

Printing date 03/30/2020

1 Identification

· Product identifier

- · Trade name: EP-799 Two Part Conductive Epoxy
- · Application of the substance / the mixture Functional electronic epoxy
- Details of the supplier of the safety data sheet

• Manufacturer/Supplier: Kayaku Advanced Materials, Inc. 200 Flanders Road Westborough, MA 01581 Tel: (617) 965-5511 Fax: (617) 965-5818

- Information department: Product Safety Email: productsafety@kayakuAM.com • Emergency telephone number:
- Kayaku Advanced Materials : 617-965-5511 Chemtrec USA Emergency : 800-424-9300 Chemtrec International Emergency : 703-527-3887

2 Hazard(s) identification

· Classification of the substance or mixture

GHS08 Health hazard

Resp. Sens. 1	H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Muta. 1B	H340 May cause genetic defects.
Carc. 1B	H350 May cause cancer.
Repr. 2	H361 Suspected of damaging fertility or the unborn child.
STOT SE 1	H370 Causes damage to organs.
STOT RE 1	H372 Causes damage to organs through prolonged or repeated exposure.

GHS05 Corrosion

Eye Dam. 1 H318 Causes serious eye damage.

GHS09 Environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.

GHS07

Skin Irrit. 2	H315 Causes skin irritation.
Skin Sens. 1	H317 May cause an allergic skin reaction.
STOT SE 3	H335 May cause respiratory irritation.

(Contd. on page 2)

Reviewed on 03/30/2020

¹



Printing date 03/30/2020

Reviewed on 03/30/2020

Trade name: EP-799 Two Part Conductive Epoxy

(Contd. of page 1) · Label elements • GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS). · Hazard pictograms GHS05 GHS08 GHS07 GHS09 · Signal word Danger · Hazard-determining components of labeling: Proprietary Curing Agent Solvent naphtha (petroleum), light arom. Epoxy Resin *N-(aminoethyl)piperazine* Proprietary Resin · Hazard statements H315 Causes skin irritation. H318 Causes serious eye damage. H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. H317 May cause an allergic skin reaction. H340 May cause genetic defects. H350 May cause cancer. H361 Suspected of damaging fertility or the unborn child. H370 Causes damage to organs. H335 May cause respiratory irritation. H372 Causes damage to organs through prolonged or repeated exposure. H411 Toxic to aquatic life with long lasting effects. · Precautionary statements Avoid breathing dust/fume/gas/mist/vapors/spray P261 P273 Avoid release to the environment. P280 Wear protective gloves/protective clothing/eve protection/face protection. *P301+P310* If swallowed: Immediately call a poison center/doctor. P302+P352 If on skin: Wash with plenty of soap and water. If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for *P304+P341* 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. *P333+P313* If skin irritation or rash occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. P337+P313 Store in a well-ventilated place. Keep container tightly closed. P403+P233 P501 Dispose of contents/container in accordance with local/regional/national/international regulations. · Classification system: · NFPA ratings (scale 0 - 4) Health = 3Fire = 1Reactivity = 0

(Contd. on page 3)

US



Printing date 03/30/2020

Reviewed on 03/30/2020

Trade name: EP-799 Two Part Conductive Epoxy

(Contd. of page 2)

· HMIS-ratings (scale 0 - 4)

HEALTH*3Health = *3FIRE1Fire = 1REACTIVITY0Reactivity = 0

• Other hazards

- · Results of PBT and vPvB assessment
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

3 Composition/information on ingredients

· Chemical characterization: Mixtures

• Description: Mixture of the substances listed below with nonhazardous additions.

	Proprietary Curing Agent	25-50%
	� Resp. Sens. 1, H334; Repr. 2, H361; STOT SE 1, H370; STOT RE 1, H372; � Eye Dam. 1, H318; � Skin Irrit. 2, H315; Skin Sens. 1, H317	
	Proprietary Resin	25-50%
	Aquatic Chronic 2, H411; 🚯 Acute Tox. 4, H312; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317	
	Epoxy Resin	25-50%
140-31-8	N-(aminoethyl)piperazine Skin Corr. 1B, H314; Eye Dam. 1, H318; Acute Tox. 4, H302; Acute Tox. 4, H312; Skin Sens. 1, H317; Flam. Liq. 4, H227; Aquatic Chronic 3, H412	1-5%
64742-95-6	Solvent naphtha (petroleum), light arom. Flam. Liq. 3, H226; Muta. 1B, H340; Carc. 1B, H350; Asp. Tox. 1, H304; Acute Tox. 4, H332	1-5%

4 First-aid measures

- · Description of first aid measures
- General information:

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

• After inhalation:

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

• After skin contact: Immediately wash with water and soap and rinse thoroughly.

• After eye contact:

Wash eyes immediately with a large amount of water or normal saline, occasionally lifting upper and lower eye lids until no evidence of chemical remains (about 20 minutes). Remove contact lenses if present and easy to remove. Seek immediate medical attention.

(Contd. on page 4)

⁻ US



Printing date 03/30/2020

Reviewed on 03/30/2020

Trade name: EP-799 Two Part Conductive Epoxy

(Contd. of page 3)

• After swallowing:

Do not induce vomiting unless instructed to do so by a physician. Wash out mouth with water and keep person at rest. Seek immediate medical attention.

• Information for doctor:

- · Most important symptoms and effects, both acute and delayed No further relevant information available.
- · Indication of any immediate medical attention and special treatment needed Treat symptomatically.

5 Fire-fighting measures

- Extinguishing media
- · Suitable extinguishing agents:
- Alcohol resistant foam
- Fire-extinguishing powder
- ABC powder
- · For safety reasons unsuitable extinguishing agents: Water with full jet
- · Special hazards arising from the substance or mixture No further relevant information available.

- Advice for firefighters
- · Protective equipment: Wear SCBA.

6 Accidental release measures

	lequate ventilation	
Wear pro	tective equipment. Keep unprotected persons away.	
	y from ignition sources	
	nental precautions:	
	spective authorities in case of seepage into water course or sewage system.	
	low to enter sewers/ surface or ground water.	
	and material for containment and cleaning up: ith liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).	
	lequate ventilation.	
	to other sections	
	on 7 for information on safe handling.	
	<i>bn 8 for information on personal protection equipment.</i>	
	m 13 for disposal information.	
	Action Criteria for Chemicals	
PAC-1:		
	Proprietary Resin	90 mg/n
140-31-8	N-(aminoethyl)piperazine	6.4 mg/
108-65-6	1-Methoxy-2-propanol acetate	50 ppm
PAC-2:		
	Proprietary Resin	990 mg/
140-31-8	N-(aminoethyl)piperazine	71 mg/m
108-65-6	1-Methoxy-2-propanol acetate	1,000 pp
PAC-3:		
	Proprietary Resin	5,900 mg/
140-31-8	N-(aminoethyl)piperazine	420 mg/m.
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(Contd. of page 4) 5000* ppm



Safety Data Sheet acc. to OSHA HCS

Printing date 03/30/2020

Reviewed on 03/30/2020

Trade name: EP-799 Two Part Conductive Epoxy

108-65-6 1-Methoxy-2-propanol acetate

7 Handling and storage

· Handling:

- Precautions for safe handling Ensure good ventilation/exhaust at the workplace. Open and handle container with care. Prevent formation of aerosols.
- Information about protection against explosions and fires: Keep respirator available. Keep ignition sources away - Do not smoke. Protect against electrostatic charges.
- Conditions for safe storage, including any incompatibilities
- Storage:
- Requirements to be met by storerooms and containers: No special requirements.
- Information about storage in one common storage facility: Do not store together with alkalis (caustic solutions). Do not store together with oxidizing and acidic materials.
- Further information about storage conditions: Store receptacle in a well ventilated area. Keep container well-sealed in cool, dry location. Protect from heat and direct sunlight.
- Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

- · Additional information about design of technical systems: No further data; see item 7.
- · Control parameters
- Components with limit values that require monitoring at the workplace:
- The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- Additional information: The lists that were valid during the creation were used as basis.
- · Exposure controls
- · Personal protective equipment:
- General protective and hygienic measures: Keep away from food and beverages.
- Immediately remove all soiled and contaminated clothing.
- Wash hands before breaks and at the end of work.
- Store protective clothing separately.
- Avoid contact with the skin.
- Avoid contact with the eyes and skin.
- Respiratory equipment:
- In case of low exposure, use cartridge respirator. In case of intensive or longer exposure, use SCBA.

(Contd. on page 6)

(Contd. of page 5)



Safety Data Sheet acc. to OSHA HCS

Printing date 03/30/2020

Reviewed on 03/30/2020

Trade name: EP-799 Two Part Conductive Epoxy

· Protection of hands:



Protective gloves

- The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
- *Material of gloves* Nitrile rubber, NBR
- · Penetration time of glove material Contact glove manufacture for break-through time.
- Eye protection:

Tightly sealed goggles

9 Physical and chemical properties

Appearance: Form:	Liquid	
Color:	Black	
Odor:	Weak, characteristic	
Odor threshold:	Not determined.	
pH-value:	Not determined.	
Change in condition		
Melting point/Melting range:	Undetermined.	
Boiling point/Boiling range:	Undetermined.	
Flash point:	100 °C (212 °F)	
Flammability (solid, gaseous):	Not applicable.	
Decomposition temperature:	Not determined.	
Auto igniting:	Product is not selfigniting.	
Danger of explosion:	Product does not present an explosion hazard.	
Explosion limits:		
Lower:	Not determined.	
Upper:	Not determined.	
Vapor pressure:	Not determined.	
Density:	See other information	
Relative density	Not determined.	
Vapor density	Not determined.	
Solubility in / Miscibility with		
Water:	Water miscible No	



Printing date 03/30/2020

Reviewed on 03/30/2020

Trade name: EP-799 Two Part Conductive Epoxy

		(Contd. of page 6)
· Viscosity:		
Dynamic:	Not determined.	
Kinematic:	Not determined.	
· Solvent content:		
Organic solvents:	1.8 %	
VOC content:	1.8 %	
• Other information	No further relevant information available.	

10 Stability and reactivity

• *Reactivity* No further relevant information available.

· Chemical stability Stable

• Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

· Possibility of hazardous reactions No dangerous reactions known.

• Conditions to avoid Heat, flames and sparks. Extremes of temperature and direct sunlight.

Contact with incompatible materials.

- · Incompatible materials: Strong Oxidizing Agents, Strong Acids, Strong Bases
- Hazardous decomposition products:
- Carbon monoxide and carbon dioxide N'_{i}

Nitrogen oxides (NOx)

11 Toxicological information

· Information on toxicological effects

• Acute toxicity:

· LD/LC50 values that are relevant for classification:
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Proprietary Resin

 $\begin{array}{c|c} Oral & LD50 & 30000 \text{ mg/kg (Rat)} \\ Dermal & LD50 & > 1200 \text{ mg/kg (Rat)} \end{array}$

Dermai	LDJ0	>1200 mg/kg (Kui)
(171) 05	(C . 1	1.1

64742-95-6 Solvent napl	htha (petroleum),	light arom.
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Oral		>6800 mg/kg (Rat)
Dermal	LD50	>3400 mg/kg (rab)
Inhalative	LC50/4 h	>10.2 mg/l (Rat)

· Primary irritant effect:

- on the skin: Irritant to skin and mucous membranes.
- on the eye: Strong irritant with the danger of severe eye injury.

· Sensitization:

Sensitization possible through inhalation.

Sensitization possible through skin contact.

• Additional toxicological information:

The product shows the following dangers according to internally approved calculation methods for preparations: Harmful

Irritant

Carcinogenic.

The product can cause inheritable damage.

(Contd. on page 8)

US



Printing date 03/30/2020

Reviewed on 03/30/2020

Trade name: EP-799 Two Part Conductive Epoxy

(Contd. of page 7)

· Carcinogenic categories

· IARC (International Agency for Research on Cancer)

None of the ingredients are listed.

·NTP (National Toxicology Program)

None of the ingredients are listed.

OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients are listed.

12 Ecological information

- · Toxicity
- · Aquatic toxicity: No further relevant information available.
- *Persistence and degradability No further relevant information available.*
- · Behavior in environmental systems:
- · Bioaccumulative potential No further relevant information available.
- · Mobility in soil No further relevant information available.
- · Ecotoxical effects:
- · Remark: Toxic for fish
- · Additional ecological information:
- · General notes:
- Water hazard class 2 (Self-assessment): hazardous for water
- Do not allow product to reach ground water, water course or sewage system.
- Danger to drinking water if even small quantities leak into the ground.
- Also poisonous for fish and plankton in water bodies.

Toxic for aquatic organisms

- · Results of PBT and vPvB assessment
- **PBT:** Not applicable.
- · vPvB: Not applicable.
- · Other adverse effects No further relevant information available.

13 Disposal considerations

- · Waste treatment methods
- · Recommendation:

Must not be disposed of as regular garbage/trash. Do not allow product to reach sewage system. Disposal must be made in accordance with Federal, State, and Local regulations.

· Uncleaned packagings:

• Recommendation: Disposal must be made in accordance with Federal, State, and Local regulations.

14 Transport information

· UN-Number

· DOT, ADR, IMDG, IATA

UN3082

(Contd. on page 9)

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- US -



Safety Data Sheet acc. to OSHA HCS

Printing date 03/30/2020

Reviewed on 03/30/2020

	(Contd. of page
UN proper shipping name	
DOT, ADR	Environmentally hazardous substances, liquid, n.o.s. (4,4
,	Isopropylidenediphenol- Epichlorohydrin Copolymer)
IMDG	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUIL
	N.O.S. (4,4'-Isopropylidenediphenol- Epichlorohydri
IATA	Copolymer), MARINE POLLUTANT ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUIL
	N.O.S. (4,4'-Isopropylidenediphenol- Epichlorohydri
	Copolymer)
Transport hazard class(es)	
DOT, ADR, IMDG, IATA	
A	
√ (11D) ₂	
*	
Class	9 Miscellaneous dangerous substances and articles
Label	9
Packing group	
DOT, ADR, IMDG, IATA	III
Environmental hazards:	Product contains environmentally hazardous substances: 4,4
	Isopropylidenediphenol- Epichlorohydrin Copolymer
Marine pollutant:	Yes (DOT)
Special precautions for user	Warning: Miscellaneous dangerous substances and articles
Hazard identification number (Kemler code):	
EMS Number:	F-A,S-F
Stowage Category	A
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	1101 uppeuoc.
DOT Ouantity limitations	On passenger aircraft/rail: No limit
Zuunny umuunns	On cargo aircraft only: No limit
ADR	, , , , , , , , , , , , , , , , ,
Excepted quantities (EQ)	Code: El
	Maximum net quantity per inner packaging: 30 ml
	Maximum net quantity per outer packaging: 1000 ml
IMDG	
Limited quantities (LQ)	5L
Excepted quantities (EQ)	Code: El
	Maximum net quantity per inner packaging: 30 ml
	Maximum net quantity per outer packaging: 1000 ml

(Contd. of page 9)



Safety Data Sheet acc. to OSHA HCS

Printing date 03/30/2020

Reviewed on 03/30/2020

Trade name: EP-799 Two Part Conductive Epoxy

· UN "Model Regulation":

UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN COPOLYMER), 9, III

15 Regulatory information

 \cdot Safety, health and environmental regulations/legislation specific for the substance or mixture \cdot Sara

· Section 355 (extremely hazardous substances):

None of the ingredients are listed.

· Section 313 (Specific toxic chemical listings):

None of the ingredients is listed.

• TSCA (Toxic Substances Control Act): All ingredients are listed or comply with TSCA regulations. • Proposition 65

• Chemicals known to cause cancer:

None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females:

None of the ingredients are listed.

• Chemicals known to cause reproductive toxicity for males:

None of the ingredients are listed.

Chemicals known to cause developmental toxicity:

None of the ingredients are listed.

· Carcinogenic categories

· EPA (Environmental Protection Agency)

None of the ingredients are listed.

• TLV (Threshold Limit Value established by ACGIH)

None of the ingredients are listed.

· NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients are listed.

· California SCAQMD Rule 443.1 VOC's: No information available.

• *GHS label elements* The product is classified and labeled according to the Globally Harmonized System (GHS). • *Hazard pictograms*



· Signal word Danger

• Hazard-determining components of labeling: Proprietary Curing Agent Solvent naphtha (petroleum), light arom. Epoxy Resin

(Contd. on page 11)



Printing date 03/30/2020

Reviewed on 03/30/2020

Trade name: EP-799 Two Part Conductive Epoxy

	(Contd. of page 10)
N-(aminoethyl)p	
Proprietary Resi	
Hazard statemen	
H315 Causes ski	
	ious eye damage.
	allergy or asthma symptoms or breathing difficulties if inhaled.
	an allergic skin reaction.
H340 May cause	genetic defects.
H350 May cause	
H361 Suspected	of damaging fertility or the unborn child.
H370 Causes dat	mage to organs.
H335 May cause	respiratory irritation.
H372 Causes dat	nage to organs through prolonged or repeated exposure.
H411 Toxic to ac	nuatic life with long lasting effects.
Precautionary st	atements
P261	Avoid breathing dust/fume/gas/mist/vapors/spray
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310	If swallowed: Immediately call a poison center/doctor.
P302+P352	If on skin: Wash with plenty of soap and water.
P304+P341	If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.
P305+P351+P3	38 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.
<i>P337+P313</i>	<i>If eye irritation persists: Get medical advice/attention.</i>
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

· National regulations:

· Other regulations, limitations and prohibitive regulations

Kayaku Advanced Materials has confirmed with our precious metal suppliers that they do not use conflict minerals, as outlined in the Dodd-Frank Wall Street Reform and Consumer Protection Act in Title XV, Section 1502.

· Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Department issuing SDS: Product safety department

· Contact: Tom Cole, EHS Manager (tcole@kayakuAM.com)

• *Revision History:* The manufacturer's information in Section 1 has been updated.

• Date of preparation / last revision 03/30/2020 / 1

• Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

(Contd. on page 12)

US -



Printing date 03/30/2020

Reviewed on 03/30/2020

Trade name: EP-799 Two Part Conductive Epoxy

EDIECS: European Investory of Fristing Communical Chemical Substances	(Contd. of page 11)
EINECS: European Inventory of Existing Commercial Chemical Substances ELINCS: European List of Notified Chemical Substances	
CAS: Chemical Abstracts Service (division of the American Chemical Society)	
NFPA: National Fire Protection Association (USA)	
HMIS: Hazardous Materials Identification System (USA)	
VOC: Volatile Organic Compounds (USA, EU)	
LC50: Lethal concentration, 50 percent	
LD50: Lethal dose, 50 percent	
PBT: Persistent. Bioaccumulative and Toxic	
vPvB: very Persistent and very Bioaccumulative	
NIOSH: National Institute for Occupational Safety	
OSHA: Occupational Safety & Health	
TLV: Threshold Limit Value	
PEL: Permissible Exposure Limit	
REL: Recommended Exposure Limit	
Flam. Liq. 3: Flammable liquids – Category 3	
Flam. Lig. 4: Flammable liquids – Category 4	
Acute Tox. 4: Acute toxicity – Category 4	
Skin Corr. 1B: Skin corrosion/irritation – Category 1B	
Skin Irrit. 2: Skin corrosion/irritation – Category 2	
Eye Dam. 1: Serious eye damage/eye irritation – Category 1	
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A	
Eye Irrit. 2B: Serious eye damage/eye irritation – Category 2B	
Resp. Sens. 1: Respiratory sensitisation – Category 1	
Skin Sens. 1: Skin sensitisation – Category 1	
Muta. 1B: Germ cell mutagenicity – Category 1B	
Carc. 1B: Carcinogenicity – Category 1B	
<i>Repr. 2: Reproductive toxicity – Category 2</i>	
STOT SE 1: Specific target organ toxicity (single exposure) – Category 1	
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3	
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1	
Asp. Tox. 1: Aspiration hazard – Category 1	
Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2	
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3	
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