

SAFETY DATA SHEET

FOR INDUSTRIAL USE ONLY

EPONTM Resin 8021

Section 1. Product and company identification

GHS product identifier MSDS Number Product type		 EPON[™] Resin 8021 K196R_US Epoxy Resin
Manufacturer/Supplier/Impor ter	:	Hexion Inc. 180 East Broad Street Columbus, Ohio 43215 USA
Contact person	:	4information@hexion.com
Telephone	:	For additional health and safety or regulatory information, call 1 888 443 9466.
Emergency telephone number	:	For Emergency Medical Assistance Call Health & Safety Information Services 1-866-303-6949
		For Emergency Transportation Information CHEMTREC US Domestic (800) 424-9300 CHEMTREC International (703) 527-3887 CANUTEC CA Domestic (613) 996-6666

Section 2. Hazards identification

Classification of the substance or mixture	:	SKIN CORROSION/IRRITATION - Category 2 SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2A SKIN SENSITISATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE [Respiratory tract irritation] - Category 3 SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE [skin] - Category 2
GHS label elements		
Hazard pictograms	:	
Signal word	:	Warning
Hazard statements	:	H315 Causes skin irritation.
		H319 Causes serious eye irritation.
		H317 May cause an allergic skin reaction.
		H335 May cause respiratory irritation.

Precautionary statements

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

<u>I recautionary statements</u>		
General	:	Not applicable.
Prevention	:	Wear protective gloves. Wear eye or face protection. Use only outdoors or in a well-ventilated area. Do not breathe vapor. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.
Response	:	Get medical attention if you feel unwell. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
Storage	:	Store locked up.
Disposal	:	Dispose of contents and container in accordance with all local, regional, national and international regulations.
Other hazards which do not result in classification	:	None known.

Section 3. Composition/information on ingredients

Substance/mixture

: Mixture

Ingredient name	% by weight	CAS number
4,4'-Isopropylidenediphenol-Epichlorohydrin Copolymer	50 - 70	25068-38-6
1,6-Hexanediol Diacrylate	35 - 50	13048-33-4

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.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	:	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
Inhalation	:	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
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. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	:	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

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

Notes to physician	:	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	:	No specific treatment.
Protection of first aid personnel	:	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media Unsuitable extinguishing media	Use an extinguishing agent suitable for the surrounding fin None known.	:е.
Specific hazards arising from the chemical Hazardous thermal decomposition products	In a fire or if heated, a pressure increase will occur and the may burst. Decomposition products may include the following mater carbon oxides acids aldehydes other organic compounds	
Special protective actions for fire- fighters	Promptly isolate the scene by removing all persons from the incident if there is a fire. No action shall be taken in personal risk or without suitable training.	•
Special protective equipment for fire-fighters	Fire-fighters should wear appropriate protective equipment contained breathing apparatus (SCBA) with a full face-piet in positive pressure mode.	

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel For emergency responders	:	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
Environmental precautions	:	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Methods and material for containmen	t and	l cleaning up
Small spill	:	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
Large spill	:	Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non- combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13 of SDS). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 of SDS for emergency contact information and section 13 of SDS for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures	:	Put on appropriate personal protective equipment (see section 8 of SDS). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
Advice on general occupational hygiene	:	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
Conditions for safe storage, including any incompatibilities	:	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10 of SDS) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
1,6-Hexanediol Diacrylate	AIHA WEEL (1999-01-01) TWA - TLV and PEL 1 mg/m3 Notes: Skin sensitizer
Recommended monitoring procedures	: If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of
Appropriate engineering controls	 hazardous substances will also be required. Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls	:	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
Individual protection measures		
Hygiene measures	:	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
Eye/face protection	:	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
Skin protection		
Hand protection	:	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Body protection	:	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Other skin protection	:	Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	:	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Section 9. Physical and chemical properties

Appearance

Physical state Color	:	Liquid Reddish-brown
Odor	:	Acrylate
Odor threshold	:	Not available
рН	:	Not available

Melting point/ Freezing point Boiling point	:	Not available Not available
Flash point	:	Setaflash Closed Cup: Greater than 93.4 °C (200.1 °F) (ASTM D 3828)
Burning time	:	Not available
Burning rate	:	Not available
Evaporation rate	:	Not available
Flammability (solid, gas)	:	Not available
Lower and upper explosive	:	Lower: Not available
(flammable) limits		Upper: Not available
Vapor pressure	:	Less than 0.1 mbar @ 20 °C (68 °F)
Vapor density	:	Greater than 1 [Air = 1]
Relative density	:	Not available
Solubility	:	Not available
Solubility in water	:	Negligible
Partition coefficient: n- octanol/water	:	Not available
Auto-ignition temperature	:	Not available
Decomposition temperature	:	Not available
SADT	:	Not available
Viscosity	:	Dynamic: Not available
		Kinematic: Not available

Other information

No additional information.

Section 10. Stability and reactivity

Reactivity	:	Stable under normal conditions.
Chemical stability	:	The product is stable.
Possibility of hazardous reactions	:	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to avoid	:	Strong oxidizer, Extremes of temperature and direct sunlight.
Incompatible materials	:	Reactive or incompatible with the following materials: strong oxidizing agents, strong acids, strong alkalis, aliphatic amines,
Hazardous decomposition products	:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Other hazards		Heating this substance above 300 deg. F in the presence of air may cause slow oxidative decomposition; above 500 deg. F polymerization may occur. Some combinations of resins and curing agents can produce exothermic reactions which in large masses can cause runaway

polymerization and charring of the reactants Fumes and vapors from the thermal and chemical decompositions vary widely in composition and toxicity.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
4,4'-Isopropylidenediphenol-I	Epichlorohydrin Cop	olymer		
	LD50 Oral	Rat	11,400 mg/kg	-
	LD50 Dermal	Rat	2,000 mg/kg	-
1,6-Hexanediol Diacrylate				
	LD50 Oral	Rat	5,000 mg/kg	-
Conclusion/Summary	: Not	available		

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
4,4'-Isopropylidenediphenol- Epichlorohydrin Copolymer	Skin - Erythema/E schar 404 Acute Dermal Irritation/Co	Rabbit	1.5 - 2		-
	rrosion Skin - Edema 404 Acute Dermal Irritation/Co rrosion	Rabbit	1.0 - 1.5		-
	eyes 405 Acute Eye Irritation/Co rrosion	Rabbit	0		-
	eyes - Redness of the conjunctiva e	Rabbit	0.7		-
	Skin - Moderate irritant	Rabbit		24 hrs	-
	Skin - Severe irritant	Rabbit		24 hrs	-
	eyes - Mild irritant	Rabbit			-
1,6-Hexanediol Diacrylate	Skin - Severe irritant	Rabbit		24 hrs	-

Conclusion/Summary Skin eyes Respiratory	:	Not available Not available Not available
Sensitization		
Conclusion/Summary Skin Respiratory	:	Not available Not available
Mutagenicity		
Conclusion/Summary	:	Not available
Carcinogenicity		
Conclusion/Summary	:	Not available
<u>Reproductive toxicity</u>		
Conclusion/Summary	:	Not available
<u>Teratogenicity</u>		
Conclusion/Summary	:	Not available

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
4,4'-Isopropylidenediphenol-	Category 3		Respiratory tract irritation
Epichlorohydrin Copolymer			

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
1,6-Hexanediol Diacrylate	Category 2		skin

Aspiration hazard

Not available

Information on likely routes of	:	Not available
exposure		

Potential acute health effects

Eye contact	:	Causes serious eye irritation.
Inhalation	:	May cause respiratory irritation.
Skin contact	:	Causes skin irritation. May cause an allergic skin reaction.
Ingestion	:	Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following pain or irritation watering redness
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Inhalation	:	Adverse symptoms may include the following: respiratory tract irritation
		coughing
Skin contact	:	Adverse symptoms may include the following:
		irritation
		redness
Ingestion	:	No specific data.
Delayed and immediate effects as we	ell as	chronic effects from short and long-term exposure
<u>Short term exposure</u>		
Potential immediate effects	:	Not available
Potential delayed effects	:	Not available
Long term exposure		
Potential immediate effects	:	Not available
Potential delayed effects	:	Not available
Potential chronic health effects		
Conclusion/Summary	:	Not available
General	:	May cause 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		No known significant effects or critical hazards.
Developmental effects		No known significant effects or critical hazards.
Fertility effects		No known significant effects or critical hazards.
-		

Numerical measures of toxicity

Acute toxicity estimates

Not available

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure				
reaction product: bisphenol-A-(epichlorhydrin); epoxy resin (number average molecular weight \leq 700)							
	Acute LC50 1.3 mg/l - 203 Fish, Acute	Fish - Fish	96 h				
	Toxicity Test						
	Acute EC50 2.1 mg/l - 202 Daphnia	Aquatic invertebrates.	48 h				
	sp. Acute Immobilization Test and	Water flea					
	Reproduction Test						
	Acute LC50 > 11 mg/l -	Aquatic plants - Algae	72 h				
	Chronic No-observable-effect-	Aquatic invertebrates.	21 d				
	concentration 0.3 mg/l semi-static test	Water flea					
	211 Daphnia Magna Reproduction Test						

Conclusion/Summary	:	Not available	
Persistence/degradability			
Conclusion/Summary	:	Not available	

Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
4,4'-Isopropylidenediphenol-	2.64 - 3.78	3 - 31 31.00	low
Epichlorohydrin Copolymer			
1,6-Hexanediol Diacrylate	2.81	-	low
EPON [™] Resin 8021		-	high

Mobility in soil

Soil/water partition coefficient	:	Not available
(KOC)		
Other adverse effects	:	No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods The generation of waste should be avoided or minimized wherever : possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 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.

Regulatory information	UN/NA number	Proper shipping name	Classes/*PG	Reportable Quantity (RQ)
CFR		Non-regulated		
TDG		Non-regulated		

IMO/IMDG	3082	ENVIRONMENTALLY Class 9 III HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (LIQUID EPOXY RESIN)		
IATA (Cargo)	3082	ENVIRONMENTALLY Class 9 III HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (LIQUID EPOXY RESIN)		
*PG : Packing group				
Environmentally hazardous and/or Marine Pollutant : Yes.				
Special precaution	ons for user	: Transport within user's premises: always transport in containers that are upright and secure. Ensure that pe transporting the product know what to do in the even or spillage.	rsons	

Section 15. Regulatory information

United States

U.S. Federal regulations	:	 United States - TSCA 12(b) - Chemical export notification: None required. United States - TSCA 5α2 - Final significant new use rules: Not listed United States - TSCA 5α2 - Proposed significant new use rules: Not listed United States - TSCA 5(e) - Substances consent order: Not listed SARA 311/312 Classification - Immediate (acute) health hazard, Delayed (chronic) health hazard
<u>California Prop. 65:</u>	:	WARNING: This product contains less than 0.1% of a chemical known to the State of California to cause cancer., WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.
United States inventory (TSC. 8b)	A :	All components are listed or exempted.
International regulations		
	Canada Japan i China i Korea i	 ia inventory (AICS): All components are listed or exempted. inventory: All components are listed or exempted. inventory: All components are listed or exempted. inventory (IECSC): All components are listed or exempted. inventory: All components are listed or exempted. aland Inventory (NZIoC): All components are listed or exempted.

Philippines inventory (PICCS): All components are listed or exempted. **United States inventory (TSCA 8b):** All components are listed or exempted.

Section 16. Other information

Hazardous Material Information System III (U.S.A.) :

Health	*	2
Flammability		1
Physical hazards		0

Caution: HMIS[®] ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS[®] ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS[®] ratings are to be used with a fully implemented HMIS[®] program. HMIS[®] is a registered mark of the National Paint & Coatings Association (NPCA). HMIS[®] materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material. For more information on HMIS[®] Personal Protective Equipment (PPE) codes, consult the HMIS[®] Implementation Manual.

Full text of abbreviated H statements	:	Not applicable.
History		
Date of printing Date of issue/Date of revision Date of previous issue Version Prepared by Key to abbreviations		08/21/2018 05/23/2018 05/20/2015 8.1 Product Safety Stewardship ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution) RID = The Regulations concerning the International Carriage of Dangerous Goods by Rail UN = United Nations
References	:	Not available

Notice to reader

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