



## PACTHANE PAC 44P90

Chemwatch Material Safety Data Sheet  
Issue Date: 8-Feb-2006

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### Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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#### PRODUCT NAME

PACTHANE PAC 44P90

#### STATEMENT OF HAZARDOUS NATURE

**Considered a Hazardous Substance according to the criteria of the New Zealand Hazardous Substances New Organisms legislation.**

#### SYNONYMS

Di-/polyisocyanate, 44-P-90

#### PRODUCT USE

Component for the production of polyurethanes.

#### SUPPLIER

Company: Pacific Urethanes NZ Ltd  
Address:  
57 Rangī Road  
Takanini  
Auckland,  
NZL  
Telephone: +64 9 269 0710  
Emergency Tel: 00 800 2436 2255 (NZ)  
Fax: +61 9 269 4140

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### Section 2 - HAZARDS IDENTIFICATION

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#### GHS Classification

Acute Toxic Inhalation Category 4  
Eye Irritant Category 2A  
Reproductive Toxicity Category 2  
Respiratory Irritant Category 3  
Respiratory Sensitizer Category 1  
Skin Irritant Category 2  
Skin Sensitizer Category 1

#### EMERGENCY OVERVIEW

##### HAZARD

DANGER: Hazardous  
Determined by Chemwatch using GHS/HSNO criteria:  
6.10A 6.1D 6.3A 6.4A 6.5A 6.5B 6.8B

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Section 2 - HAZARDS IDENTIFICATION

May cause respiratory irritation  
Harmful if inhaled  
Causes skin irritation  
Causes serious eye irritation  
May cause allergic or asthmatic symptoms or breathing difficulties if inhaled  
May cause allergic skin reaction  
Suspected of damaging fertility

## PRECAUTIONARY STATEMENTS

Keep container in a well ventilated place.  
Avoid exposure - obtain special instructions before use.  
To clean the floor and all objects contaminated by this material, use water and detergent.  
Keep container tightly closed.  
Keep away from food, drink and animal feeding stuffs.  
Take off immediately all contaminated clothing.  
In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.  
If swallowed, IMMEDIATELY contact Doctor or Poisons Information Centre. (show this container or label).  
If you feel unwell contact Doctor or Poisons Information Centre. (Show the label if possible).

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
polymeric diphenylmethane diisocyanate	9016-87-9	>75
phenyl isocyanate	103-71-9	trace

## Section 4 - FIRST AID MEASURES

### SWALLOWED

- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.

### EYE

- If this product comes in contact with the eyes:
- Immediately hold eyelids apart and flush the eye continuously with running water.
  - Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
  - Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
  - Transport to hospital or doctor without delay.
  - Removal of contact lenses after an eye injury should only be undertaken by

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Section 4 - FIRST AID MEASURES

skilled personnel.

## SKIN

If skin contact occurs:

- Immediately remove all contaminated clothing, including footwear
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

## INHALED

- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prosthesis such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
- Transport to hospital, or doctor, without delay.

## NOTES TO PHYSICIAN

For sub-chronic and chronic exposures to isocyanates:

- This material may be a potent pulmonary sensitiser which causes bronchospasm even in patients without prior airway hyperreactivity.
- Clinical symptoms of exposure involve mucosal irritation of respiratory and gastrointestinal tracts.
- Conjunctival irritation, skin inflammation (erythema, pain vesiculation) and gastrointestinal disturbances occur soon after exposure.
- Pulmonary symptoms include cough, burning, substernal pain and dyspnoea.
- Some cross-sensitivity occurs between different isocyanates.
- Noncardiogenic pulmonary edema and bronchospasm are the most serious consequences of exposure. Markedly symptomatic patients should receive oxygen, ventilatory support and an intravenous line.
- Treatment for asthma includes inhaled sympathomimetics (epinephrine [adrenalin], terbutaline) and steroids.
- Activated charcoal (1 g/kg) and a cathartic (sorbitol, magnesium citrate) may be useful for ingestion.
- Mydriatics, systemic analgesics and topical antibiotics (Sulamyd) may be used for corneal abrasions.
- There is no effective therapy for sensitised workers.  
[Ellenhorn and Barceloux; Medical Toxicology]

NOTE: Isocyanates cause airway restriction in naive individuals with the degree of response dependant on the concentration and duration of exposure. They induce smooth muscle contraction which leads to bronchoconstrictive episodes. Acute changes in lung function, such as decreased FEV1, may not represent sensitivity. [Karol & Jin, Frontiers in Molecular Toxicology, pp 56-61, 1992].

## Section 5 - FIRE FIGHTING MEASURES

### EXTINGUISHING MEDIA

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.
- Water spray or fog - Large fires only.

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Section 5 - FIRE FIGHTING MEASURES

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## FIRE FIGHTING

- Alert Fire Brigade and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by any means available, spillage from entering drains or water course.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- Avoid spraying water onto liquid pools.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.

## FIRE/EXPLOSION HAZARD

- Combustible.
- Moderate fire hazard when exposed to heat or flame.
- When heated to high temperatures decomposes rapidly generating vapour which pressures and may then rupture containers with release of flammable and highly toxic isocyanate vapour.
- Burns with acrid black smoke and poisonous fumes.
- Combustion yields traces of highly toxic hydrogen cyanide HCN, plus toxic nitrogen oxides NO<sub>x</sub> and carbon monoxide.
- Small quantities of water in contact with hot liquid may react violently with generation of a large volume of rapidly expanding hot sticky semi-solid foam.
- Presents additional hazard when fire fighting in a confined space.
- Cooling with flooding quantities of water reduces this risk.

Combustion products include, carbon dioxide (CO<sub>2</sub>), isocyanates, and minor amounts of, hydrogen cyanide, nitrogen oxides (NO<sub>x</sub>), other pyrolysis products typical of burning organic material.

May emit poisonous fumes.

May emit corrosive fumes.

## FIRE INCOMPATIBILITY

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

## Personal Protective Equipment

Breathing apparatus.

Gas tight chemical resistant suit.

Limit exposure duration to 1 BA set 30 mins.

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## Section 6 - ACCIDENTAL RELEASE MEASURES

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## EMERGENCY PROCEDURES

### MINOR SPILLS

- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid breathing vapours and contact with skin and eyes.
- Control personal contact by using protective equipment.
- Contain and absorb spill with sand, earth, inert material or vermiculite.
- Wipe up.
- Place in a suitable labelled container for waste disposal.

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Section 6 - ACCIDENTAL RELEASE MEASURES

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## MAJOR SPILLS

Moderate hazard.

- Clear area of personnel and move upwind.
- Alert Fire Brigade and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- No smoking, naked lights or ignition sources.
- Increase ventilation.
- Stop leak if safe to do so.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Absorb remaining product with sand, earth or vermiculite.
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- If contamination of drains or waterways occurs, advise emergency services.

**Personal Protective Equipment advice is contained in Section 8 of the MSDS.**

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## Section 7 - HANDLING AND STORAGE

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### PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
  - Wear protective clothing when risk of exposure occurs.
  - Use in a well-ventilated area.
  - Prevent concentration in hollows and sumps.
  - DO NOT enter confined spaces until atmosphere has been checked.
  - Avoid smoking, naked lights or ignition sources.
  - Avoid contact with incompatible materials.
  - When handling, DO NOT eat, drink or smoke.
  - Keep containers securely sealed when not in use.
  - Avoid physical damage to containers.
  - Always wash hands with soap and water after handling.
  - Work clothes should be laundered separately.
  - Use good occupational work practice.
  - Observe manufacturer's storing and handling recommendations.
  - Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.
- DO NOT allow clothing wet with material to stay in contact with skin.

### SUITABLE CONTAINER

- Metal can or drum
- Packaging as recommended by manufacturer.
- Check all containers are clearly labelled and free from leaks.

### STORAGE INCOMPATIBILITY

Avoid cross contamination between the two liquid parts of product (kit). If two part products are mixed or allowed to mix in proportions other than manufacturer's recommendation, polymerisation with gelation and evolution of heat (exotherm) may occur. This excess heat may generate toxic vapour.

- Avoid contamination with water, alkalis and detergent solutions.
- Material reacts with water and generates gas, pressurises containers with even drum rupture resulting.

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Section 7 - HANDLING AND STORAGE

- DO NOT reseal container if contamination is suspected.
  - Open all containers with care.
- Avoid reaction with oxidising agents.

## STORAGE REQUIREMENTS

Rotate all stock to prevent ageing. Use on FIFO (First In-First Out) basis.

- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer's storing and handling recommendations.

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Peak ppm	Peak mg/m <sup>3</sup>
New Zealand Workplace Exposure Standards (WES)	Isocyanates, all, (as -NCO)		0.02		0.07		
No data available:	polymeric diphenylmethane diisocyanate as (CAS: 9016-87-9)						

None assigned. Refer to individual constituents.

### INGREDIENT DATA

#### POLYMERIC DIPHENYLMETHANE DIISOCYANATE:

Some jurisdictions require that health surveillance be conducted on occupationally exposed workers. This should emphasise:

- demography, occupational and medical history and health advice
- completion of a standardised respiratory questionnaire
- physical examination of the respiratory system and skin
- standardised respiratory function tests such as FEV1, FVC and FEV1/FVC.

### PERSONAL PROTECTION

#### EYE

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### HANDS/FEET

Wear chemical protective gloves, eg. PVC.

Wear safety footwear or safety gumboots, eg. Rubber.

NOTE: The material may produce skin sensitisation in predisposed individuals.

Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.

### OTHER

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

### RESPIRATOR

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant.

Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half-face Respirator	Full-Face Respirator
1000	10	A-AUS P	-
1000	50	-	A-AUS P
5000	50	Airline *	-
5000	100	-	A-2 P
10000	100	-	A-3 P
	100+		Airline**

\* - Continuous Flow \*\* - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

### ENGINEERING CONTROLS

Spraying of material or material in admixture with other components must be carried out in conditions conforming to local state regulations. Local exhaust ventilation with full face air supplied breathing apparatus (hood or helmet type) is normally required. Unprotected personnel must vacate spraying area. NOTE: Isocyanate vapours will not be adequately absorbed by organic vapour respirators.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### APPEARANCE

Brown liquid with earthy, musty odour; does not mix with water.

Viscosity @ 20 deg.C: 165 mPa's (DIN 53211)

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## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### PHYSICAL PROPERTIES

Liquid.

Does not mix with water.

Sinks in water.

Molecular Weight: Not applicable

Melting Range (C): -20

Solubility in water (g/L): Immiscible

pH (1% solution): Not applicable.

Volatile Component (%vol): Not available

Relative Vapour Density (air=1): Not available

Lower Explosive Limit (%): Not applicable

Autoignition Temp (C): >500 (DIN51758)

State: Liquid

Boiling Range (C): 300 initial

Specific Gravity (water=1): 1.22 (DIN51757)

pH (as supplied): Not applicable

Vapour Pressure (kPa): 1.4 @ 20 degC

Evaporation Rate: Not available

Flash Point (C): 230 (DIN51758)

Upper Explosive Limit (%): Not applicable

Decomposition Temp (°C): 260 approx.

## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

### CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
  - Product is considered stable.
  - Hazardous polymerisation will not occur.
- Presence of elevated temperatures.

## Section 11 - TOXICOLOGICAL INFORMATION

### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

Considered an unlikely route of entry in commercial/industrial environments.  
Ingestion may result in nausea, abdominal irritation, pain and vomiting.

##### EYE

This material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation. Moderate inflammation may be expected with redness; conjunctivitis may occur with prolonged exposure.

##### SKIN

Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.

This material can cause inflammation of the skin on contact in some persons.

The material may accentuate any pre-existing dermatitis condition.

Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

##### INHALED

Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful.

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## Section 11 - TOXICOLOGICAL INFORMATION

There is some evidence to suggest that this material can cause, if inhaled once, irreversible damage of organs.

The material can cause respiratory irritation in some persons. The body's response to such irritation can cause further lung damage.

### CHRONIC HEALTH EFFECTS

Principal routes of exposure are by accidental skin and eye contact and by inhalation of vapours especially at higher temperatures. Persons with a history of asthma or other respiratory problems or are known to be sensitised, should not be engaged in any work involving the handling of isocyanates. [CCTRADE-Bayer, APMF]. This product contains a polymer with a functional group considered to be of high concern. Isocyanates can cause sensitisation of the airways. Aromatic species (those with benzene rings) may have the potential to cause cancer. Toxicity is lower for larger species because they are less easily absorbed by the body. However even large polymers with more than one high-risk reactive group cannot be classified as a low risk polymer. Inhaling this product is more likely to cause a sensitisation reaction in some persons compared to the general population. Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population. Based on experience with similar materials, there is a possibility that exposure to the material may reduce fertility in humans at levels which do not cause other toxic effects. Respiratory sensitisation may result in allergic/asthma like responses; from coughing and minor breathing difficulties to bronchitis with wheezing, gasping. Isocyanate vapours are irritating to the airways and can cause their inflammation, with wheezing, gasping, severe distress, even loss of consciousness and fluid in the lungs. Nervous system symptoms that may occur include headache, sleep disturbance, euphoria, inco-ordination, anxiety, depression and paranoia. Digestive effects include nausea and vomiting. Breathing difficulties may occur unpredictably after a period of tolerance and after skin contact. Allergic inflammation of the skin can occur, with rash, itching, blistering, and swelling of the hands and feet. Sensitive people can react to very low levels and should not be exposed to this material. Sensitisation may result in allergic dermatitis responses including rash, itching, hives or swelling of extremities.

### TOXICITY AND IRRITATION

Not available. Refer to individual constituents.

unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances

#### POLYMERIC DIPHENYLMETHANE DIISOCYANATE:

product

Oral (rat) LD50: 43000 mg/kg

Eye (rabbit): 100 mg - mild

Dermal (rabbit) LD50: >9400 mg/kg

Inhalation (rat) LC50: 490 mg/m<sup>3</sup>/4h

The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

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## Section 12 - ECOLOGICAL INFORMATION

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DO NOT discharge into sewer or waterways.  
Refer to data for ingredients, which follows:

POLYMERIC DIPHENYLMETHANE DIISOCYANATE:

Aquatic toxicity:

Fish (Brachydanio rerio) 96h LC0: >1000 mg/l \*

(Daphnia) 24h EC50: >1000 mg/l \*

Bacterial toxicity (activated sludge microorganism) 3h EC50: >100 mg/l \*

\* [Bayer]

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## Section 13 - DISPOSAL CONSIDERATIONS

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Treat isocyanate spills with sufficient amounts of isocyanate decontaminant preparation. Typically, such a preparation may consist of: sawdust: 20 parts by weight Kieselguhr 40 parts by weight plus a mixture of {ammonia (s.g. 0.880) 8% v/v non-ionic surfactant 2% v/v water 90% v/v}. Let stand for 24 hours.

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Authority for disposal.
- Bury or incinerate residue at an approved site.
- Recycle containers if possible, or dispose of in an authorised landfill.

If container can not be cleaned sufficiently well to ensure none of the original product remains or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.

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## Section 14 - TRANSPORTATION INFORMATION

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### HAZCHEM

None

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS:UN,IATA,IMDG

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## Section 15 - REGULATORY INFORMATION

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### REGULATIONS

polymeric diphenylmethane diisocyanate (CAS: 9016-87-9) is found on the following regulatory lists;

International Agency for Research on Cancer (IARC) Carcinogens

New Zealand Transferred List of Single Component Substances

OECD Representative List of High Production Volume (HPV) Chemicals

Specific advice on controls required for materials used in

New Zealand can be found at

<http://www.ermanz.govt.nz/search/registers.html>

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## Section 16 - OTHER INFORMATION

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NEW ZEALAND POISONS INFORMATION CENTRE  
0800 POISON (0800 764 766)  
NZ EMERGENCY SERVICES: 111

### Denmark Advisory list for selfclassification of dangerous substances

Substance	CAS	Suggested codes
phenyl isocyanate	103-71-9	Xn;R22 R43

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