Safety Data Sheet

PetraThane WB – PART A

1. IDENTIFICATION

24 HOUR EMERGENCY ASSISTANCE	MANUFACTURER/GENERAL MSDS ASSISTANCE
CHEM-TEL 1-800-255-3924	**Petra Polymers** **Tel.:** (888)-497-3872 **1610 E. Miraloma Ave.** **Placentia, CA 92870**

PRODUCT IDENTIFIER/NAME: **PetraThane WB – PART A**
RECOMMENDED USE: Chemical intermediate for polyurethane

2. HAZARD(S) IDENTIFICATION

HAZARD CLASSIFICATION:

CLASSIFICATION OF THE SUBSTANCE OR MIXTURE:
GHS-US CLASSIFICATION

Acute Toxicity – Oral 4

NFPA ratings (scale 0 – 4):

HEALTH	**2**
FIRE	**1**
REACTIVITY	**0**
SPECIAL	**-**

NFPA HAZARD RATING:
4= EXTREME 2= MODERATE 0= INSIGNIFICANT
3= HIGH 1= SLIGHT

HAZARD PICTOGRAMS:

SIGNAL WORD: Warning

PHYSICAL APPEARANCE: Milky clear or colored liquid with aromatic odor

HAZARD STATEMENTS:

Harmful if swallowed
Causes skin irritation
Causes eye irritation

May cause respiratory irritation

PRECAUTIONARY STATEMENTS:

PREVENTION:	Wash thoroughly after handling Do not eat, drink or smoke when using this product Use personal protective equipment as required
RESPONSE:	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell Rinse mouth
STORAGE:	Store in a closed container. Store in a well-ventilated place. Keep container tightly closed Store in dry place
DISPOSAL:	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

OTHER HAZARDS:

None known

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hydroxyfunctional Polyacrylic Urethane	(CAS TS)	> 70%
Dipropylene glycol n-butylether	(CAS 29911-28-2)	8 %
Triethanolamine	(CAS 102-71-6)	0.5-3%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not Hazardous per this OSHA Standard may be listed. Where proprietary Ingredient shows, the identity may be made available as provided **i**n this standard**.**

4. FIRST AID MEASURES

EYES: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Call a physician immediately.
SKIN: In case of skin contact, wash affected areas with soap and water. Immediately remove contaminated clothing and shoes. 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.
INGESTION: Do not induce vomiting. If conscious, give 2 glasses of water. Get immediate medical attention. Do not give anything by mouth to an unconscious person.

5. FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: All extinguishing media are suitable; water spray for large fires.
SPECIAL FIRE FIGHTING PRECAUTIONS: 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 risk of rupture.
UNUSUAL FIRES PRECAUTIONS: Toxic and irritating gases/fumes may be given off during burning or thermal decomposition. Vapors or fumes may form explosive mixture with air. Dry residue will support combustion.

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK PROCEDURES: Cleanup personnel must use appropriate personal protective equipment. Evacuate and keep unnecessary people out of spill area. Avoid release to the environment. Dike or dam spilled material and control further spillage, if possible. Absorb spillage with non-combustible, absorbent material. Cover spill with inert material (e.g., dry sand or earth) and collect for proper disposal. Wash spill area with soap and water. Ventilate area to remove vapors or dust.

7. HANDLING AND STORAGE

STORAGE TEMPERATURE:
Minimum: 7ºC (45ºF)
Maximum: 25ºC(77ºF)

STORAGE PERIOD: 6 months

HANDLING AND STORAGE PROCEDURE: Use only with adequate ventilation/personal protection- Wash thoroughly after handling. Keep container closed when not in use. Do not get in eyes. Do not get on skin or clothing_ Avoid breathing dust, vapor, or mist. Protect from freezing. Store in original or similar containers. Protect from light. May form explosive peroxides.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CONTROL PARAMETERS:


Chemical Name		US. ACGIH TLV
Triethanolamine	102-71-6	TWA: 5 mg/m3

Any component which is listed in section 3 and is not listed in this section does not have a known ACGIH TLV, OSHA PEL or supplier recommended occupational exposure limit.

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. Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination. 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: In case of insufficient ventilation wear suitable respiratory equipment., The following respirator is recommended if airborne concentrations exceed the appropriate standard/guideline., NIOSH approved, air purifying organic vapor respirator.

HAND PROTECTION: Permeation resistant gloves.

EYE PROTECTION: Chemical resistant goggles must be worn, Chemical safety goggles in combination with a full face shield if a splash hazard exists.

SKIN AND BODY PROTECTION: 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

FORM: Liquid
APPEARANCE: Thixotropic
COLOR: Milky White or Pigmented
ODOR: Slight

pH: 7-8
BOILING POINT: Approximately 100 °C (212 °F)
FLASH POINT: NA
VAPOR PRESSURE: No Data
DENSITY: Approximately 1.19 @ 25 °C
SOLUBLE IN WATER: Miscible

10. STABILITY AND REACTIVITY

STABILITY: Stable
CONDITIONS TO AVOID: Protect from freezing
HAZARDOUS DECOMPOSITION PRODUCT: By Fire and Thermal Decomposition: carbon dioxide and carbon monoxide, chlorine compounds, fluoride compounds, various hydrocarbons, nitrogen oxides (NOx), other aliphatic fragments which have not been determined.
HAZARDOUS REACTIONS: Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

LIKELY ROUTES OF EXPOSURE

Effects on Eye: No data available

Effects of Skin: No data available

Inhalation Effects: No data available

Ingestion Effects: No data available

Symptoms: No data available

ACUTE TOXICITY Acute Toxicity – Component(s):

Oral: >5000 mg/kg

Inhalation: - Dipropylene glycol n-butyletherL
LC50 >5.4 mg/l (with restriction) Species: Rat
LC50 >2.04 mg/l (without restriction) Species: Rat

Dermal: No data available

Skin corrosion/ irritation: No data available

Eye damage/ irritation: No data available

Sensitization to respiratory: No data available

Skin sensitsation: No data available

CHRONIC TOXICITY OR EFFECTS FROM LONG TERM EXPOSURES

Carcinogenicity: No data available

Reproductive toxicity: No data available

Germ cell mutagenicity: No data available

Specific target organ systemic toxicity:

Single exposure: No data available
Repeated exposure: No data available

12. ECOLOGICAL INFORMATION

ECOTOXICITY EFFECTS

Aquatic toxicity:

Toxicity to Fish – Component(s):	No data available
Toxicity to Aquatic Invertebrates – Component(s):	No data available
Toxicity to Aquatic Plants – Components(s):	No data available
Toxicity to other organisms – Components(s):	No data available

PERSISTENCE AND DEGRADABILITY

Biodegradability:	No data available
Mobility in soil:	No data available
Bioaccumulation:	No data available

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD: Waste disposal should be in accordance with existing federal, state and local environmental control laws.
EMPTY CONTAINER PRECAUTION: Recondition or dispose of empty container in accordance with governmental regulations. Empty containers retain product residue (dust, liquid, vapor and/or gases) and can be dangerous. Do not heat or cut empty container with electric or gas torch because highly toxic vapors and gases are formed.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION

DOT: Not regulated

IATA: Not regulated

IMDG: Not regulated

TDG: Not regulated

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA (TOXIC SUBSTANCE CONTROL ACT): None

Country	Regulatory List	Notification
USA	TSCA	Included on Inventory
	EINECS	Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer.
CANADA	DSL	Included on Inventory
AUSTRALIA	AICS	Included on Inventory
JAPAN	ENCS	Included on Inventory
SOUTH KOREA	ECL	Included on Inventory
CHINA	SEPA	Included on Inventory

PHILIPPINES	PICCS	Included on Inventory

EPA SARA Title III Section 311/312 (40 CFR 370) Hazard Classification: Non- Hazard

EPA SARA Title III Section 313 (40 CFR 372) Component(s): None

EPA SARA Title III Section 302 (40 CFR 355) Component(s): None

EPA SARA Title III Section 313 (40 CFR 372.65) Component(s): None

US California Safe Drinking Water & Toxic Enforcement Act (Proposition 65): None

16. OTHER INFORMATION

Date Revised: 05/06/2017

MANUFACTURER'S NAME AND ADDRESS:
Petra Polymers
1610 E. Miraloma Ave.
Placentia, CA 92870
Telephone: 888-497-3872

The information herein is given in good faith, but no warranty expressed or implied is made. Petra Polymers urges users of this product to evaluate its suitability and compliance with local regulations as Petra Polymers cannot foresee the nature of the final application or final location of usage.

Safety Data Sheet

PetraThane WB – PART B

1. IDENTIFICATION

24 HOUR EMERGENCY ASSISTANCE	MANUFACTURER/GENERAL MSDS ASSISTANCE
CHEM-TEL 1-800-255-3924	**Petra Polymers** **Tel.:** (888)-497-3872 **1610 E. Miraloma Ave.** **Placentia, CA 92870**

PRODUCT IDENTIFIER/NAME: **PetraThane WB – PART B**
RECOMMENDED USE: Chemical intermediate for polyurethane

2. HAZARD(S) IDENTIFICATION

HAZARD CLASSIFICATION:

GHS-US CLASSIFICATION

Acute Toxicity – Inhalation 4
Skin Sens. 1
STOS – single exposure – Resp. 3

NFPA ratings (scale 0 – 4):

HEALTH	**2**
FIRE	**1**
REACTIVITY	**1**
SPECIAL	**-**

NFPA HAZARD RATING:
4= EXTREME 2= MODERATE 0= INSIGNIFICANT
3= HIGH 1= SLIGHT

HAZARD PICTOGRAMS:

SIGNAL WORD: Warning

PHYSICAL APPEARANCE: Clear liquid with slight odor

HAZARD STATEMENTS:

May cause an allergic skin reaction
Harmful if inhaled
May cause respiratory irritation

POTENTIAL HEALTH EFFECT

PRIMARY ROUTES OF ENTRY: Skin Contact, Eye Contact, Ingestion, Inhalation
MEDICAL CONDITIONS AGGRAVATED BY: Skin disorders, Respiratory disorders, Eye disorders

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE

ACUTE INHALATION
Aliphatic Polyisocyanate: 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). Persons with a preexisting, nonspecific bronchial hyper reactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

CHRONIC INHALATION:
Aliphatic Polyisocyanate: 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. Extreme asthmatic reactions can be life threatening. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Sensitization can be permanent. Chronic overexposure to diisocyanates has also been reported to cause lung damage (including fibrosis, decrease in lung function) that may be permanent.

ACUTE SKIN:
Aliphatic Polyisocyanate: 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:
Aliphatic Polyisocyanate: 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.

ACUTE EYE:
Aliphatic Polyisocyanate: 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:
Aliphatic Polyisocyanate: Prolonged vapor contact may cause conjunctivitis.

ACUTE INGESTION:
Aliphatic Polyisocyanate: May cause irritation; Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

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

PRECAUTIONARY STATEMENTS:

PREVNENTION: Avoid breathing dust/fume/gas/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace

Wear protective gloves. Wash….thoroughly after handling.

RESPONSE: IF ON SKIN: Wash with plenty of soap and water.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Call a POISON CENTER or doctor/physician if you feel unwell.
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse.

STORAGE: Store in a well-ventilated place. Keep container tightly closed.
Store locked up

DISPOSAL: Dispose of contents/container in accordance with existing federal, state, and local environmental control laws.

OTHER HAZARDS:

None known

3. COMPOSITION/INFORMATION ON INGREDIENTS

Homopolymer of Hexamethylene Diisocyanate	(CAS 28182-81-2)	>60 %
Hydrophilic Aliphatic Polyisocyanate based on Hexamethylene Diisocynate	(CAS 666723-27-9)	>15 %
Hexamethylene-1,6-Diisocyanate	(CAS 822-06-0)	< 0.5%
N,N-dimethylcyclohexylamine	(CAS 98-94-2)	0.1-1%

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4. FIRST AID MEASURES

EYES: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Call a physician immediately.
SKIN: In case of skin contact, wash affected areas with soap and water. Immediately remove contaminated clothing and shoes. 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.
INGESTION: Do not induce vomiting. If conscious, give 2 glasses of water. Get immediate medical attention. Do not give anything by mouth to an unconscious person. Get medical attention.

MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED:

Isocyanate 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). Persons with a pre-existing, nonspecific bronchial hyperreactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

May cause skin 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.

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

May cause irritation of the digestive tract; symptoms may include abdominal pain, nausea, vomiting and diarrhea.

Symptoms affective the respiratory tract can also occur several hours after overexposure.

NOTES TO PHYSICIANS /SPECIAL TREATMENT:

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.
If seeking medical attention, provide SDS document to physician.

5. FIRE-FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA: Dry chemical, carbon dioxide (CO_2), water spray for large fires,

SPECIAL FIRE FIGHTING PRECAUTIONS:

Closed container may forcibly rupture under extreme heat or when contents are contaminated with water (CO_2 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.

ADVICE FOR FIRE-FIGHTERS:

Firefighters should wear NFPA compliant structural firefighting protective equipment, including self-contained breathing apparatus and NFPA compliant helmet, hood, boot 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. Exposure to heated diisocyanate can be extremely dangerous.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES:

Implement site emergency response plan. Evacuate non-emergency personnel. The magnitude of the evacuation depends upon the quantity release, site conditions, and the ambient temperature. Isolate the area and prevent access of unauthorized personnel. Notify management. Call CHEMTREC at 1-800-424-9300 for assistance and advice.

Wear necessary personal protective equipment (PPE) as specified in the SDS or the site emergency response plan.

ENVIRONMENTAL PRECAUTIONS:

Ventilate and remove ignition sources. Control the source of the leak. Contain the release material by damming, diking, retaining or diverting into an appropriate containment area. Absorb or pump off as much of the spilled material as possible. When using absorbent, completely cover the spill area with suitable absorbent material (e.g., vermiculite, kitty litter, Oil-Dri®, etc.…). Allow for the absorbent material to absorb the spilled liquid. Shovel the absorbent material into an approved metal container (i.e., 55-gallon salvage drum). Do not fill the container more than 2/3 full to allow for expansion and do not tighten the lid on the container. Repeat application of absorbent material until all liquid has been removed from the surface.

METHODS AND MATERIAL FOR CONTAINMENT AND CLEANING UP:

Decontaminate the spill surface area using a neutralization solution (see list of solutions on the SDS): scrubbing the surface with a broom or brush helps the decontamination solution to penetrate into porous surfaces. Wait at least 15 minutes after first application of the neutralization solution. Cover the area with absorbent material and shovel this into an approved metal container. Check for residual surface contamination using Swype® test kits, available from Colorimetric Laboratories, Inc. (CLI) at 847-803-3737. If the Swype® test pad demonstrates that isocyanate remains on the surface (red color on pad), repeat applications of neutralization solution, with scrubbing, followed by absorbent until the surface is decontaminated (no color change on Swype® pad). Apply lid loosely to metal waste container (do not tighten the lid because carbon dioxide gas and heat can be generated from the neutralization process). With the lid still loosely in place, move the container to an isolated, well-ventilated area to allow release of carbon dioxide. After 72 hours, seal the container, and properly dispose of the waste material and any contaminated equipment (i.e., broom or brush) in accordance with existing federal, state and local regulations.

ADDITIONAL ADVICE:

Products or product mixtures that have been shown to be effective neutralization solutions for decontaminating surfaces, tools, or equipment that have been in contact with an isocyanate includes; products available through industrial suppliers.:

- Spartan Chemical Company 1-800-537-8990
  - Spartan® ShineLine Emulsifier Plus
  - Spartain® SC-200 Heavy Duty Cleaner
- Colorimetric Laboratories, Inc. (CLI) 1-847-803-3737
  - Isocyanate Decontamination Solution

Mix equal amounts of the following:

- Mineral spirits (80%), VM&P Naphtha (15%), and household detergent (5%) and
- A 50-50 mixture of monoethanolamine and water

In a separate container, blend the two solutions in a 1:1 ratio by volume. Immediately prior to applying this blended neutralization solution onto the contaminated surface area, mix or agitate the container to help ensure uniform mixing of the ingredients.

If the above products are not available, the following products can be obtained through retail outlets:

- ZEP® Commerical Heavy-Duty Floor Stripper
- Greased Lightning® Super Strength Cleaner and Degreaser
- EASY OFF® Grill and Oven Cleaner or EASY OFF® Fume Free Oven Cleaner
- A mixture of 50% Simple Green®Pro HD Heavy-Duty Cleaner and 50% household ammonia
- A mixture of 90% Fantastic® Heavy Duty All Purpose Cleaner and 10% household ammonia.

NOTE: Always wear proper PPE when cleaning up an isocyanate spill and using a neutralization solution. It may take two or more applications of the neutralization solution to decontaminate the surface. Check for residual surface contamination using a surface wipe method such as the CLI Swype® pad.

7. HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING:

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. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Individuals with lung or breathing problems or prior allergic reactions to isocyantes must not be exposed to vapor or spray mist. 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 of burning this material. Decomposition products can be highly toxic and irritating. Store in tightly closed containers to prevent moisture contamination. Do no reseal if contamination is suspected.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES:

Storage Period:	6 months @ 25°C (77°F), after receipt of material
Storage Temperature:	Minimum 7°C (44.6°F), Maximum 50°C (122°F)
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 Communications Standard 29 CFR 1910.1200
Substances to Avoid:	Water, amines, strong bases, alcohols, copper alloys

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits

Homopolymer of Hexamethylene Diisocyanate	Time Weighted Average (TWA)	0.5 mg/m3
	Short Term Exposure Limit (STEL)	1.0 mg/m3 (15-min)
Hexamethylene-1,6-Diisocyanate	Time Weighted Average (TWA)	0.005 ppm

Any component which is listed in section 3 and is not listed in this section does not have a known ACGIH TLV, OSHA PEL or supplier recommended occupational exposure limit.

ENGINEERING 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 of 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.

PERSONAL PROTECTION

EYE PROTECTION:

When directly handling liquid product, eye protection is required. Examples of eye protection include a chemical safety goggle, or chemical safety goggle in combination with a full face shield when there is a greater risk of splash.

SKIN 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.

HAND PROTECTION:

Gloves should be worn. Nitrile rubber gloves, butyl rubber gloves, neoprene gloves.

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 recommended. Before an air-purifying respirator can be used, air monitoring must be performed to measure airborne concentrations of HDI monomer and HDI polyisocyanate. Specific conditions under which air-purifying respirators can be used are outlined in the following sections. Observe OSHA regulations for respirator use (29 CFR 1910.134). SPRAY APPLICATIONS: 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/m3 average over 8 hours or 10 mg/m3 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). A properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by test to be effective in isocyanate-containing spray paint environments, and used in accordance with all recommendations made by the manufacturer, can be used when ALL of the following conditions are met: -

The airborne isocyanate monomer concentrations are known to be below 0.05 ppm averaged over eight (8) hours (10 times 8 hour TWA exposure limit); and –the airborne polyisocyanate (polymeric, oligomeric) concentrations are known to be below 5 mg/m3 averaged over 8 hours or 10 mg/m3 averaged 15 minutes (10 time the 8 hour TWA or the 15 minutes STEL exposure limits) and –a NIOSH-certified End of Service Life indicator or a change schedule based upon objective information or data is used to ensure that cartridges are replaced before the end of their service life. In addition, prefilters should be changed whenever breathing resistance increases due to particulate buildup. NON-SPRAY OPERATIONS: 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 coatings system will be applied in a non-spray manner, 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/m3 averaged over 8 hours or 10 mg/m3 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). A properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by test to be effective in manufacturer, can be used when ALL of the following conditions are met; -the airborne concentrations of the isocyanate monomer are below 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); and –the airborne polyiscyanate (polymeric, oligomeric) concentrations are known to be below 5 mg/m3 averaged over 8 hours or 10 mg/m3 averaged 15 minutes (10 time the 8 hour TWA or the 15 minutes STEL exposure limits) and –a NIOSH-certified End of Service Life indicator or a change schedule based upon objective information or data is used to ensure that cartridges are replaced before the end of their service life. In addition, prefilters should be changed whenever breathing resistance increases due to particulate buildup.

SPECIAL INSTRUCTIONS:

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 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.

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.

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9. PHYSICAL AND CHEMICAL PROPERTIES

FORM: Liquid
COLOR: Colorless to light yellow
ODOR: Slight
pH: Not established
BOILING POINT: Not Applicable, Decomposition
FLASH POINT: > 193 °C (> 379.4 °F)
VAPOR PRESSURE: HDI Polyisocyanate: 5.2 X 10-9 @ 20 °C (68 °F) mmHg
DENSITY: 1.15 @ 20 °C (68 ˚F)
SOLUBLE IN WATER: Insoluble – Reacts slowly with water to liberate CO2 gas
AUTO-IGNITION TEMPERATURE: Approximately 435 °C (815 °F)
VISCOSITY DYNAMIC:: Approximately 800 mPa.s @ 20 °C (68 °F)

10. STABILITY AND REACTIVITY

STABILITY: Stable under normal conditions of use and storage.
MATERIALS TO AVOID: Water, Amines, Strong bases, Alcohols, copper alloys.
CONDITIONS TO AVOID: None known
HAZARDOUS DECOMOSITION PRODUCTS: By Fire and Thermal Decomposition: Carbon oxides, nitrogen oxides (NOx), hydrogen cyanide, Isocyanic acid, other aliphatic fragments which have not been determined.
HAZARDOUS REACTIONS: Contact with moisture, other materials that react with isocyanates, or temperatures above 350 °F (177 C), may cause polymerization.

11. TOXICOLOGICAL INFORMATION

LIKELY ROUTES OF EXPOSURE

Effects on Eye:

Acute: May cause eye irritation with symptoms of reddening, tearing, stinging and swelling. May cause temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing.

Chronic: Prolonged vapor contact with the eyes may cause conjunctivitis.

Effects of Skin:

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

Inhalation Effects:

Acute: Isocyanate 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). Persons with a preexisting, nonspecific bronchial hyperactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu0like symptoms (e.g. fever,chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

Chronic: As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to isocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to isocyanates 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 immediate or delayed up to several hours after exposure. Extreme asthmatic reactions can be life threatening. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms

upon exposure to dust, cold air or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Sensitization can be permanent.

Ingestion Effects: No data available

Symptoms:

Acute: May cause irritation of the digestive tract; symptoms may include abdominal pain, nausea, vomiting and diarrhea.

Chronic: Symptoms affecting the respiratory tract can also occur several hours after overexposure.

ACUTE TOXICITY Acute Toxicity – Component(s):

Oral:	-Homopolymer of Hexamethylene Diisocyanate:	LD50: >=5000 mg/kg	Species: Rat
	-Hydrophilic Aliphatic Polyisocyanate based on Hexamethylene Diisocynate:	LD50: >=5000 mg/kg	Species: Rat
	-Hexamethylene-1,6-Diisocyanate:	LD50: 746 mg/kg LD50: 959 mg/kg	Species: Rat (male) Species: Rat (male)
Inhalation:	-Homopolymer of Hexamethylene Diisocyanate:	LC50: 0.39mg/l, 4h, dust/mist	Species: Rat (female)
	-Hydrophilic Aliphatic Polyisocyanate based on Hexamethylene Diisocynate:	LC50: 0.158 mg/l,4h, dust/mist	Species: Rat
	-Hexamethylene-1,6-Diisocyanate:	LC50: 0.124 mg/l,4h vapor	Species: Rat
Dermal:	-Homopolymer of Hexamethylene Diisocyanate:	LD50: >2000 mg/kg	Species: Rat, Rabbit
	-Hydrophilic Aliphatic Polyisocyanate based on Hexamethylene Diisocynate:	No data available	
	-Hexamethylene-1,6-Diisocyanate:	LD50: >7000 mg/kg	Species: Rat

Skin corrosion/ irritation: Slight irritant

Eye damage/ irritation: Slight irritant

Sensitization to respiratory: No data available

Skin sensitization: Causes sensitization

CHRONIC TOXICITY OR EFFECTS FROM LONG TERM EXPOSURES

Carcinogenicity: No data available

Reproductive toxicity: No data available

Germ cell mutagenicity: No data available

Specific target organ systemic toxicity:

Single exposure: No data available
Repeated exposure: No data available

Aspiration hazard: No data available

12. ECOLOGICAL INFORMATION

ECOTOXICITY EFFECTS

Aquatic toxicity:

Toxicity to Fish – Component(s):

-Homopolymer of Hexamethylene Diisocyanate:	LC50: >100 mg/l 96h	Species: Danio rerio (zebra fish)
-Hydrophilic Aliphatic Polyisocyanate based on Hexamethylene Diisocynate:	LC50: 35.2 mg/l 96h	Species: Danio rerio (zebra fish)
-Hexamethylene-1,6-Diisocyanate:	LC0: >=82.8 mg/l 96h	Species: Danio rerio (zebra fish)

Toxicity to Aquatic Invertebrates – Component(s):

-Homopolymer of Hexamethylene Diisocyanate:	EC50: >100 mg/l 48h	Species: Daphnia magna (water flea)
-Hydrophilic Aliphatic Polyisocyanate based on Hexamethylene Diisocynate:	EC50: >100 mg/l 48h	Species: Daphnia magna (water flea).
-Hexamethylene-1,6-Diisocyanate:	EC0: >=89.1 mg/l 48h	Species: Daphnia magna (water flea).

Toxicity to Aquatic Plants – Component(s):

-Homopolymer of Hexamethylene Diisocyanate:	ErC50: 199 mg/l 72h	Species: scenedesmus subspicatus
-Hydrophilic Aliphatic Polyisocyanate based on Hexamethylene Diisocynate:	IC50: 72 mg/l 72h	Species: Desmodesmus subspicatus (green algae)-
Hexamethylene-1,6-Diisocyanate:	ErC50: >77.4 mg/l 72h	Species: Desmodesmus subspicatus (green algae)

Toxicity to other organisms - Component(s):

-Homopolymer of Hexamethylene Diisocyanate:	EC50: >10,000 mg/l 3h	Species: activated sludge
-Hydrophilic Aliphatic Polyisocyanate based on Hexamethylene Diisocynate:	EC50: >10,000 mg/l	Species: activated sludge
-Hexamethylene-1,6-Diisocyanate:	EC50: 842 mg/l 3h	Species: activated sludge

PERSISTENCE AND DEGRADABILITY

Biodegradability: Not readily degradable

Mobility in soil: No data available

Bioaccumulation: No data available

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 containers retain product residue; observe all precautions or 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. If container is to be disposed, ensure all product residues are removed prior to disposal.

14. TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION

DOT: ID NUMBER: NA3082

PROPER SHIPPING NAME: Other regulated substances, liquid, N.O.S. (contains Hexamthylene-1,6-Diisocyanate)
HAZARD CLASS: 9
PACKING GROUP: III

IATA: Non-Regulated

IMDG: Non-Regulated

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

TSCA (TOXIC SUBSTANCE CONTROL ACT): None

Country	Regulatory List	Notification
USA	TSCA	Included on Inventory
EU	EINECS	Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer.
CANADA	DSL	Included on Inventory
AUSTRALIA	AICS	Included on Inventory
JAPAN	ENCS	Included on Inventory
SOUTH KOREA	ECL	Included on Inventory
CHINA	SEPA	Included on Inventory
PHILIPPINES	PICCS	Included on Inventory

EPA SARA Title III Section 311/312 (40 CFR 370) Hazard Classification: Acute Health Hazard

EPA SARA Title III Section 313 (40 CFR 372.65) Component(s): None

EPA SARA Title III Section 302 (40 CFR 355) Component(s): None

US California Safe Drinking Water & Toxic Enforcement Act (Proposition 65): None

State Right-To-Know: Massachusetts, New Jersey, Pennsylvania (see list of components)

16. OTHER INFORMATION

Date Revised: 05/06/2017

MANUFACTURER'S NAME AND ADDRESS:
Petra Polymers
1610 E. Miraloma Ave.
Placentia, CA 92870
Telephone: 888-497-3872

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