergy symptoms from exposure to this product. Pre-existing skin and eye disorders may be aggravated by exposure to this product.

Section 5. Fire Fighting Measures

Suitable Extinguishing Media

Flash Point:
164°F (setaflash)

Auto Ignition Temperature:
Not Available

Flammable Limits (Lower):
Not Available

Flammable Limits (Upper):
Not Available

Extinguishing media:
Carbon dioxide, dry chemical, appropriate foam or FOG. If water is used, very large quantities are required. Contain runoff water with temporary barriers.
CAUTION! COMBUSTIBLE.

Do not enter confined fire space without full bunker gear (helmet with face shield, bunker coats, gloves and rubber boots), including a positive pressure NIOSH approved self-contained breathing apparatus.

Cool fire exposed containers with water.
No unusual hazard. Handle as combustible liquid. Containers exposed to intense heat from fire should be cooled with water to prevent vapor pressure buildup which could result in container rupture. Container area exposed to direct flame contact should be cooled with large quantities of water as needed to prevent weakening of container structure.

Unsuitable Extinguishing Media

N/A

Section 6. Accidental Release Measures

Spill and Leak Procedures

Spill response procedures: Caution. Combustible. – Large spills – Eliminate potential sources of ignition. Wear appropriate respirator and other protective clothing. Shut off source of leak only if safe to do so. Dike and contain. Remove with vacuum trucks or pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand, or other suitable material; place in non-leaking containers and seal tightly for proper disposal. Flush area with water to remove trace residue; dispose of flush solution as above. – Small spills – Take up with an absorbent material and place in non-leaking containers for proper disposal.

Waste Disposal Methods

Solidify with clay or other absorbent in a steel drum. Consult your local authorities for an appropriate disposal facility.

Section 7. Handling and Storage

Ventilation and Engineering controls	Store material in a cool dry place with adequate ventilation.
Respiratory Protection	Avoid prolonged or repeated breathing of vapors or mists. If exposure may or does exceed occupational exposure limits (section 2) use a NIOSH-approved respirator to prevent overexposure. In accord with 29 CFR 1910.134, use either an atmosphere-supplying or an air-purifying respirator for organic vapors.
Eye Protection	Wear safety glasses or goggles as appropriate
Gloves	Wear chemical-resistant gloves and other clothing as required to minimize skin contact
Other Clothing and Equipment	Avoid prolonged or repeated contact with the skin. Wear chemical-resistant gloves and other clothing as required to minimize skin contact.
Hygienic Practices	Launder contaminated clothes before wearing. Do not smoke or eat where this material is being used. Wash hands before smoking, eating or going to the bathroom

Section 8. Exposure Controls/Personal Protection

Occupational Exposure Limits	Ingredient Name	ACGIH TLV	OSHA PEL	STEL
	Phenol, 4,4'-(1-methylethylidene)bis-, polymer with (chloromethyl)oxirane	N/A	none	N/A
	Fumed Silica	N/A	10 mg/m ³ , TLV-TWA, Inhalation	N/A
	Oxirane, (butoxymethyl)-	N/A	N/A	N/A
Personal Protective Equipment	N/A			

Section 9. Physical and Chemical Properties

Physical State	Paste
Color	Tan
Odor	Low odor
Odor Threshold	N/A
Solubility	Negligible
Partition coefficient Water/n-octanol	N/A
VOC%	N/A
Viscosity	N/A
Specific Gravity	1.13
Density lbs/Gal	N/A
Pounds per Cubic Foot	N/A
Flash Point	164°F
FP Method	setaflash
Ph	N/A
Melting Point	N/A
Boiling Point	N/A
Boiling Range	N/A
LEL	N/A
UEL	N/A
Evaporation Rate	N/A
Flammability	N/A
Decomposition Temperature	N/A
Auto-ignition Temperature	N/A
Vapor Pressure	N/A
Vapor Density	4.5

Section 10. Stability and Reactivity

Chemical Stability	Stable under normal conditions.
Conditions to Avoid	Can react vigorously with strong oxidizing agents, strong Lewis or mineral acids. In reactions with many curing agents, considerable heat is released.
Incompatibilities	Strong oxidizing agents, strong lewis or mineral acids.
Hazardous Decomposition Products	Carbon monoxide, aldehydes and acids may be formed during combustion. Reaction with some curing agents may produce considerable heat.
Hazardous Polymerization	Will not occur

Section 11. Toxicological Information

No Data Available

Section 12. Ecological Information

No Data Available

Section 13. Disposal

No Data Available

Section 14. Transport Information

UN Number	N/A
UN Proper Shipping Name	N/A
DOT Classification	N/A
Packing Group	N/A

Section 15. Regulatory Information

EPA SARA Title III Section 312	SECTION 9 SARA Title III Section 313 Information Component : Epichlorohydrin CAS # 106898 Wt % <2 ppm
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Regulatory Information The State of California regulation, Proposition 65, requires the State to identify and list specific chemicals known to cause cancer or birth defects/reproductive harm. Proposition 65 requires a disclosure for products sold within the State of California containing any Proposition 65 listed chemical. The requirement for disclosure is independent of concentration, thus disclosure is required for any detectable amount. Federal regulations require disclosure for carcinogens if the concentration is 0.1% or higher. The following information is required by the State of California for this product:

This product contains chemicals known to the State of California to cause cancer.

Phenyl Glycidyl Ether CAS No: 122-60-1 (6ppm or 0.0006%)
Epichlorohydrin CAS No: 106-89-8 (2 ppm or 0.0002%)

Section 16. Other Information

Revision Date	9/21/2015
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Disclaimer The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication as part of E.V. Roberts' product safety program. It is not intended to constitute performance information concerning the product. No warranty, expressed or implied, or merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.

To determine applicability or effects of any law or regulation with respect to the product, user should consult his legal advisor or the appropriate government agency. E.V. Roberts does not undertake to furnish advice on such matters.



Safety Data Sheet

RFC 2112 Part B

Section 1. Identification

Product Identifier	RFC 2112 Part B		
Synonyms	Epoxy paste		
Manufacturer Stock Numbers	27033		
Recommended use	Epoxy Paste		
Uses advised against	Oxidizing agents, acids, aldehydes, ketones, epoxides, acrylates, and organic halides.		
Manufacturer Contact Address	Resin Formulators 18027 Bishop Avenue Carson, CA, 90746 USA		
	Phone	Emergency Phone	Fax
	(310) 204-6159	(800) 424-9300 CHEMTREC	(310) 202-7247
	Email	Website	
	sales@evroberts.com	http://www.evroberts.com	

Section 2. Hazards Identification

Classification	ACUTE TOXICITY - DERMAL - Category 5 ACUTE TOXICITY - INHALATION - Category 4 ACUTE TOXICITY - ORAL - Category 5 EYE DAMAGE/IRRITATION - Category 2A
Signal Word	Warning
Pictogram	

Hazard Statements	Causes serious eye irritation Harmful if inhaled May be harmful if swallowed May be harmful in contact with skin
Precautionary Statements	
Response	Call a poison center/doctor/ ... /if you feel unwell. If eye irritation persists: Get medical advice/attention. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If inhaled: Remove person to fresh air and keep comfortable for breathing.
Prevention	Avoid breathing dust/fume/gas/mist/ vapors/spray. Use only outdoors or in a well-ventilated area. Wash ...thoroughly after handling. Wear eye protection/face protection.
Storage	N/A
Disposal	N/A
Ingredients of unknown toxicity	0%
Hazards not Otherwise Classified	
Over-exposure signs/symptoms	
Inhalation	Vapors may be irritating if material is heated.
Skin or eyes	A strong sensitizer (can cause an allergic reaction such as skin rashes, swelling, and even open sores). This reaction can become worse with additional exposure until affected individual cannot tolerate even very small exposures to the chemical without experiencing symptoms. Causes chemical burns.
Skin	Can cause severe irritation or burns. Absorbed through skin; Prolonged or repeated exposure may result in the absorption of harmful amounts of material, resulting to allergenic effects such as rashes, itching, hives, or even open sores.
Inhalation	Moderately toxic. May cause nausea, vomiting, and abdominal pain. (It is caustic and could burn the tissues of the body if swallowed.
Potential Health Effects	----- Health Effects or Risks from Exposure. Acute: See section 5. Chronic: Sensitization of the skin resulting in rashes and even sores from contact with chemicals. -----

Section 3. Ingredients

CAS	Ingredient Name	Weight %
7631-86-9	Fumed Silica	10 %
112-24-3	1,2-Ethanediamine, N,N'-bis(2-aminoethyl)-	3.4 %
68410-23-1	Fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines	51 %

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-Aid Measures

General	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
Eye Contact	Immediately flush eyes with running water for a minimum of 15 minutes. Hold eyelids open during flushing. If irritation persists repeat flushing and obtain medical attention IMMEDIATELY.
Skin	Immediately flush with large amounts of water for at least 15 minutes. Use soap if available. Remove contaminated clothing, including shoes, after flushing has begun. Get prompt medical attention.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get immediate medical attention.
Ingestion	Do not induce vomiting. The victim should drink several glasses of water to dilute the ingested substance. If vomiting occurs naturally, keep airway clear. Get medical attention. Never give anything by mouth if the victim is rapidly losing consciousness, or is unconscious or convulsing.
Chronic Health Hazard, General	This product's ingredients are NOT found in the lists below: OSHA NTP IARC
Medical Conditions Aggravated by Exposure	Allergies or respiratory conditions such as asthma may be aggravated by excessive contact with this chemical.

Section 5. Fire Fighting Measures

Suitable Extinguishing Media	Flash Point: >365°F (>185°C) Auto Ignition Temperature: Not Available Flammable Limits (Lower): Not Available Flammable Limits (Upper): Not Available Extinguishing media: Use alcohol-resistant foam, carbon dioxide, dry chemical or water spray when fighting fires involving this material. Unusual Fire and Explosion Hazards: May produce hazardous fumes or hazardous decomposition products.
Unsuitable Extinguishing Media	N/A

Section 6. Accidental Release Measures

Major Spills	For Major Spills, call CHEMTREC at 1-800-424-9300
Small Spills	Soak up small spills with absorbant material and place in labeled containers for recovery or disposal.
Large Spills	Wear respirator and protective clothing as appropriate. Shut off source of leak if safe to do so. Dike and contain. Soak up residue with an absorbent such as clay, sand or other suitable inert material; dispose of properly.
Methods for cleaning up	Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal. Contact Air Products Emergency Response Center for advice.

Section 7. Handling and Storage

Handling	This product should be confined within closed equipment, in which case general (mechanical) room ventilation should be satisfactory. Special, local ventilation is needed at points where vapors can be expected to escape to the air.
Respiratory Protection	Not ordanarily required. If resin is warmed or heated, vapors or mists may be produced. In such cases, use a NIOSH-approved respirator as required to prevent overexposure. In accord with 29 CFR 1910.134, use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors.
Eye Protection	Wear safety glasses or goggles as appropriate
Gloves	Wear chemical-resistant gloves and other clothing as required to minimize skin contact
Hygenic Practices	Laundry contaminated clothes before wearing. Do not smoke or eat where this material is being used. Wash hands before smoking, eating or going to the bathroom

Section 8. Exposure Controls/Personal Protection

Occupational Exposure Limits	Ingredient Name	ACGIH TLV	OSHA PEL	STEL
	Fumed Silica	N/A	10 mg/m3, TLV-TWA, Inhalation	N/A
	1,2-Ethanediamine, N,N'-bis(2-aminoethyl)-	N/A	1 ppm, skin, TWA 6 mg/m3, inhalation	N/A
	Fatty acids, C18-unsatd., dimers, reaction products with polyethylenepolyamines	N/A	N/A	N/A
Personal Protective Equipment	Goggles, Gloves, CHEMICAL GOGGLES, PROTECTIVE CLOTHING, EYE WASH AND SAFETY SHOWER			
Ventilation	Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.			
Hand protection	Impervious gloves. The breakthrough time of the selected glove(s) must be greater than the intended use period.			
Eye Protection	Chemical safety goggles. Use a full-face shield.			

Section 9. Physical and Chemical Properties

Physical State	Paste
Color	Tan
Odor	mild ammoniacal odor
Odor Threshold	N/A
Solubility	N/A
Partition coefficient Water/n-octanol	N/A
VOC%	N/A
Viscosity	N/A
Specific Gravity	1.4
Density lbs/Gal	N/A
Pounds per Cubic Foot	N/A
Flash Point	>365°F
FP Method	Cleveland Open Cup
Ph	N/A
Melting Point	N/A
Boiling Point	N/A
Boiling Range	N/A
LEL	N/A
UEL	N/A
Evaporation Rate	N/A
Flammability	N/A
Decomposition Temperature	N/A
Auto-ignition Temperature	N/A
Vapor Pressure	N/A
Vapor Density	N/A

Section 10. Stability and Reactivity

Conditions to Avoid	Exposure to temperatures of around 300°C and above. Avoid bringing into contact with strong oxidizing materials or epoxy resins under uncontrolled conditions.
Incompatibilities	Oxidizing agents, acids, aldehydes, ketones, epoxides, acrylates, and organic halides.
Hazardous Decomposition Products	Thermal decomposition or burning may produce carbon monoxide and/or carbon dioxide, nitrogen oxides and ammonia.
Hazardous Polymerization	Will not occur

Section 11. Toxicological Information

No Data Available

Section 12. Ecological Information

No Data Available

Section 13. Disposal

No Data Available

Section 14. Transport Information

UN Number	N/A
UN Proper Shipping Name	N/A
DOT Classification	N/A
Packing Group	N/A

Section 15. Regulatory Information

No Data Available

Section 16. Other Information

Revision Date

9/22/2015

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RFC 2112

DESCRIPTION:

RFC 2112 Part A and B is an epoxy adhesive system for bonding a wide variety of substrates. This product is thixotropic, and so can be used on vertical surfaces without excessive runout from the bond line.

INSTRUCTIONS:

Any surface to be bonded must be as clean and as rough a practical. For critical bond, contact the Resin Formulators technical staff for surface preparation recommendations. For most applications, a clean surface that is free of oxide, oil, grease or any kind of particulate matter will yield a good bond with RFC 2112.

It is usually best to use disposable mixing containers and stirrer, or to acquire the adhesive in a premeasured mix kit. In either case it is important to achieve a thorough mix of the two components of the adhesive before applying to the substrate. Mixing this material is more like making bread dough than stirring cream into coffee. The pot life of this adhesive is about one hour. Do not mix more than you will be able to use in about 30 to 45 minutes. Do not mix large quantities (more than a pound) of this material at one time. If a large quantity of this material were mixed and allowed to react in a concentrated mass, considerable heat and possible toxic fumes could result.

The mix ratio is 1 to 1 by volume. Mix thoroughly for at least 3 minutes with a broad bladed spatula, scraping the bottom and side of the mixing container often. If the RFC 2112 has been supplied in a premixed and frozen form, remove a cartridge from the -40°C freezer a few minutes before you plan to use it. If the product is premixed and frozen there is no mixing or measuring necessary.

Cure the adhesive for 24 hours to achieve handling strength. Full cure is achieved in several days at room temperature, although, for most purposes one day is sufficient.

PHYSICAL PROPERTIES:

Lap Shear (typical, A1/A1): >3000 psi
(ASTM D1002, FPL etched 2024-T3 aluminum)

Moisture resistance:

Water soak at 77°F, A1/A1, Lap Shear, psi
30 days: 3100
12 months: 2800
24 months: 2400

Temperature range:

Lap Shear, A1/A1, psi

-67°F : 2300
77°F : 3000
180°F : 1200
250°F : 420

Compatibility with plastics: complete
Heat aging (1000 hours at 100°C, % weight loss) : <0.50
Chemical resistance : excellent