SAFETY DATA SHEET

D.E.R.® 669-20 Epoxy Resin

Version	Revision Date:	SDS Number:	Date of last issue: 05-16-2022
6.2	05-25-2023	101196411	Date of first issue: 05-25-2023

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.® 669-20 Epoxy Resin
Product code : 000000013000000215

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
24-Hour Emergency Contact : +1 800 424 9300
Local Emergency Contact : 1-800-424-9300
Identified uses : Can coatings.
Coil coatings.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Combustible dust

Reproductive toxicity : Category 2

GHS label elements

Hazard pictograms :

Signal Word : Warning

Hazard Statements : May form combustible dust concentrations in air.
Suspected of damaging fertility or the unborn child.

Precautionary Statements :

Prevention:

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Storage:

P405 Store locked up.

Disposal:

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

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture	:	Substance
Substance name	:	Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]
CAS-No.	:	25036-25-3
Synonyms	:	Bisphenol A diglycidyl ether - bisphenol A copolymer

Components

Chemical name	CAS-No.	Concentration (% w/w)
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]	25036-25-3	> 99.8
Bisphenol A	80-05-7	< 0.2

SECTION 4. FIRST AID MEASURES

If inhaled	:	Move person to fresh air; if effects occur, consult a physician.
In case of skin contact	:	Wash off with plenty of water.
In case of eye contact	:	Flush eyes with plenty of water; remove contact lenses after the first 1-2 minutes then continue flushing for several minutes. Only mechanical effects expected. If effects occur, consult a physician, preferably an ophthalmologist.
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	:	If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Notes to physician	:	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.

Unsuitable extinguishing media : No information available.

Specific hazards during fire fighting : Pneumatic conveying and other mechanical handling operations can generate combustible dust. To reduce the potential for dust explosions, do not permit dust to accumulate.
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.
Soak thoroughly with water to cool and prevent re-ignition.
If material is molten, do not apply direct waterstream. Use fine water spray or foam.
Cool surroundings with water to localize fire zone.
Hand held dry chemical or carbon dioxide extinguishers may be used for small fires.
Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage.
Review the 'Accidental Release Measures' and the 'Ecological Information' sections of this (M)SDS.

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 : Keep unnecessary and unprotected personnel from entering the area.
Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
Spilled material may cause a slipping hazard.

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 : Remove all sources of ignition.
Use non-sparking tools in cleanup operations.
Contain spilled material if possible.

Material can create slippery conditions.
Clean up promptly by sweeping or vacuum.
Collect in suitable and properly labeled containers.
See Section 13, Disposal Considerations, for additional information.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : Keep away from heat, sparks and flame.
Keep container closed.
Use with adequate ventilation.
No smoking, open flames or sources of ignition in handling and storage area.
Electrically ground and bond all equipment.
Good housekeeping and controlling of dusts are necessary for safe handling of product.

Conditions for safe storage : To ensure long-term storage flowability, it is recommended to avoid direct sunlight or prolonged periods of high temperatures. Avoid additional load by stacked pallets.
Store in a cool, dry place.

Storage period : 24 Months

Further information on storage stability : Under certain conditions sintering of this product may occur, impacting the flowability of the solid product flakes. For more information, please refer to Olin Technical Bulletin for Sintering Sensitive Material or contact us via info@olin.com

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Bisphenol A	80-05-7	(Inhalable fraction and vapor)	2 mg/m3	OLIN OEL

Personal protective equipment

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, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions, no respiratory protection should be needed; however, in dusty atmospheres, use an approved particulate respirator.

Filter type : The following should be effective types of air-purifying respirators: Particulate filter.

Hand protection

Remarks : Chemical protective gloves should not be needed when handling this material. Consistent with general hygienic practice for any material, skin contact should be minimized.

Eye protection : Use safety glasses (with side shields).

Skin and body protection	:	If there is a potential for exposure to particles which could cause eye discomfort, wear chemical goggles. No precautions other than clean body-covering clothing should be needed.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Flakes
Color	:	yellow, brown
Odor	:	Mild
Odor Threshold	:	No test data available
pH	:	Not applicable
Melting point/range	:	No test data available
Freezing point		Not applicable to solids
Boiling point/boiling range	:	Not applicable
Flash point	:	Method: closed cup Not applicable
Evaporation rate	:	No test data available
Flammability (solid, gas)	:	May form combustible dust concentrations in air.
Upper explosion limit / Upper flammability limit	:	Not applicable
Lower explosion limit / Lower flammability limit	:	Not applicable
Vapor pressure	:	Not applicable
Relative vapor density	:	Not applicable
Relative density	:	1.18 Method: Literature
Solubility(ies)		
Water solubility	:	Insoluble
Partition coefficient: n-octanol/water	:	No data available.
Autoignition temperature	:	Not applicable
Decomposition temperature	:	No test data available
Viscosity		
Viscosity, dynamic	:	Not applicable

Viscosity, kinematic	:	No test data available
Explosive properties	:	No data available
Oxidizing properties	:	No 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

Reactivity	:	No data available
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.
Incompatible 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

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

Acute oral toxicity	:	LD50 (Rat): > 2,000 mg/kg Assessment: The substance or mixture has no acute oral toxicity
Acute inhalation toxicity	:	Remarks: The LC50 has not been determined.
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity

Bisphenol A:

Acute oral toxicity	:	LD50 (Rat, male and female): > 2,000 mg/kg

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

Acute dermal toxicity : LD50 (Rabbit): 3,000 mg/kg

Skin corrosion/irritation

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

Result : No skin irritation
Remarks : Essentially nonirritating to skin.

Bisphenol A:

Result : No skin irritation
Remarks : Brief contact is essentially nonirritating to skin.
Prolonged contact may cause skin irritation with local redness.
Repeated contact may cause skin irritation with local redness.

Serious eye damage/eye irritation

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

Result : No eye irritation
Remarks : May cause slight temporary eye irritation.
Corneal injury is unlikely.
Solid or dust may cause irritation or corneal injury due to mechanical action.

Bisphenol A:

Result : Corrosive
Remarks : May cause moderate eye irritation.
May cause slight corneal injury.
May cause permanent impairment of vision.

Respiratory or skin sensitization

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

Remarks : For skin sensitization:
No relevant data found.

Remarks : For respiratory sensitization:
No relevant data found.

Bisphenol A:

Assessment : May cause sensitization by skin contact.
Remarks : Skin contact may cause an allergic skin reaction.

Remarks : For respiratory sensitization:
No relevant data found.

Germ cell mutagenicity

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

Genotoxicity in vitro : Remarks: Some similar resins have shown genetic toxicity in in vitro tests, while others have not.

Bisphenol A:

Genotoxicity in vitro : Remarks: In vitro genetic toxicity studies were predominantly negative.
Animal genetic toxicity studies were negative.

Carcinogenicity

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

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

Bisphenol A:

Remarks : No convincing evidence for carcinogenicity of Bisphenol A has been seen in long-term animal studies.

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.

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

Effects on fertility : Remarks: No relevant data found.

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

Bisphenol A:

Effects on fertility : Remarks: Bisphenol A affected reproduction in rats and mice, but only at high exposure levels that exceeded the body's capacity to metabolize and deactivate the chemical. Maintaining exposures below appropriate workplace exposure limits should avoid these and other effects.

Effects on fetal development : Remarks: Has been toxic to the fetus in laboratory animals at doses toxic to the mother.
Did not cause birth defects in laboratory animals.

Reproductive toxicity - Assessment : Suspected human reproductive toxicant

STOT-single exposure

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

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

Bisphenol A:

Routes of exposure : Inhalation
Target Organs : Respiratory Tract
Assessment : May cause respiratory irritation.

Repeated dose toxicity

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

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

Bisphenol A:

Remarks : Liver effects and questionable kidney and bladder effects were observed in animals fed bisphenol A.

Aspiration toxicity

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

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

Bisphenol A:

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

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Ecotoxicology Assessment

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

Toxicity to fish : Remarks: Not expected to be acutely toxic, but may cause adverse effects by physical/mechanical means.

Bisphenol A:

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 (Fathead minnow (Pimephales promelas)): 4.6 mg/l
Exposure time: 96 h

LC50 (Atlantic silverside (Menidia menidia)): 9.4 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 10.2 mg/l
Exposure time: 48 h

EC50 (saltwater mysid Mysidopsis bahia): 1.1 mg/l
Exposure time: 96 h

Toxicity to algae/aquatic plants : EC50 (Skeletonema costatum (marine diatom)): 1.1 mg/l
End point: Growth rate inhibition
Exposure time: 96 h
Test Type: static test

M-Factor (Acute aquatic toxicity) : 1

Toxicity to fish (Chronic toxicity) : NOEC (Fathead minnow (Pimephales promelas)): 0.160 mg/l
End point: mortality
Exposure time: 164 d

NOEC (Pimephales promelas (fathead minnow)): 0.016 mg/l
End point: number of offspring
Exposure time: 444 d

NOEC (Cyprinodon variegatus (sheepshead minnow)): 0.066 mg/l
End point: number of offspring

Exposure time: 116 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (saltwater mysid Mysidopsis bahia): 0.17 mg/l
End point: number of offspring
Exposure time: 28 d

NOEC (Marisa cornuarietis (Giant Ramshorn Snail)): 0.025 mg/l
End point: growth
Exposure time: 328 d

M-Factor (Chronic aquatic toxicity) : 10

Toxicity to microorganisms : EC50 (Bacteria): > 320 mg/l
End point: Respiration rates.
Exposure time: 96 h

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

Persistence and degradability

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

Biodegradability : Remarks: Surface photodegradation is expected with exposure to sunlight.
No appreciable biodegradation is expected.

Bisphenol A:

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

Biodegradation: 93.1 %
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent
Remarks: 10-day Window: Pass

Biodegradation: 87 - 95 %
Exposure time: 28 d
Method: OECD Test Guideline 302A or Equivalent
Remarks: 10-day Window: Not applicable

ThOD : 2.52 mg/mg

Bioaccumulative potential

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

Partition coefficient: n-octanol/water : Remarks: In the terrestrial environment, material is expected to remain in the soil.

Mobility in soil

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

Distribution among environmental compartments : Remarks: In the aquatic environment, material will sink and remain in the sediment.

Bisphenol A:

Distribution among environmental compartments : Koc: 636 - 931
Method: Measured
Remarks: Potential for mobility in soil is low (Koc between 500 and 2000).

Other adverse effects

Components:

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis[oxirane]:

Results of PBT and vPvB assessment : This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

Bisphenol A:

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 : 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.
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.
DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER.
FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG
Not regulated as a dangerous good

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

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
Not regulated as a dangerous good

Special precautions for user
Not applicable

SECTION 15. REGULATORY INFORMATION

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 : Combustible dust
Reproductive toxicity

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

Bisphenol A	80-05-7

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:

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.
AIIC	:	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.
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.
CH INV	:	All intentional components are listed on the inventory, are exempt, or are supplier certified.

TSCA list

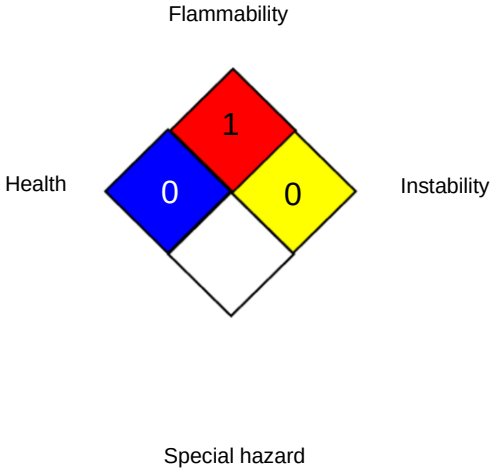
No substances are subject to a Significant New Use Rule.

Exemptions from the obligation to register

SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; 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; TECI - Thailand Existing Chemicals 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 : 05-25-2023

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.

US / Z8