SDS: 0057889
Date Prepared: 01/08/2018

SAFETY DATA SHEET

1. IDENTIFICATION

Product Name:	**EBECRYL® 4510 radiation curing resins**
Synonyms:	None
Product Description:	Urethane acrylate resin containing isocyanate
Molecular Weight:	Not available
Intended/Recommended Use:	Binder

Allnex USA Inc., 9005 Westside Parkway, Alpharetta, Georgia 30009, USA
For Product and all Non-Emergency Information call your local Allnex contact point or contact us at http://www.allnex.com/contact

EMERGENCY PHONE (24 hours/day) - For emergency only involving spill, leak, fire, exposure or accident call:
Asia Pacific:
Australia: +61 2801 44558 (Carechem 24)
China (PRC): +86(0)532-8388-9090 (NRCC)
Japan: +81 345 789 341 (Carechem 24)
New Zealand: +64 9929 1483 (Carechem 24)
India: 000 800 100 7479 (toll free) or +65 3158 1198 (Carechem 24)
Korea: +82 2 3479 8401 (Carechem 24)
Malaysia: +60 3 6207 4347 (Carechem 24)
Philippines: +63 2 231 2149 (Carechem 24)
All Others: +65 3158 1074 (Carechem 24)
Europe/Africa/Middle East (Carechem 24):
Europe, Middle East, Africa, Israel: +44 (0) 1235 239 670
Middle East, Africa (Arabic speaking countries): +44 (0) 1235 239 671
Latin America:
Brazil: +55-800-707-7022 (toll free) or +55-11-98149-0850 (Suatrans 24)
Chile: +56 2 2582 9336 (Carechem 24)
Mexico and all others: +52-555-004-8763 (Carechem 24)
Canada and USA (Carechem 24 - Allnex29003-NCEC): +1-866-928-0789 (toll free) or +1-215-207-0061

2. HAZARDS IDENTIFICATION

GHS Classification
Flammable Liquids Hazard Category 3
Skin Sensitizer Hazard Category 1B
Aquatic Environment Acute Hazard Category 3
Aquatic Environment Chronic Hazard Category 3

LABEL ELEMENTS

Signal Word
WARNING

Hazard Statements
Flammable liquid and vapor
May cause an allergic skin reaction
Harmful to aquatic life
Harmful to aquatic life with long lasting effects

Precautionary Statements
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/Bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wear protective gloves/protective clothing/eye protection/face protection.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Contaminated work clothing should not be allowed out of the workplace.
Avoid release to the environment.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
In case of fire: Use CO2, dry chemical, or foam for extinction.
If skin irritation or rash occurs: Get medical advice/attention.
Specific treatment (see supplemental first aid instructions on this label).
Wash contaminated clothing before reuse.
Store in a well-ventilated place. Keep cool.
Dispose of contents/container in accordance with local and national regulations.

Hazards Not Otherwise Classified (HNOC), Other Hazards
Polymerization may occur from excessive heat, contamination or exposure to direct sunlight.

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3. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS

Component / CAS No.	%	GHS Classification	Carcinogen
Butyl acetate 123-86-4	5 - 10	Flam. Liq. 3 (H226) STOT SE 3 (H336) Skin Irrit. 3 (H316) Eye Irrit. 2B (H320)	-
Isocyanatoacrylate -	90 - 90.5	Skin Irrit. 3 (H316) Skin Sens. 1B (H317) Aquatic Acute 3 (H402) Aquatic Chronic 3 (H412)	-

The specific chemical identity and/or exact percentage of composition for one or more ingredients has been withheld as a trade secret.

Additional GHS classification or other information may be included in this section but has not been adopted by OSHA. See Section 16 for full text of H phrases.

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4. FIRST AID MEASURES

First-aid Measures

Inhalation:
Remove to fresh air. If breathing is difficult, give oxygen. Obtain medical advice if there are persistent symptoms.

Skin Contact:
Wash immediately with plenty of water and soap. Remove contaminated clothing and shoes without delay. Obtain medical attention. Do not reuse contaminated clothing without laundering. Destroy or thoroughly clean shoes before reuse.

Eye Contact:
Rinse immediately with plenty of water for at least 15 minutes. Obtain medical advice if there are persistent symptoms.

Ingestion:
If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.

Most Important Symptoms and Effects, Acute and Delayed
None known

Immediate Medical Attention and Special Treatment
In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

Notes To Physician:
No specific measures have been identified.

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5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media:
Use water spray or fog, carbon dioxide or dry chemical.

Unsuitable Extinguishing Media:
high pressure water jet.

Protective Equipment:
Firefighters, and others exposed, wear self-contained breathing apparatus. Wear full firefighting protective clothing. See SDS Section 8 (Exposure Controls/Personal Protection).

Special Hazards:
Keep containers cool by spraying with water if exposed to fire.

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6. ACCIDENTAL RELEASE MEASURES

Personal precautions:
Where exposure level is not known, wear approved, positive pressure, self-contained respirator. Where exposure level is known, wear approved respirator suitable for level of exposure. In addition to the protective clothing/equipment in Section 8 (Exposure Controls/Personal Protection), wear impermeable boots.

Methods For Cleaning Up:
Cover spills with some inert absorbent material; sweep up and place in a waste disposal container. Flush spill area with water.

Environmental Precautions:
Avoid release to the environment.

References to other sections:
See Sections 7, 8 and 13 for additional information.

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7. HANDLING AND STORAGE

HANDLING

Precautions: Keep away from heat, sparks and open flame. - No smoking. Keep container tightly closed. Ground/Bond container and receiving equipment. Use explosion-proof electrical, ventilating, lighting and other equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wear protective gloves and eye/face protection. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment.

Special Handling Statements: Individuals previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Provide good ventilation of working area (local exhaust ventilation if necessary). During processing and handling of the product, comply with the indicative occupational exposure limit values. Containers must be bonded and grounded when pouring or transferring material. Avoid excessive heat, contamination or exposure to direct sunlight to prevent polymerization.

STORAGE
Store in a cool, dry, well ventilated place and keep container tightly closed. Keep away from heat sources and direct sunlight. Areas containing this material should have fire safe practices and electrical equipment in accordance with applicable regulations and/or guidelines. Standards are primarily based on the material`s flashpoint, but may also take into account properties such as miscibility with water or toxicity. All local and national regulations should be followed.
In the Americas, National Fire Protection Association (NFPA) 30: Flammable and Combustible Liquids Code, is a widely used standard. NFPA 30 establishes storage conditions for the following classes of materials: Class I Flammable Liquids, Flashpoint <37.8 °C. Class II Combustible Liquids, 37.8 °C < Flashpoint <60 °C. Class IIIa Combustible Liquids, 60 °C < Flashpoint < 93 °C. Class IIIb Combustible Liquids, Flashpoint > 93 °C. Keep away from sources of ignition - refrain from smoking. Take precautionary measures against electrostatic loading - earthing necessary during loading operations. Observe the general rules of industrial fire protection.

Storage Temperature: Store at 4 - 40 °C 39.2 - 104 °F
Reason: Quality.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures:
Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure when spraying or curing at elevated temperatures.

Respiratory Protection:
For operations where inhalation exposure can occur use an approved respirator. Recommendations are listed below. Other protective respiratory equipment may be used based on user's own risk assessment.
Recommended respirators include those certified by NIOSH.

Recommended:
Full Face Mask with organic vapor cartridge, Type A filter (BP >65°C)

Eye Protection:
Wear eye/face protection such as chemical splash proof goggles or face shield. Eyewash equipment and safety shower should be provided in areas of potential exposure.

Skin Protection:
Avoid skin contact. Wear impermeable gloves and suitable protective clothing. Barrier creams may be used in

conjunction with the gloves to provide additional skin protection.

Hand Protection:
Wear protective gloves. Recommendations are listed below. Other protective materials may be used based on user's own risk assessment. Barrier creams may help to protect the exposed areas of the skin, they should however not be applied once exposure has occurred. Replace gloves immediately when torn or any change in appearance (dimension, color, flexibility etc.) is noticed.

Gloves for repeated or prolonged exposure - non exhaustive list:
Polyvinyl alcohol (PVA), thickness: 0.2-0.3 mm, break through time: > 480 min

Gloves for short term exposure/splash protection - non exhaustive list:
Butyl rubber (VB), thickness: 0.30 mm, break through time: up to 120 min

The chemical resistance depends on the type of product and amount of product on the glove. Therefore gloves need to be changed when in contact with chemicals.

Not suitable gloves - non exhaustive list:
Natural rubber (NRL), thickness: 0.75 mm
Neoprene rubber (NE), thickness: 0.40 mm

Due to many conditions (e.g. temperature, abrasion) the practical usage of a chemical protective glove in practice may be much shorter than the permeation time determined through testing.

Additional Advice:
Food, beverages, and tobacco products should not be carried, stored, or consumed where this material is in use. Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water.

Exposure Limit(s)

123-86-4 Butyl acetate

OSHA (PEL):	150 ppm (TWA)
	710 mg/m³ (TWA)
ACGIH (TLV):	150 ppm (STEL)
	50 ppm (TWA)
Other Value:	Not established

Biological Exposure Limit(s)

No values have been established.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Color:	yellowish
Appearance:	liquid
Odor:	odorless
Boiling Point:	~ 127 °C 260.6 °F @ 1.013 hPa DIN 53171
Melting Point:	Not available
Vapor Pressure:	13 hPa @ 20 °C EG A4
Specific Gravity/Density:	~ 1.16 g/cm³ DIN 51757 @ 20 °C
Vapor Density:	Not available
Percent Volatile (% by wt.):	Not available
pH:	Not available
Saturation In Air (% By Vol.):	Not available
Evaporation Rate:	Not available
Solubility In Water:	@ 15 °C immiscible

Volatile Organic Content:	Not available
Flash Point:	~ 39 °C 102 °F ASTM D 93
Flammable Limits (% By Vol):	Lower: 1.2 Upper: 7.5 (values for n-butyl acetate)
Autoignition Temperature:	Not available
Decomposition Temperature:	Not available
Partition coefficient (n-octanol/water):	Not available
Odor Threshold:	Not available
Viscosity (Kinematic):	Not applicable
Viscosity (Dynamic):	~ 15000 mPa.s @ 23 °C DIN EN ISO 3219

10. STABILITY AND REACTIVITY

Reactivity: No information available

Stability: Stable

Conditions To Avoid: Avoid direct exposure to sunlight. Avoid temperatures above 60°C (140°F). Avoid friction with temperature increase as result. Avoid exposure to strong UV sources. Avoid direct contact with heat sources.

Polymerization: May occur

Conditions To Avoid: Avoid exposure to strong UV sources. Peroxides, free radical initiators, strong alkalies. Avoid contact with sunlight or ultraviolet light, and heat. Avoid contact with water, polyols and amines Reacts with water or strong acids generating carbon dioxide, building up pressure in closed containers.

Materials To Avoid: Strong oxidizing agents, acids, and amines.
Avoid acids, bases, strong amines, oxidizing agents and water.

Hazardous Decomposition Products: No hazardous decomposition products if stored and handled as prescribed.

11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure: Skin, Eyes, Oral.

Acute toxicity - oral: Not Classified **-** Based on available data and/or professional judgment, the classification criteria are not met.
Acute toxicity - dermal: Not Classified **-** Based on available data and/or professional judgment, the classification criteria are not met.
Acute toxicity - inhalation: Not Classified **-** Based on available data and/or professional judgment, the classification criteria are not met.

Skin corrosion / irritation: Not Classified **-** Based on available data and/or professional judgment, the classification criteria are not met.
Serious eye damage / eye irritation: Not Classified **-** Based on available data and/or professional judgment, the classification criteria are not met.

Respiratory sensitization: Not Classified **-** Based on available data and/or professional judgment, the classification criteria are not met.
Skin sensitization: May cause an allergic skin reaction

Carcinogenicity: Not Classified **-** Based on available data and/or professional judgment, the classification criteria are not met.
Germ cell mutagenicity: Not Classified **-** Based on available data and/or professional judgment, the

classification criteria are not met.
Reproductive toxicity: Not Classified **-** Based on available data and/or professional judgment, the classification criteria are not met.

Specific target organ toxicity (STOT) - single exposure: Not Classified. **-** Based on available data and/or professional judgment, the classification criteria are not met.
Specific target organ toxicity (STOT) - repeated exposure: Not Classified. **-** Based on available data and/or professional judgment, the classification criteria are not met.

Aspiration hazard: Not Classified **-** Based on available data and/or professional judgment, the classification criteria are not met.

PRODUCT TOXICITY INFORMATION

ACUTE TOXICITY DATA

oral	rat	Acute LD50	> 5000 mg/kg
dermal	rabbit	Acute LD50	> 2000 mg/kg
inhalation	rat	Acute LC50 4 hr	> 20 mg/l (Vapors)

LOCAL EFFECTS ON SKIN AND EYE

Acute Irritation	dermal	rabbit	Not irritating
Acute Irritation	eye	rabbit	Not irritating

ALLERGIC SENSITIZATION

Sensitization	Skin	Sensitizing
Sensitization	respiratory	No data

GENOTOXICITY

Assays for Gene Mutations

Ames Salmonella Assay	No data

OTHER INFORMATION
The product toxicity information above has been estimated.

HAZARDOUS INGREDIENT TOXICITY DATA

Butyl acetate (CAS# 123-86-4) has acute oral (rat) and dermal (rabbit) LD50 values of 10,768 mg/kg and >17,600 mg/kg, respectively (RTECS). The acute 4-hr inhalation (rat) LC50 = >2000 ppm (9.5 mg/L)(NTP). Direct contact with this material may cause moderate eye and skin irritation. In humans, exposure concentrations of 200-300 ppm resulted in slight eye and nose irritation while short exposure to 3300 ppm caused extreme irritation of the eyes and nose (HSDB). Overexposure to solvent vapors may cause irritation of the eyes, nose, and throat. Severe inhalation overexposure may cause weakness, drowsiness, and unconsciousness. Prolonged dermal exposure may produce irritation of the skin. This material did not cause mutagenic activity when tested in the bacterial mutagenicity assay. When tested for reproductive effects in rats, fetotoxicity (stunted growth) and abnormalities of the musculoskeletal system was noted at an exposure concentration of 1500 ppm/7h/day during days 7-16 of pregnancy (HSDB).

Based on toxicological studies of a similar substance: The isocyanatoacrylate has an acute oral LD50 (rat) of > 5000 mg/kg. Direct contact may cause slight skin irritation (rabbits). The substance is not irritating to the eyes (rabbits). Positive results were produced in skin sensitization studies (mouse). No pulmonary sensitization was observed in animal test. The substance was not mutagenic in the Ames test.

12. ECOLOGICAL INFORMATION

TOXICITY, PERSISTENCE AND DEGRADABILITY, BIOACCUMULATIVE POTENTIAL, MOBILITY IN SOIL, OTHER ADVERSE EFFECTS

Overall Environmental Toxicity: Harmful to aquatic life. Harmful to aquatic life with long lasting effects.

The ecological assessment for this material is based on an evaluation of its components.
Isocyanate reacts with water at the interface forming CO2 and a solid insolube product with high melting point (polyurea). This reaction is accelerated by surfactants (e.g. detergents) or by water soluble solvents. Previous experience shows that polyurea is inert and non-degradable.

RESULTS OF PBT AND vPvB ASSESSMENT
Not determined

HAZARDOUS INGREDIENT TOXICITY DATA

Component / CAS No.	Toxicity to Fish
Butyl acetate (123-86-4)	LC50 = 62 mg/L - Leuciscus idus (96h) LC50 = 100 mg/L - Lepomis macrochirus (96h) LC50 17 - 19 mg/L - Pimephales promelas (96h)
Isocyanatoacrylate (-)	LC50 > 100 mg/L - Zebra Fish (Brachydanio rerio) (96h)

Component / CAS No.	Toxicity to Water Flea
Butyl acetate (123-86-4)	EC50 = 72.8 mg/L - Daphnia magna (24h)
Isocyanatoacrylate (-)	EC50 58 mg/L - Water Flea (Daphnia magna) (48h)

Component / CAS No.	Toxicity to Algae
Butyl acetate (123-86-4)	EC50 = 674.7 mg/L - Desmodesmus subspicatus (72h)
Isocyanatoacrylate (-)	ErC50 > 100 mg/L - Green Algae (Scenedesmus subspicatus) (72h)

Component / CAS No.	Partition coefficient
Butyl acetate (123-86-4)	1.81
Isocyanatoacrylate (-)	Not available

13. DISPOSAL CONSIDERATIONS

The information on RCRA waste classification and disposal methodology provided below applies only to the product, as supplied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. Hazardous waste classification under federal regulations (40 CFR Part 261 et seq) is

dependent upon whether a material is a RCRA "listed hazardous waste" or has any of the four RCRA "hazardous waste characteristics." Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA "listed hazardous waste"; information contained in Section 15 of this SDS is not intended to indicate if the product is a "listed hazardous waste." RCRA Hazardous Waste Characteristics: There are four characteristics defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, Reactivity, and Toxicity. To determine Ignitability, see Section 9 of this SDS (flash point). For Corrosivity, see Sections 9 and 14 (pH and DOT corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 3 (composition). Federal regulations are subject to change. State and local requirements, which may differ from or be more stringent than the federal regulations, may also apply to the classification of the material if it is to be disposed. The Company encourages the recycle, recovery and reuse of materials, where permitted, as an alternate to disposal as a waste. The Company recommends that organic materials classified as RCRA hazardous wastes be disposed of by thermal treatment or incineration at EPA approved facilities. The Company has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

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14. TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

US DOT

Dangerous Goods? X
PROPER SHIPPING NAME: RESIN SOLUTION
Hazard Class: 3
Packing Group: III
UN/ID Number: UN1866
Transport Label Required: Flammable Liquid

Component / CAS No.	Hazardous Substances/Reportable Quantity of Product (lbs)
1,6-Hexamethylene diisocyanate	43206

Comments: Flammable liquids with a flash point at or above 38° C (100° F) and not meeting the definition of any other hazard class may be reclassed as a Combustible liquid except for transport by vessel or aircraft. If reclassed, these Combustible liquids are not regulated in non-bulk packagings.
Hazardous Substances/Reportable Quantities - DOT requirements specific to Hazardous Substances only apply if the quantity in one package equals or exceeds the product reportable quantity.

TRANSPORT CANADA

Dangerous Goods? X
PROPER SHIPPING NAME: RESIN SOLUTION
Hazard Class: 3
Packing Group: III
UN Number: UN1866
Transport Label Required: Flammable Liquid

ICAO / IATA

Dangerous Goods? X
UN PROPER SHIPPING NAME: RESIN SOLUTION
Transport Hazard Class: 3
Packing Group: III
UN Number: UN1866
Transport Label Required: Flammable Liquid

IMO

Dangerous Goods? X
UN PROPER SHIPPING NAME: RESIN SOLUTION
Transport Hazard Class: 3
UN Number: UN1866
Packing Group: III
Transport Label Required: Flammable Liquid

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15. REGULATORY INFORMATION

Inventory Information

United States (USA): All components of this product are included on the TSCA Chemical Inventory or are not required to be listed on the TSCA Chemical Inventory.

Canada: All components of this product are included on the Domestic Substances List (DSL) or are not required to be listed on the DSL.

European Economic Area (including EU): When purchased from an Allnex legal entity based in the EEA (EU or Norway), this product is compliant with the registration of the REACH Regulation (EC) No. 1907/2006 as all its components are either excluded, exempt, pre-registered and/or registered.

Australia: One or more components of this product have NOT yet been included in the Australian Inventory of Chemical Substances (AICS) or assessed by NICNAS.

China: All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese inventory.

Japan: All components of this product are included on the Japanese (ENCS and ISHL) inventories or are not required to be listed on the Japanese inventories.

Korea: All components of this product are included on the Korean (ECL) inventory or are not required to be listed on the Korean inventory.

Taiwan: All components of this product are included in the Taiwan chemical substance inventory or are not required to be listed on the Taiwan chemical substance inventory (TCSI).

Switzerland: All components of this product are exempt from the new substance notification requirements for Switzerland (SR 813.11 art. 24-26).

OTHER ENVIRONMENTAL INFORMATION
The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12(b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.) See Section 13 for information on waste classification and waste disposal of this product.

This product does not contain any components regulated under these sections of the EPA

PRODUCT HAZARD CATEGORY UNDER SECTIONS 311 AND 312 OF EPCRA

Physical Hazards
Flammable (gases, aerosols, liquids, or solids)

Health Hazards
Respiratory or Skin Sensitization

16. OTHER INFORMATION

NFPA Hazard Rating (National Fire Protection Association)

Health: 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

Fire: 2 - Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur.

Instability: 1 - Materials that in themselves are normally stable, but that can become unstable at elevated temperatures and pressures.

Reasons For Issue: Revised Section 15

Date Prepared: 01/08/2018
Date of last significant revision: 08/29/2017

Component - Hazard Statements

Butyl acetate
- H226 - Flammable liquid and vapor.
- H336 - May cause drowsiness or dizziness.
- H316 - Causes mild skin irritation.
- H320 - Causes eye irritation.

Isocyanatoacrylate
- H316 - Causes mild skin irritation.
- H317 - May cause an allergic skin reaction.
- H402 - Harmful to aquatic life.
- H412 - Harmful to aquatic life with long lasting effects.

Prepared By: Product Stewardship & Regulatory Affairs Department, http://www.allnex.com/contact