

# SAFETY DATA SHEET

Part No.: Z-5B-UV.55

DATE: June 2, 2014  
SUPERSEDES: January 31, 2013

PRODUCT NAME: Z-5 UV Resin

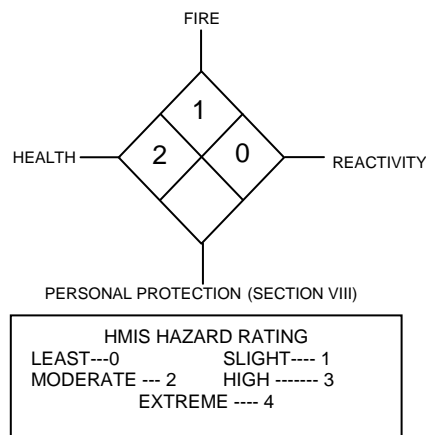
## SECTION 1 - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: Pinnacle West Enterprises Inc.

ADDRESS: 31897 Mercantile Way, Abbotsford, BC, V2T 4C3

INFORMATION PHONE: 604-854-5968

EMERGENCY CONTACT: (CHEMTREC): 800-424-9300



## SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

### Hazardous Components

Weight %	Components	CAS-No.
30 - 50%	Aspartic Ester	Trade Secret
10 - 30%	Glyceryl poly(oxypropylene) diamine	9046-10-0
3 - 10%	Tetra (2-hydroxypropyl) ethylenediamine	102-60-3
0.1 - 2%	Triethylenediamine	280-57-9
1 - 5%	Aliphatic Carboxylic Ester	623-91-6
1 - 15%	3-Aminomethyl-3,5,5-trimethylcyclohexylamine	

### OTHER INGREDIENTS

The following potentially hazardous ingredient(s) are contained at levels below disclosure requirements and are provided for informational purposes only.

Weight %	Components	CAS-No.
<=0.4%	Alicyclic Amine	6864-37-5

## SECTION 3 - HAZARDS IDENTIFICATION

### Emergency Overview

**WARNING!** Color: Clear Form: viscous liquid Odor: Mild, Aldehyde. Toxic gases/fumes may be given off during burning or thermal decomposition. Use cold water spray to cool fire-exposed containers to minimize the risk of rupture. Product, based on components, may be toxic by inhalation, ingestion and skin absorption. Causes respiratory tract irritation. Harmful if inhaled. May cause allergic skin reaction. Causes skin irritation. Causes eye irritation. Harmful if swallowed.

### Primary Routes of Entry:

#### Medical Conditions Aggravated by Exposure:

Skin Contact, Eye Contact, Ingestion, Inhalation, Skin disorders, Respiratory disorders, Eye disorders, Skin Allergies

### HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE

#### Inhalation

##### Acute Inhalation

Expected to be toxic by inhalation. May cause respiratory tract irritation with symptoms of coughing, sore throat and runny nose.

**PRODUCT NAME: Z-5 UV Resin****Skin****Acute Skin**

May cause sensitization of susceptible persons. Slightly toxic by skin absorption. May cause irritation with symptoms of reddening, itching, swelling and rash.

**Eye****Acute Eye**

Corrosive with symptoms of reddening, tearing, swelling, burning and possible permanent damage. Vapor may cause irritation with symptoms of burning and tearing.

**Chronic Eye**

Prolonged vapor contact may cause conjunctivitis.

**Ingestion****Acute Ingestion**

May be harmful if swallowed. Symptoms of ingestion may include abdominal pain, nausea, vomiting, and diarrhea. Aldimine component can be corrosive to the digestive tract with symptoms of burning and ulceration. Ingestion and/or vomiting may cause aspiration into the lungs resulting in chemical pneumonitis (inflammation of the lungs).

**Carcinogenicity:**

No Carcinogenic substances as defined by IARC, NTP and/or OSHA

**SECTION 4 – FIRST AID MEASURES****Eye Contact**

In case of contact, flush eyes with plenty of lukewarm water. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Get medical attention if irritation develops.

**Skin Contact**

In case of skin contact, wash affected areas with soap and water. Immediately remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops.

**Inhalation**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if irritation develops.

**Ingestion**

If ingested, do not induce vomiting unless directed to do so by medical personnel. Give two glasses of water for dilution. Call a physician immediately. Never give anything by mouth to an unconscious person.

**SECTION 5 – FIRE FIGHTING MEASURES****Suitable Extinguishing Media:**

All extinguishing media are suitable.

**Special Fire Fighting Procedures**

Firefighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes. Use cold water spray to cool fire-exposed containers to minimize the risk of rupture.

**Unusual Fire/Explosion Hazards**

Toxic and irritating gases/fumes may be given off during burning or thermal decomposition.

**PRODUCT NAME: Z-5 UV Resin****SECTION 6 – ACCIDENTAL RELEASE MEASURES****Spill and Leak Procedures**

Cleanup personnel must use appropriate personal protective equipment. Cover spill with inert material (e. g., dry sand or earth) and collect for proper disposal. Prevent from entering open drains and waterways. Notify local health and safety authorities and other appropriate agencies if necessary. Ventilate area to remove vapors or dust. Evacuate and keep unnecessary people out of spill area.

**SECTION 7 – HANDLING AND STORAGE****Storage Temperature:**

**minimum:** 0 °C (32 °F)

**maximum:** 40 °C (104 °F)

**Storage Period**

6 Months: after receipt of material by customer

**Handling/Storage Precautions**

Avoid contact with skin or clothing. Avoid contact with eyes. Use only with adequate ventilation/personal protection. Wash thoroughly after handling. Keep container closed when not in use. Do not breathe vapours or spray mist. Store in a dry place away from excessive heat. Material is hygroscopic and may absorb small amounts of atmospheric moisture.

**Further Info on Storage Conditions**

Store in a cool dry place. Store in original or similar containers.

**SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION**

Country specific exposure limits have not been established or are not applicable

**Industrial Hygiene/Ventilation Measures**

General dilution and local exhaust as necessary to control airborne vapors, mists, dusts and thermal decomposition products below appropriate airborne concentration standards/guidelines. Curing ovens must be ventilated to prevent the build up of explosive atmospheres and to prevent off gases from entering the work place.

**Respiratory Protection**

The use of a positive pressure supplied air respirator is recommended if the airborne concentration is unknown or if spraying is performed in a confined space or area with limited ventilation., In spray applications, an organic vapor/particulate respirator or air supplied unit is necessary.

**Hand Protection**

Permeation resistant gloves, 4H laminate gloves, Butyl rubber gloves, Nitrile rubber gloves.

**Eye Protection**

Chemical safety goggles or safety glasses with side-shields., Chemical safety goggles in combination with a full face shield if a splash hazard exists.

**Skin and body protection**

Permeation resistant clothing, Wear cloth work clothing including long pants and long-sleeved shirts.

**Additional Protective Measures**

Employees should wash their hands and face before eating, drinking, or using tobacco products. Educate and train employees in the safe use and handling of this product. Emergency showers and eye wash stations should be available.

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**PRODUCT NAME: Z-5 UV Resin**

## SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

<b>Form:</b>	Liquid
<b>Appearance:</b>	Viscous
<b>Color:</b>	White
<b>Odor:</b>	Mild, Aldehyde
<b>pH:</b>	Approximately 10 - 10.5
<b>Freezing Point:</b>	Not Established
<b>Boiling Point/Range:</b>	Not Established
<b>Flash Point:</b>	> 93.33 °C (> 200 °F) based on similar material
<b>Lower Explosion Limit:</b>	Not Established
<b>Upper Explosion Limit:</b>	Not Established
<b>Vapor Pressure:</b>	Not Established
<b>Specific Gravity:</b>	Approximately 1.06 - 1.08 Estimated based on component(s)
<b>Solubility in Water:</b>	Insoluble
<b>Autoignition Temperature:</b>	Not Established
<b>Bulk Density:</b>	Approximately 8.80 - 9.013 lb/gal Estimated based on component(s)

## SECTION 10 – STABILITY AND REACTIVITY

### Hazardous Reactions

Hazardous polymerization does not occur.

### Stability

Stable

### Materials to avoid

Oxidizing agents, Acids, Isocyanates

### Conditions to avoid

Avoid extreme heat.

### Hazardous decomposition products

By Fire and Thermal Decomposition: Carbon oxides, nitrogen oxides (NOx), Amines, other aliphatic fragments which have not been determined, Ammonia gas may be liberated at high temperatures.

## SECTION 11 – TOXICOLOGICAL INFORMATION

### Toxicity Data

#### Aspartic Ester

#### **Acute Oral Toxicity**

LD50: > 2,000 mg/kg (Rat)

#### **Acute Inhalation Toxicity**

LC50: 4224 mg/m<sup>3</sup>, aerosol, 4 h (Rat)

#### **Acute dermal toxicity**

LD50: > 2,000 mg/kg (Rat)

#### **Skin Irritation**

rabbit, Moderately irritating

#### **Eye Irritation**

rabbit, Non-irritating

#### **Sensitization**

dermal: sensitizer (Guinea pig, Magnusson/Kligmann (Maximization Test))

**PRODUCT NAME: Z-5 UV Resin****Mutagenicity**

Genetic Toxicity in Vitro:

Ames: negative (Salmonella typhimurium, Metabolic Activation: with/without)

**Triethylenediamine (TEDA)****Acute Oral Toxicity**

	Data	Species	Method
Ingestion:	LD50 3200mg/kg	Rat	Estimated

**Inhalation****Inhalation Components**

Triethylenediamine (TEDA)	LC50 (1hr):	>20.2mg/l	Rat
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**Skin****Skin Components**

Triethylenediamine (TEDA)	LD50	>2000 mg/kg	Rabbit
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**Eye Irritation/corrosion:** Moderate**3-Aminomethyl-3,5,5-trimethylcyclohexylamine****Acute Dermal Irritation/Corrosion:** Moderate skin irritation**Acute toxicity****Oral:** Type of value: LD50 Species: rat Value: 1,030 mg/kg**Inhalation:** No data available.**Dermal:** No data available. The European Union (EU) has classified this substance as 'harmful'.**Irritation / corrosion****Skin:** Species: rabbit Result: Corrosive.**Eye:** Species: Rabbit Result: Risk of serious damage to eyes. Method: OECD Guideline 405**Sensitization:**

Guinea pig maximization test

Species: guinea pig Result: sensitizing Method: OECD Guideline 406

**Genetic toxicity**

Experimental/calculated data: Ames-test

No mutagenic effects reported.

Experimental/calculated data: Micronucleus assay No mutagenic effects reported.

**Aspiration Hazard:**

No aspiration hazard expected.

**PRODUCT NAME: Z-5 UV Resin****SECTION 12 – Ecological Information****Aspartic Ester****Additional Ecotoxicological Remarks**

Do not allow to escape into waterways, wastewater or soil.

**Ecological Data for Aspartic Ester****Biodegradation**

13 %, Exposure time: 28 d, i.e. not readily degradable Ecotoxicological reports on a comparable product

**Acute and Prolonged Toxicity to Fish**

LC50: 66 mg/l (Danio rerio (zebra fish), 96 h) Ecotoxicological reports on a comparable product

**Acute Toxicity to Aquatic Invertebrates**

EC50: 88.6 mg/l (Daphnia magna (Water flea), 48 h) Studies of a comparable product.

**Toxicity to Aquatic Plants**

IC50: 113 mg/l, (scenedesmus subspicatus, 72 h) Ecotoxicological reports on a comparable product

**Toxicity to Microorganisms**

EC50: 3,110 mg/l, (activated sludge, 3 h) Ecotoxicological reports on a comparable product

**Ecological Data for Aliphatic Carboxylic Ester****Biodegradation**

92 - 95 %, i.e. readily biodegradable

**Acute and Prolonged Toxicity to Fish**

38 mg/l (Fathead minnow (Pimephales promelas), 96 h)

**3-Aminomethyl-3,5,5-trimethylcyclohexylamine****Fish****Acute:**

Directive 84/449/EEC, C.1 semistatic

Leuciscus idus/LC50 (96 h): 110 mg/l

Nominal values (confirmed by concentration control analytics)

**Chronic:**

Study scientifically not justified.

**Aquatic invertebrates****Acute:**

OECD Guideline 202, part 1 static

Daphnia magna/EC50 (48 h): 23 mg/l

Nominal values (confirmed by concentration control analytics)  
semistatic

Chaetogammarus marinus/EC50 (48 h): 388 mg/l

The details of the toxic effect relate to the nominal concentration.

**PRODUCT NAME: Z-5 UV Resin****Chronic:**

OECD Guideline 202, part 2 semistatic Daphnia magna (NOEC) 21 d 3 mg/l

Nominal values (confirmed by concentration control analytics)

Aquatic plants

**Toxicity to aquatic plants:**

Directive 88/302/EEC, part C, p. 89 green algae/EC50 (72 h): > 50 mg/l

Nominal concentration.

Microorganisms

**Toxicity to microorganisms:**

DIN 38412 Part 8 bacterium/EC10 (18 h): 1,120 mg/l

Nominal concentration.

Degradability / Persistence

Biological / Abiological Degradation

Test method: Directive 92/69/EEC, C.4-A (aerobic),

Method of analysis: DOC reduction

Degree of elimination: 8 % (28 d)

Evaluation: Not readily biodegradable (by OECD criteria).

Hydrolysis

Test method: OECD Guideline 111

Half-life: (50 °C)

**Bioaccumulation**

Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected. Literature data.

**Environmental mobility:****Transport between environmental compartments:**

calculated adsorption/water - soil

KOC: 928

log KOC: 2.97

**Other adverse effects:**

Due to the pH-value of the product, neutralization is generally required before discharging sewage into treatment plants. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

**SECTION 13 – DISPOSAL CONSIDERATIONS****Waste Disposal Method**

Waste disposal should be in accordance with existing federal, state and local environmental control laws.

**Empty Container Precautions**

Recondition or dispose of empty container in accordance with governmental regulations. Do not reuse empty container without proper cleaning. Empty containers retain product residue (dust, liquid, vapor and/or gases) and can be dangerous. Do not heat or cut container with electric or gas torch.

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## SECTION 14 – TRANSPORTATION INFORMATION

Land transport (DOT) Non-Regulated

Sea transport (IMDG) Non-Regulated

Air transport (ICAO/IATA) Non-Regulated

## SECTION 15 – REGULATORY INFORMATION

### United States Federal Regulations

**OSHA Hazcom Standard Rating:** Hazardous

**US. Toxic Substances Control Act:** Listed on the TSCA Inventory.

**US. EPA CERCLA Hazardous Substances (40 CFR 302):**

**Components:** None

**SARA Section 311/312 Hazard Categories:** Acute Health Hazard

**US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A):**

**Components:** None

**US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA)**

**SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification**

**Required: Components:** None

**US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261):**

If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

### State Right-To-Know Information

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

**Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists:**

#### Weight %

60 - 80%

<=5%

#### Components

Aspartic Ester

Aliphatic Carboxylic Ester

#### CAS-No.

CAS# is a trade secret

623-91-6

### **California Prop. 65:**

To the best of our knowledge, this product does not contain any of the listed chemicals, which the state of California has found to cause cancer, birth defects or other reproductive harm.



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**PRODUCT NAME: Z-5 UV Resin****SECTION 16 – OTHER INFORMATION****NFPA 704M Rating**

Health	2
Flammability	1
Reactivity	0
Other	

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

**HMIS Rating**

Health	2
Flammability	1
Physical Hazard	0

0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe \* = Chronic Health Hazard

This information is furnished without warranty, express or implied. This information is believed to be accurate to the best knowledge of Pinnacle West Enterprises Inc. The information in this MSDS relates only to the specific material designated herein. Pinnacle West Enterprises Inc. assumes no legal responsibility for use of or reliance upon the information in this MSDS.

# SAFETY DATA SHEET

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PRODUCT NAME: Z-5 UV Iso

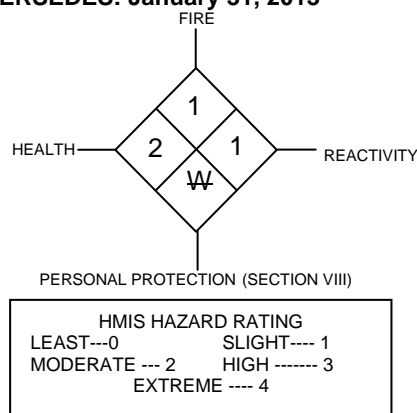
## SECTION 1 - MANUFACTURER IDENTIFICATION

MANUFACTURER'S NAME: Pinnacle West Enterprises Inc.

ADDRESS: 31897 Mercantile Way, Abbotsford, BC, V2T 4C3

INFORMATION PHONE: 604-854-5968

EMERGENCY CONTACT: (CHEMTREC): 800-424-9300



## SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

Weight %	Components	CAS No.
>=95%	Homopolymer of Hexamethylene Diisocyanate	28182-81-2
<=1%	Hexamethylene-1,6-Diisocyanate	822-06-0

### Hazardous Components

Residual diisocyanate monomer content: <0.30%

## SECTION 3 - HAZARDS IDENTIFICATION

**Emergency Overview WARNING! Color:** Colorless, Yellow **Form:** liquid **Odor:** Solvent, Fruity. Flammable. Toxic gases/fumes may be given off during burning or thermal decomposition. Closed container may forcibly rupture under extreme heat or when contents have been contaminated with water. Use cold water spray to cool fire-exposed containers to minimize the risk of rupture. Vapors may spread long distances and ignite. Vapors or mist may be a fire and explosion hazard when exposed to high temperature or ignition. Causes respiratory tract irritation. May cause allergic respiratory reaction. Harmful if inhaled. Respiratory sensitizer. Lung damage and respiratory sensitization may be permanent. Causes skin irritation. May cause allergic skin reaction. Skin sensitizer. Animal tests and other research indicate that skin contact with diisocyanates can play a role in causing isocyanate sensitization and respiratory reaction. Causes eye irritation. May cause lung damage.

### Potential Health Effects

**Primary Routes of Entry:** Skin Contact, Inhalation, Eye Contact

**Medical Conditions Aggravated by Exposure:** Skin Allergies, Eczema, Asthma, Respiratory disorders

### HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE Inhalation

#### Acute Inhalation

Diisocyanate or polyisocyanate vapors or mist at concentrations above the exposure limits or guidelines can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) with symptoms of runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing difficulty). Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

#### Chronic Inhalation

As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to diisocyanates or polyisocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to diisocyanates or polyisocyanates at levels well below the exposure limits or guidelines. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be delayed up to several hours after exposure. Sensitization can be

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permanent. Chronic overexposure to diisocyanates has also been reported to cause lung damage (including fibrosis, decrease in lung function) that may be permanent.

**Skin****Acute Skin**

Causes irritation with symptoms of reddening, itching, and swelling. Can cause sensitization. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove.

**Chronic Skin**

Prolonged contact can cause reddening, swelling, rash, and, in some cases, skin sensitization. Animal tests and other research indicate that skin contact with diisocyanates can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanates.

**Eye****Acute Eye**

Causes irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor may cause irritation with symptoms of burning and tearing.

**Chronic Eye**

Prolonged vapor contact may cause conjunctivitis.

**Ingestion****Acute Ingestion**

Ingestion and/or vomiting may cause aspiration into the lungs resulting in chemical pneumonitis (inflammation of the lungs).

**Carcinogenicity:**

No Carcinogenic substances as defined by IARC, NTP and/or OSHA

**SECTION 4 – FIRST AID MEASURES****Eye Contact**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Use lukewarm water if possible. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Then remove contact lenses, if easily removable, and continue eye irrigation for not less than 15 minutes. Get medical attention if irritation develops.

**Skin Contact**

Immediately remove contaminated clothing and shoes. In case of skin contact, wash affected areas with soap and water. Use lukewarm water if possible. Wash contaminated clothing before reuse. For severe exposures, immediately get under safety shower and begin rinsing. Get medical attention if irritation develops and persists.

**Inhalation**

Move to an area free from further exposure. Get medical attention immediately. Administer oxygen or artificial respiration as needed. Asthmatic symptoms may develop and may be immediate or delayed up to several hours. Extreme asthmatic reactions can be life threatening.

**Ingestion**

Do not induce vomiting. Wash mouth out with water. Do not give anything by mouth to an unconscious person. Get medical attention.

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Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing vision. Skin: This compound is a skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn. Ingestion: Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of the compound. Inhalation: Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material should be removed from further exposure to any diisocyanate.

**SECTION 5 – FIRE FIGHTING MEASURES**

**Suitable Extinguishing Media:** dry chemical, carbon dioxide (CO<sub>2</sub>), foam, water spray for large fires.

**Special Fire Fighting Procedures**

Firefighters should wear NFPA compliant structural firefighting protective equipment, including self-contained breathing apparatus and NFPA compliant helmet, hood, boots and gloves. Avoid contact with product. Decontaminate equipment and protective clothing prior to reuse. During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion.

**Unusual Fire/Explosion Hazards**

Closed container may forcibly rupture under extreme heat or when contents are contaminated with water (CO<sub>2</sub> formed). Use cold-water spray to cool fire-exposed containers to minimize the risk of rupture. Large fires can be extinguished with large volumes of water applied from a safe distance, since reaction between water and hot diisocyanate can be vigorous. Flammable Liquid. Vapors may spread long distances and ignite. Vapors or mist may be a fire and explosion hazard when exposed to high temperature or ignition. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flashback.

**SECTION 6 – ACCIDENTAL RELEASE MEASURES****Spill and Leak Procedures**

Evacuate non-emergency personnel. Isolate the area and prevent access. Remove ignition sources. Notify management. Put on protective equipment. Control source of the leak. Ventilate. Contain the spill to prevent spread into drains, sewers, water supplies, or soil. Major Spill or Leak (Standing liquid): To minimize vapor, cover the spillage with fire fighting foam (AFFF). Released material may be pumped into closed, but not sealed, metal container for disposal. Process can generate heat. Minor Spill or Leak (Wet surface): Cover spill area with suitable absorbent material (Kitty Litter, Oil-Dri®, etc). Saturate absorbent material with neutralization solution and mix. Wait 15 minutes. Collect material in open-head metal containers. Repeat applications of decontamination solution, with scrubbing, followed by absorbent until the surface is decontaminated. Check for residual surface contamination. Swype® test kits have been used for this purpose. Apply lid loosely and allow containers to vent for 72 hours to let carbon dioxide (CO<sub>2</sub>) escape. **Additional Spill Procedures/Neutralization**

Neutralization solutions:

- (1) Colorimetric Laboratories Inc. (CLI) decontamination solution.
- (2) A mixture of 75% water, 20% non-ionic surfactant (e.g. Plurafac SL-62, Tergitol TMN-10) and 5% n-propanol.
- (3) A mixture of 80% water, 20% non-ionic surfactant (e.g. Plurafac SL-62, Tergitol TMN-10).
- (4) A mixture of 90% water, 3-8% ammonium hydroxide or concentrated ammonia, and 2% liquid detergent.

Pinnacle requires that CHEMTREC be immediately notified (800-424-9300) when this product is unintentionally released from its container during its course of distribution, regardless of the amount

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released. Distribution includes transportation, storage incidental to transportation, loading and unloading. Such notification must be immediate and made by the person having knowledge of the release.

**SECTION 7 – HANDLING AND STORAGE****Storage Temperature:****minimum:** 4 °C (39.2 °F)**maximum:** 30 °C (86 °F)**Storage Period**

12 Months: after receipt of material by customer

**Handling/Storage Precautions**

Do not breathe vapors, mists, or dusts. Use adequate ventilation to keep airborne isocyanate levels below the exposure limits. Wear respiratory protection if material is heated, sprayed, used in a confined space, or if the exposure limit is exceeded. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent overexposure from inhalation. Avoid contact with skin and eyes. Wear appropriate eye and skin protection. Wash thoroughly after handling. Do not breathe smoke and gases created by overheating or burning this material. Decomposition products can be highly toxic and irritating. Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. Ground and bond containers and equipment before transferring to avoid static sparks.

**Further Info on Storage Conditions**

Store separate from food products. Employee education and training in the safe use and handling of this product are required under the OSHA Hazard Communication Standard 29 CFR 1910.1200.

**SECTION 8 – EXPOSURE CONTROLS / PERSONAL PROTECTION****Homopolymer of Hexamethylene Diisocyanate (28182-81-2)**Time Weighted Average (TWA): 0.5 mg/m<sup>3</sup> Exposure Limit Short TermExposure Limit (STEL): 1.00 mg/m<sup>3</sup> (15-min)**Polyisocyanate Based on Hexamethylene Diisocyanate (HDI) (CAS# is a trade secret)**Time Weighted Average (TWA): 0.50 mg/m<sup>3</sup> Exposure LimitShort Term Exposure Limit (STEL): 1.00 mg/m<sup>3</sup>**Hexamethylene-1,6-Diisocyanate (822-06-0)**

US. ACGIH Threshold Limit Values

Time Weighted Average (TWA): 0.005 ppm Exposure Limit Ceiling Limit

Value: 0.02 ppm

**Industrial Hygiene/Ventilation Measures**

Good industrial hygiene practice dictates that worker protection should be achieved through engineering controls, such as ventilation, whenever feasible. When such controls are not feasible to achieve full protection, the use of respirators and other personal protective equipment is mandated. Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination. Curing ovens must be ventilated to prevent emissions into the workplace. If oven off-gases are not vented properly (i.e. they are released into the work area), it is possible to be exposed to airborne monomeric HDI.

**Respiratory Protection**

A respirator that is recommended or approved for use in isocyanate-containing environments (air-purifying or fresh air-supplied) may be necessary for spray applications or other situations such as high temperature use which may produce inhalation exposures. A supplied-air respirator (either positive pressure or continuous flow-type) is highly recommended when spraying this material. Observe OSHA

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**PRODUCT NAME: Z-5 UV Iso**

regulations for respirator use (29 CFR 1910.134). SPRAY APPLICATION: A. Good industrial hygiene

practice dictates that when isocyanate-based coatings are spray applied, some form of respiratory protection should be worn. During the spray application of coatings containing this product the use of a supplied-air (either positive pressure or continuous flow-type) respirator is mandatory when ONE OR MORE of the following conditions exists: -the airborne isocyanate concentrations are not known; or -the airborne isocyanate monomer concentrations exceed 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); or -the airborne polyisocyanate (polymeric, oligomeric) concentrations exceed 5 mg/m<sup>3</sup> averaged over 8 hours or 10 mg/m<sup>3</sup> averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits); or -operations are performed in a confined space (See OSHA Confined Space Standard, 29 CFR 1910.146).

NON-SPRAY OPERATIONS: A. During non-spray operations such as mixing, batch-making, brush or roller application, etc., at elevated temperatures (for example, heating of material or application to a hot substrate), it is possible to be exposed to airborne isocyanate vapors. Therefore, when the coatings system will be applied in a non-spray manner, a supplied-air (either positive pressure or continuous flow-type) respirator is highly recommended.

**Hand Protection**

Gloves should be worn, Nitrile rubber gloves, Butyl rubber gloves, Neoprene gloves.

**Eye Protection**

When handling liquid product, chemical goggles should be worn., Chemical safety goggles in combination with a full face shield if a splash hazard exists.

**Skin and body protection**

Avoid all skin contact. Depending on the conditions of use, cover as much of the exposed skin area as possible with appropriate clothing to prevent skin contact., Gloves, long sleeved shirts and pants.

**Medical Surveillance**

All applicants who are assigned to an isocyanate work area should undergo a pre-placement medical evaluation. A history of eczema or respiratory allergies such as hay fever, are possible reasons for medical exclusion from isocyanate areas. Applicants who have a history of adult asthma should be restricted from work with isocyanates. Applicants with a history of prior isocyanate sensitization should be excluded from further work with isocyanates. A comprehensive annual medical surveillance program should be instituted for all employees who are potentially exposed to diisocyanates. Once a worker has been diagnosed as sensitized to any isocyanate, no further exposure can be permitted.

**Additional Protective Measures**

Emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of this product. Follow all label instructions.

**SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES**

<b>Form:</b>	Liquid
<b>Color:</b>	Colorless, Yellow
<b>Odor:</b>	Fruity
<b>pH:</b>	Not Applicable
<b>Freezing Point:</b>	No Data Available
<b>Boiling Point/Range:</b>	Approximately 97 °C (206.6 °F) Estimated based on component(s)
<b>Flash Point:</b>	<b>338 F (170 C)</b> – Penske Martin
<b>Lower Explosion Limit:</b>	Not Established
<b>Upper Explosion Limit:</b>	Not Established
<b>Vapor Pressure:</b>	HDI Polyisocyanate: 4.1 X 10 <sup>-7</sup> @ 68 F (20 C) mmHg
<b>Specific Gravity:</b>	Approximately 1.16 @ 20 °C (68 °F) Estimated
<b>Solubility in Water:</b>	Insoluble - Reacts slowly with water to liberate CO <sub>2</sub> gas

# SAFETY DATA SHEET

Part No.: Z-5A-UV.55

DATE: June 2, 2014  
SUPERSEDES: January 31, 2013

## PRODUCT NAME: Z-5 UV Iso

Autoignition Temperature: 445 °C (833 °F)

Bulk Density: 1.13 g/cm<sup>3</sup> Approximately 9.64 lb/gal Estimated based on component(s)

### SECTION 10 – STABILITY AND REACTIVITY

#### Hazardous Reactions

Contact with moisture, other materials that react with isocyanates, or temperatures above 350 F (177 C), may cause polymerization.

#### Stability

Stable under normal conditions of use and storage.

#### Materials to avoid

Water, Amines, Strong bases, Alcohols, copper alloys

#### Conditions to avoid

Heat, flames and sparks.

#### Hazardous decomposition products

By Fire and High Heat: Carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), oxides of nitrogen (NO<sub>x</sub>), dense black smoke, Hydrogen cyanide, Isocyanate, Isocyanic Acid, Other undetermined compounds

### SECTION 11 – TOXICOLOGICAL INFORMATION

#### Toxicity Data for Homopolymer of Hexamethylene Diisocyanate Acute Oral Toxicity

LD50: > 5,000 mg/kg (Rat) Estimated Value

#### Acute Inhalation Toxicity

LC50: 390-453 mg/m<sup>3</sup>, aerosol, 4 hrs (Rat, Male/Female) RD50: 20.8 mg/m<sup>3</sup>, 3 hrs

#### Acute dermal toxicity

LD50: > 5,000 mg/kg (rabbit)

#### Skin Irritation

rabbit, Draize, Slightly irritating

#### Eye Irritation

rabbit, Draize, Slightly irritating

#### Sensitization

dermal: sensitizer (guinea pig, Maximisation Test (GPMT)) dermal: non-sensitizer (Guinea pig, Buehler)

inhalation: non-sensitizer (guinea pig)

#### Repeated Dose Toxicity

3 wks, inhalation: NOAEL: 3.7 - 4.3 mg/m<sup>3</sup>, (Rat) 90 ds, inhalation: NOAEL: 3.3 - 3.4 mg/m<sup>3</sup>, (Rat)

Irritation to lungs and nasal cavity.

#### Mutagenicity

Genetic Toxicity in Vitro:

Ames: negative (Salmonella typhimurium, Metabolic Activation: with/without)

#### Toxicity Data for t-Butyl Acetate Acute Oral Toxicity

LD50: 4,500 mg/kg (Rat)

#### Acute Inhalation Toxicity

LC50: > 4000 ppm, (rat)

#### Acute dermal toxicity

LD50: > 2,000 mg/kg (rabbit)

#### Skin Irritation

Skin Irritation

#### Eye Irritation

Eye Irritation

#### Repeated Dose Toxicity

inhalation: NOAEL: Not Established (<120 ppm), (rat, )

#### Toxicity Data for Benzene, 1-chloro-4-(trifluoromethyl)-Acute Oral Toxicity

LD50: > 10,000 mg/kg (rat)

DATE: June 2, 2014  
SUPERSEDES: January 31, 2013**PRODUCT NAME: Z-5 UV Iso****Acute Inhalation Toxicity**

LC50: &gt; 10,000 mg/l, (rat)

**Acute dermal toxicity**

LD50: &gt; 2,700 mg/kg (rabbit)

**Skin Irritation**

rabbit, Non-irritating

**Eye Irritation**

rabbit, Non-irritating

**Repeated Dose Toxicity**

28 d, inhalation: NOAEL: Not Established (&lt;100 ppm), (rat, Male/Female)

**SECTION 12 – ECOLOGICAL INFORMATION****Ecological Data for Homopolymer of Hexamethylene Diisocyanate Biodegradation**

0 %, Exposure time: 28 Days, Not readily biodegradable.

**Acute and Prolonged Toxicity to Fish**

LC0: &gt; 100 mg/l (Zebra fish (Brachydanio rerio), 96 hrs)

**Acute Toxicity to Aquatic Invertebrates**

EC0: &gt; 100 mg/l (Water flea (Daphnia magna), 48 hrs)

**Toxicity to Aquatic Plants**

EC50: &gt; 1,000 mg/l, (Green algae (Scenedesmus subspicatus), 72 hrs)

**Toxicity to Microorganisms**

EC50: &gt; 1,000 mg/l, (Activated sludge microorganisms, 3 hrs)

**Ecological Data for t-Butyl Acetate Biodegradation**

Readily biodegradable.

**Bioaccumulation**

approximately 10 BCF

**Acute and Prolonged Toxicity to Fish**

LC50: 327 mg/l (Fathead minnow (Pimephales promelas), 96 h)

**Acute Toxicity to Aquatic Invertebrates**

EC50: 3,968 mg/l (Water flea (Daphnia magna))

**Toxicity to Aquatic Plants**

420 mg/l, EC5, (other: algae)

**Ecological Data for Benzene, 1-chloro-4-(trifluoromethyl)-Biodegradation**

Not readily biodegradable.

**Acute and Prolonged Toxicity to Fish**

LC50: 13.5 mg/l (Bluegill (Lepomis macrochirus), 96 h)

**Acute Toxicity to Aquatic Invertebrates**

12.4 mg/l LC50 (Water flea (Daphnia magna), 48 h)

**Toxicity to Aquatic Plants**

500 mg/l, IC50, (Blue-green algae (Anabaena flosaquae), 72 h)

**SECTION 13 - DISPOSAL CONSIDERATIONS****Waste Disposal Method**

Waste disposal should be in accordance with existing federal, state and local environmental control laws. Incineration is the preferred method.

**Empty Container Precautions**

Empty containers retain product residue; observe all precautions for product. Do not heat or cut empty container with electric or gas torch because highly toxic vapors and gases are formed. Do not reuse without thorough commercial cleaning and reconditioning.



**PRODUCT NAME: Z-5 UV Iso**

**SECTION 14 – TRANSPORTATION INFORMATION**

**Land transport (DOT)**

**Proper Shipping Name:** Other regulated substances, liquid, n.o.s. (contains Hexamethylene- 1,6-Diisocyanate)

**Hazard Class or Division: 9**

**UN/NA Number:** NA 3082

**Packaging Group: II**

**Hazard Label(s): Class 9**

**RSPA/DOT Regulated Components:**

Hexamethylene-1,6-Diisocyanate

**Reportable Quantity: 39,998 lbs**

**Additional Transportation Information**

When in individual containers of less than the Product RQ, this material ships as non-regulated.

**Sea transport (IMDG)**

Non Regulated

**Air transport (ICAO/IATA)**

Non Regulated

**SECTION 15 – REGULATORY INFORMATION**

**United States Federal Regulations**

**OSHA Hazcom Standard Rating:** Hazardous

**US. Toxic Substances Control Act:** Listed on the TSCA Inventory.

**US. EPA CERCLA Hazardous Substances (40 CFR 302):**

**Components**

None

**SARA Section 311/312 Hazard Categories:**

Acute Health Hazard, Chronic Health Hazard

**US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III**

**Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A):**

**Components**

None

**US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III**

**Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required:**

**Components**

None

**PRODUCT NAME: Z-5 UV Iso****US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261)**

Under RCRA, it is the responsibility of the person who generates a solid waste, as defined in 40 CFR 261.2, to determine if that waste is a hazardous waste.

**State Right-To-Know Information**

The following chemicals are specifically listed by individual states; other product specific health and safety data in other sections of the MSDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

**Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists:**

Weight percent	Components	CAS-No.
>=95%	Homopolymer of Hexamethylene Diisocyanate	28182-81-2

**New Jersey Environmental Hazardous Substances List and/or New Jersey RTK Special Hazardous Substances Lists:****California Prop. 65:**

To the best of our knowledge, this product does not contain any of the listed chemicals, which the state of California has found to cause cancer, birth defects or other reproductive harm.

**SECTION 16 – OTHER INFORMATION****NFPA 704M Rating**

Health	2
Flammability	1
Reactivity	1
Other	

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

**HMIS Rating**

Health	2*
Flammability	1
Physical Hazard	1

0=Minimal 1=Slight 2=Moderate 3=Serious 4=Severe \* = Chronic Health Hazard

The method of hazard communication for Pinnacle is comprised of Product Labels and Material Safety Data Sheets. HMIS and NFPA ratings are provided by Pinnacle as a customer service.

The handling of products containing reactive HDI polyisocyanate/prepolymer and/or monomeric HDI requires appropriate protective measures referred to in this MSDS. These products are therefore recommended only for use in industrial or trade (commercial) applications.

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