SAFETY DATA SHEET

D.E.R.™ 660-PA80 Epoxy Resin

Version	Revision Date:	SDS Number:	Date of last issue: 10-23-2019
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BLUE CUBE OPERATIONS LLC encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

SECTION 1. IDENTIFICATION

Product name	:	D.E.R.™ 660-PA80 Epoxy Resin
Product code	:	000000001000000984

Manufacturer or supplier's details

Company name of supplier	:	BLUE CUBE OPERATIONS LLC
Address	:	190 CARONDELET PLAZA, SUITE 1530 CLAYTON MO 63105-3467
Telephone	:	(844) 238-3445
E-mail address	:	INFO@OLIN.COM
Emergency telephone	:	+1 800 424 9300
Local Emergency Contact	:	1-800-424-9300
Identified uses	:	Functional Coatings.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Flammable liquids	:	Category 2
Skin irritation	:	Category 2
Eye irritation	:	Category 2A
Skin sensitization	:	Sub-category 1B
Specific target organ toxicity - single exposure	:	Category 3 (Central nervous system)

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : Highly flammable liquid and vapor.
Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
May cause drowsiness or dizziness.

Precautionary Statements :

Prevention:

P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves/ eye protection/ face protection.

Response:

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
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.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

Static-accumulating flammable liquid.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers	25085-99-8	>= 80
Propyl acetate	109-60-4	<= 20

Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

If inhaled : Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

In case of skin contact : Remove material from skin immediately by washing with soap and plenty of water. Remove contaminated clothing and shoes while washing. Seek medical attention if irritation persists. Wash clothing before reuse.
Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands.

In case of eye contact : Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.
Suitable emergency eye wash facility should be available in work area.

If swallowed : If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms and effects, both acute and delayed : Aside from the information found under Description of first aid measures(above)any additional important symptoms and effects are described in Section 11: Toxicology Information.

Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection).
If potential for exposure exists refer to Section 8 for specific personal protective equipment.

Notes to physician : Repeated excessive exposure may aggravate preexisting lung disease.
Maintain adequate ventilation and oxygenation of the patient.
May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help.
No specific antidote.
Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.
Unsuitable extinguishing media	:	Do not use direct water stream. Straight or direct water streams may not be effective to extinguish fire.
Specific hazards during fire fighting	:	When product is stored in closed containers, a flammable atmosphere can develop. Electrically ground and bond all equipment. Flammable mixtures of this product are readily ignited even by static discharge. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Flammable mixtures may exist within the vapor space of containers at room temperature. Flammable concentrations of vapor can accumulate at temperatures above flash point; see Section 9. Dense smoke is emitted when burned without sufficient oxygen.
Hazardous combustion products	:	During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Phenolic compounds. Carbon monoxide. Carbon dioxide.
Further information	:	Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Water may not be effective in extinguishing fire. Do not use direct water stream. May spread fire. Eliminate ignition sources. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.
Special protective equipment for fire-fighters	:	Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-

contained breathing apparatus and fight fire from a remote location.
For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas. Keep personnel out of confined or poorly ventilated areas. Keep upwind of spill. Ventilate area of leak or spill. Vapor explosion hazard. Keep out of sewers. For large spills, warn public of downwind explosion hazard. Check area with combustible gas detector before reentering area. Ground and bond all containers and handling equipment. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment. Refer to section 7, Handling, for additional precautionary measures. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
Environmental precautions	:	Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.
Methods and materials for containment and cleaning up	:	Pump with explosion-proof equipment. If available, use foam to smother or suppress. If available, use foam to smother or suppress vapors. Ground and bond all containers and handling equipment. Contain spilled material if possible. Absorb with materials such as: Sand. Polyethylene fiber products. Polypropylene fiber products. Collect in suitable and properly labeled containers. Remove residual with soap and hot water. Residual can be removed with solvent. Solvents are not recommended for clean-up unless the recommended exposure guidelines and safe handling practices for the specific solvent are followed. Consult appropriate solvent Safety Data Sheet for handling information and exposure guidelines. See Section 13, Disposal Considerations, for additional information.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	:	Keep away from heat, sparks and flame. Avoid contact with eyes, skin, and clothing.

Avoid prolonged or repeated contact with skin.
Avoid breathing vapor.
Keep container closed.
Use with adequate ventilation.
Wash thoroughly after handling.
Do not enter confined spaces unless adequately ventilated.
Never use air pressure for transferring product.
No smoking, open flames or sources of ignition in handling and storage area.
Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur.
Electrically bond and ground all containers, personnel and equipment before transfer or use of material.
Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers.
Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation.
Handling operations that can promote accumulation of static charges include but are not limited to mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations.
See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Conditions for safe storage : Flammable mixtures may exist within the vapor space of containers at room temperature.
Minimize sources of ignition, such as static build-up, heat, spark or flame.
Store in original container.
Keep container closed.

Recommended storage temperature : 36 - 109 °F / 2 - 43 °C

Storage period : 24 Months

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Propyl acetate	109-60-4	TWA	200 ppm 840 mg/m3	OSHA P0
		STEL	250 ppm 1,050 mg/m3	OSHA P0
		TWA	200 ppm 840 mg/m3	OSHA Z-1
		TWA	100 ppm	ACGIH
		STEL	150 ppm	ACGIH

Engineering measures : Use engineering controls to maintain airborne level below exposure limit requirements or guidelines.
If there are no applicable exposure limit requirements or guidelines, use only in enclosed systems or with local exhaust ventilation.
Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point.
Lethal concentrations may exist in areas with poor ventilation.

Personal protective equipment

Filter type : The following should be effective types of air-purifying respirators: Organic vapor cartridge.

Respiratory protection : Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines.
If there are no applicable exposure limit requirements or guidelines, use an approved respirator.
Selection of air-purifying or positive-pressure supplied-air will depend on the specific operation and the potential airborne concentration of the material.
For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.
In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

Hand protection

Remarks : Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Chlorinated polyethylene. Polyethylene. Ethyl vinyl alcohol laminate ('EVAL'). Polyvinyl alcohol ('PVA'). Examples of acceptable glove barrier materials include: Natural rubber ('latex'). Neoprene. Polyvinyl chloride ('PVC' or 'vinyl'). Viton.
NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Eye protection : Use chemical goggles.
If exposure causes eye discomfort, use a full-face respirator.

Skin and body protection : Use protective clothing chemically resistant to this material.
Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Liquid.
Color	:	Yellow to brown
Odor	:	Ester.
Odor Threshold	:	No test data available
pH	:	No test data available
Melting point/range	:	Not applicable
Freezing point		No test data available
Boiling point/boiling range	:	216 °F / 102 °C Method: Literature (n-propyl acetate)
Flash point	:	55 °F / 13 °C Method: Tag Closed Cup ASTM D56, closed cup (n-propyl acetate)
Evaporation rate	:	No test data available
Flammability (solid, gas)	:	Not applicable to liquids
Upper explosion limit / Upper flammability limit	:	7.95 %(V) Method: Literature (n-propyl acetate)
Lower explosion limit / Lower flammability limit	:	1.71 %(V) (100 °F / 38 °C) Method: Literature (n-propyl acetate)
Vapor pressure	:	23 mmHg Method: Literature (n-propyl acetate)
Relative vapor density	:	3.5 Method: Literature (n-propyl acetate)
Relative density	:	1.12 Method: Literature
Density	:	1.1 g/cm3 (77 °F / 25 °C) Method: ASTM D4052
Solubility(ies)		
Water solubility	:	23 g/l Insoluble, Resin, (solvent) Method: Literature

Partition coefficient: n-octanol/water	:	No data available.
Autoignition temperature	:	855 °F / 457 °C Method: Literature (n-propyl acetate)
Decomposition temperature	:	No test data available
Viscosity		
Viscosity, dynamic	:	1,500 - 4,500 cP (77 °F / 25 °C) Method: ASTM D 445
Viscosity, kinematic	:	No data available
Explosive properties	:	No
Oxidizing properties	:	No
Molecular weight	:	No test data available

Note: These are the Reference Points for these Physical Properties listed above, unless otherwise noted in their respective Physical Property value information: Boiling Point at 760 mmHg; Evaporation Rate Butyl Acetate = 1; Relative Vapor Density Air = 1; and Relative Density Water = 1.
NOTE: The physical data presented above are typical values and should not be construed as a specification.

SECTION 10. STABILITY AND REACTIVITY

Chemical stability	:	Stable under recommended storage conditions. See Storage, Section 7.
Possibility of hazardous reactions	:	Will not occur by itself. Masses of more than one pound (0.5 kg) of product plus an aliphatic amine will cause irreversible polymerization with considerable heat build-up.
Conditions to avoid	:	Exposure to elevated temperatures can cause product to decompose. Avoid static discharge.
Incompatible materials	:	Avoid contact with oxidizing materials. Avoid contact with: Acids. Bases. Avoid unintended contact with amines.
Hazardous decomposition products	:	Decomposition products depend upon temperature, air supply and the presence of other materials. Uncontrolled exothermic reaction of epoxy resins release phenolics, carbon monoxide, and water.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute oral toxicity : Remarks: Low toxicity if swallowed.
Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

LD50 (Rat): > 2,000 mg/kg
Method: Estimated.
Remarks: As product:
Single dose oral LD50 has not been determined.

Acute inhalation toxicity : Remarks: In confined or poorly ventilated areas, vapor can readily accumulate and can cause unconsciousness and death.
Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs.
Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed.

LC50 (Rat): 32 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Remarks: For component(s) tested.

Acute dermal toxicity : Remarks: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

LD50 (Rabbit): > 2,000 mg/kg
Method: Estimated.
Remarks: As product:
The dermal LD50 has not been determined.

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:

Acute oral toxicity : LD50 (Rat): > 15,000 mg/kg

Acute inhalation toxicity : Remarks: The LC50 has not been determined.

Acute dermal toxicity : LD50 (Rabbit): 23,000 mg/kg

Propyl acetate:

Acute oral toxicity : LD50 (Rat, male): 8,700 mg/kg

Acute inhalation toxicity : Remarks: Prolonged excessive exposure may cause adverse effects.
Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs.
Symptoms of excessive exposure may be anesthetic or nar-

cotic effects; dizziness and drowsiness may be observed.

LC50 (Rat): 32 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit, male): > 17,800 mg/kg

Skin corrosion/irritation

Product:

Remarks : Prolonged contact is essentially nonirritating to skin.
May cause more severe response on covered skin (under clothing, gloves).

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:

Result : Skin irritation
Remarks : Prolonged contact may cause skin irritation with local redness.
Repeated contact may cause skin irritation with local redness.

Propyl acetate:

Result : Mild skin irritation
Remarks : Brief contact is essentially nonirritating to skin.
Prolonged contact may cause severe skin irritation with local redness and discomfort.
May cause more severe response on covered skin (under clothing, gloves).

Serious eye damage/eye irritation

Product:

Remarks : May cause slight eye irritation.
May cause slight corneal injury.
Vapor may cause eye irritation experienced as mild discomfort and redness.

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:

Result : Mild eye irritation
Remarks : May cause eye irritation.
Corneal injury is unlikely.

Propyl acetate:

Result : Eye irritation
Remarks : May cause severe eye irritation.
May cause severe corneal injury.

Respiratory or skin sensitization

Product:

Assessment : The product is a skin sensitizer, sub-category 1B.
Remarks : Contains component(s) which have caused allergic skin sensitization in guinea pigs.

Remarks : For respiratory sensitization:
No relevant data found.

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:

Assessment : The product is a skin sensitizer, sub-category 1B.
Remarks : Has caused allergic skin reactions in humans.
Has demonstrated the potential for contact allergy in mice.

Remarks : For respiratory sensitization:
No relevant data found.

Propyl acetate:

Assessment : Does not cause skin sensitization.
Remarks : For similar material(s):
Did not cause allergic skin reactions when tested in guinea pigs.

Remarks : For respiratory sensitization:
No relevant data found.

Germ cell mutagenicity

Product:

Genotoxicity in vitro : Remarks: Contains component(s) which were positive in in vitro genetic toxicity studies.
Some similar resins have shown genetic toxicity in in vitro tests, while others have not.

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:

Genotoxicity in vitro : Remarks: In vitro genetic toxicity studies were negative in some cases and positive in other cases.
Animal genetic toxicity studies were negative.

Propyl acetate:

Genotoxicity in vitro : Remarks: In vitro genetic toxicity studies were inconclusive.

Carcinogenicity

Product:

Remarks : Similar epoxy resin did not cause cancer in long-term animal studies.

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:

Remarks : Many studies have been conducted to assess the potential carcinogenicity of diglycidyl ether of bisphenol A (DGEBPA). Indeed, the most recent review of the available data by the International Agency for Research on Cancer (IARC) has concluded that DGEBPA is not classified as a carcinogen. 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 DGEBPA is carcinogenic.

Propyl acetate:

Remarks : Based on the metabolite(s):
1-Propanol.
Acetic acid
Did not cause cancer in laboratory animals.

IARC No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Product:

Effects on fertility : Remarks: No relevant data found.

Effects on fetal development : Remarks: No relevant data found.

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:

Effects on fertility : Remarks: In animal studies, did not interfere with reproduction.

Effects on fetal development : Remarks: Resins based on the diglycidyl ether of bisphenol A (DGEBPA) 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.

Propyl acetate:

Effects on fertility : Remarks: Based on the metabolite(s):

1-Propanol.
In animal studies, has been shown to interfere with fertility in males.
Effects are reversible.
These concentrations exceed relevant human dose levels.

Effects on fetal development : Remarks: Based on the metabolite(s):
At extremely high concentrations, n-propanol has been reported to cause birth defects in rats. At progressively lower concentrations there were no birth defects.
These concentrations exceed relevant human dose levels.

STOT-single exposure

Product:

Assessment : Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:

Assessment : Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Propyl acetate:

Routes of exposure : Inhalation
Target Organs : Central nervous system
Assessment : May cause drowsiness or dizziness.

Repeated dose toxicity

Product:

Remarks : Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:

Remarks : Except for skin sensitization, repeated exposures to low molecular weight epoxy resins of this type are not anticipated to cause any significant adverse effects.

Propyl acetate:

Remarks : Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Aspiration toxicity

Product:

Based on physical properties, not likely to be an aspiration hazard.

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:
Based on physical properties, not likely to be an aspiration hazard.

Propyl acetate:
May be harmful if swallowed and enters airways.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:

Toxicity to fish	:	Remarks: Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested). LC50 (Oncorhynchus mykiss (rainbow trout)): 2 mg/l Exposure time: 96 h Test Type: semi-static test
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 1.8 mg/l Exposure time: 48 h Test Type: static test
Toxicity to algae/aquatic plants	:	ErC50 (Scenedesmus capricornutum (fresh water algae)): 11 mg/l End point: Growth rate inhibition Exposure time: 72 h Test Type: static test
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (Daphnia magna (Water flea)): 0.3 mg/l End point: number of offspring Exposure time: 21 d Test Type: semi-static test MATC (Maximum Acceptable Toxicant Level) (Daphnia magna (Water flea)): 0.55 mg/l End point: number of offspring Exposure time: 21 d Test Type: semi-static test
Toxicity to microorganisms	:	IC50 (Bacteria): > 42.6 mg/l End point: Respiration rates. Exposure time: 18 h

Propyl acetate:

Toxicity to fish	:	Remarks: Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested).

LC50 (Pimephales promelas (fathead minnow)): 60 mg/l
Exposure time: 96 h
Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 91.5 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202 or Equivalent

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 672 mg/l
End point: Growth rate inhibition
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC0 (Pseudomonas putida): > 170 mg/l
End point: Growth inhibition
Exposure time: 16 h
Test Type: static test

Persistence and degradability

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:

Biodegradability : Result: Not biodegradable.
Remarks: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

aerobic
Biodegradation: 12 %
Exposure time: 28 d
Method: OECD Test Guideline 302B or Equivalent
Remarks: 10-day Window: Not applicable

ThOD : 2.35 mg/mg
Method: Estimated.

Photodegradation : Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Rate constant: 6.69E-11 cm3/s
Method: Estimated.

Propyl acetate:

Biodegradability : Result: Readily biodegradable.
Remarks: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

Inoculum: sewage, domestic, non-adapted
Biodegradation: 62 %

Exposure time: 5 d
Method: OECD Test Guideline 301D or Equivalent
Remarks: 10-day Window: Pass

Biochemical Oxygen Demand (BOD) : 62 %
Incubation time: 5 d

80 %
Incubation time: 10 d

72 %
Incubation time: 20 d

Chemical Oxygen Demand (COD) : 2.04 mg/mg

ThOD : 2.04 mg/mg

Stability in water : Degradation half life: 78 d

Photodegradation : Test Type: Half-life (indirect photolysis)
Sensitizer: OH radicals
Rate constant: 3.20E-12 cm3/s
Method: Estimated.

Bioaccumulative potential

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:

Bioaccumulation : Remarks: Bioconcentration potential is moderate (BCF between 100 and 3000 or Log Pow between 3 and 5).

Partition coefficient: n-octanol/water : log Pow: 3.242 (77 °F / 25 °C)
pH: 7.1
Method: Estimated.
GLP: yes

Mobility in soil

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:

Distribution among environmental compartments : Koc: 1800 - 4400
Method: Estimated.
Remarks: Potential for mobility in soil is low (Koc between 500 and 2000).
Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

Propyl acetate:

Distribution among environmental compartments : Koc: 11
Method: Estimated.

Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

Other adverse effects

Components:

Propane, 2,2-bis[p-(2,3-epoxypropoxy)phenyl]-, polymers:

Results of PBT and vPvB assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

Propyl acetate:

Results of PBT and vPvB assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER.
All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations.
Regulations may vary in different locations.
Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator.
AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL.
THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information.
FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted:
Recycler.
Reclaimer.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number	:	UN 1866
Proper shipping name	:	RESIN SOLUTION
Class	:	3
Packing group	:	II
Labels	:	3

IATA-DGR

UN/ID No.	:	UN 1866
Proper shipping name	:	Resin solution
Class	:	3
Packing group	:	II
Labels	:	Flammable Liquids
Packing instruction (cargo aircraft)	:	364
Packing instruction (passenger aircraft)	:	353

IMDG-Code

UN number	:	UN 1866
Proper shipping name	:	RESIN SOLUTION (Epoxy resin)
Class	:	3
Packing group	:	II
Labels	:	3
EmS Code	:	F-E, S-E
Marine pollutant	:	yes
Remarks	:	Stowage category B

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number	:	UN 1866
Proper shipping name	:	Resin solution
Class	:	3
Packing group	:	II
Labels	:	FLAMMABLE LIQUID
ERG Code	:	127
Marine pollutant	:	no

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards	:	Flammable (gases, aerosols, liquids, or solids) Hazard not otherwise classified (physical hazards) Skin corrosion or irritation Serious eye damage or eye irritation Respiratory or skin sensitization Specific target organ toxicity (single or repeated exposure)

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US State Regulations

Pennsylvania Right To Know

Propyl acetate	109-60-4

California Prop. 65

This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

International Regulations

Montreal Protocol	:	Not applicable
Rotterdam Convention (Prior Informed Consent)	:	Not applicable
Stockholm Convention (Persistent Organic Pollutants)	:	Not applicable

The ingredients of this product are reported in the following inventories:

CH INV	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
DSL	:	All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.
AICS	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
NZIoC	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
ENCS	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
ISHL	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
KECI	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
PICCS	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
IECSC	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
TCSI	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.
TSCA	:	All substances listed as active on the TSCA Inventory or are not required to be listed.

TSCA list

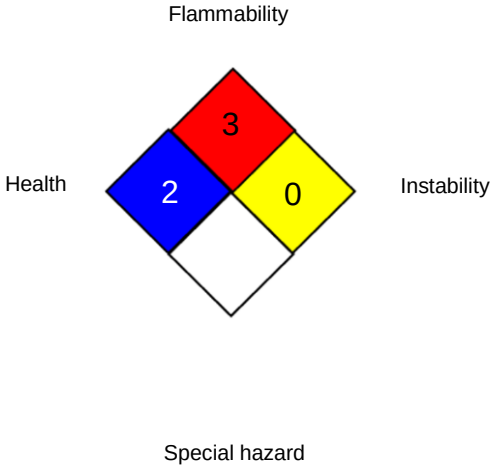
No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
OSHA P0	:	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
OSHA P0 / TWA	:	8-hour time weighted average
OSHA P0 / STEL	:	Short-term exposure limit
OSHA Z-1 / TWA	:	8-hour time weighted average

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC

- International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Revision Date : 06-23-2021

BLUE CUBE OPERATIONS LLC urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given.Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

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