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**April 2001**

**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION  
AND ASSESSMENT SCHEME**

**FULL PUBLIC REPORT**

**RC80371**

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**FULL PUBLIC REPORT****RC80371****1. APPLICANT**

Du Pont (Australia) Ltd (ACN 000 716 469) of 49-59 Newton Road WETHERILL PARK NSW 2164 has submitted a notification statement in support of their application for an assessment certificate for the synthetic polymer of low concern (PLC) RC80371.

**2. IDENTITY OF THE CHEMICAL**

The chemical name, CAS number, molecular and structural formulae, molecular weight, spectral data and details of the polymer composition have been exempted from publication in the Full Public Report.

**Marketing Names:** RC80371;  
Acrylic polymer 80371;  
RCZ80371.

**Number Average Molecular Weight:** > 1 000

**Comments on Chemical Identity**

Infrared spectral data were submitted for the identification of the notified polymer. A trace from Gel Permeation Chromatography was supplied to substantiate the number average molecular weight and percentage of low molecular weight species.

**3. POLYMER COMPOSITION AND PURITY**

Details of the polymer composition have been exempted from publication in the Full Public Report.

**4. PLC JUSTIFICATION**

The notified polymer meets the Synthetic Polymer of Low Concern (PLC) Criteria.

## 5. PHYSICAL AND CHEMICAL PROPERTIES

The notified polymer is manufactured as a 60% solution in organic solvents (See Section 10 Additives/Adjuvants). Where indicated, the properties listed below are for the polymer solution or the solvents.

<b>Appearance:</b>	Pale yellow liquid.
<b>Melting Point:</b>	Not provided
<b>Density:</b>	1.025 kg/L (polymer solution)
<b>Water solubility:</b>	The notifier expects the water solubility of the notified polymer to be < 1 ppm based on the oleophilic nature of its monomers.
<b>Stability/reactivity:</b>	During the paint formulation process, the hydroxyl groups of the notified polymer are reacted with an isocyanate curing agent to form a stable high molecular weight polymer which is not expected to undergo further reaction in environmental situations.
<b>Hydrolysis as function of pH:</b>	The notified polymer contains ester linkages that could be expected to undergo hydrolysis under extreme pH conditions. However, in the environmental pH range of 4 to 9, significant hydrolysis is unlikely to occur.
<b>Partition coefficient:</b>	Test not conducted. Notified polymer is likely to partition into the octanol phase based on its expected low water solubility and hydrophobic nature.
<b>Adsorption/desorption:</b>	Test not conducted. The notified polymer is expected to be relatively immobile in soil due to the high molecular weight and low water solubility.
<b>Dissociation constant:</b>	Test not conducted. The notified polymer is unlikely to dissociate in the environmental pH range of 4 to 9.
<b>Autoignition temperature:</b>	218-428°C (polymer solution).
<b>Flammability limits:</b>	0.9% Lower flammability limit. 7.6% Upper flammability limit. (polymer solution)

## 6. USE, VOLUME AND FORMULATION

### Use:

The notified polymer, RC80371, will be used as the primary resin in specialist automotive sealers for sale to professional spray painters.

### Import volume:

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Import Volume (tonnes)	<10 000	<10 000	<10 000	<10 000	<10 000

### Formulation details:

The notified polymer is 5 to 20% wet weight of an undercoat product Centari K513 and topcoat product Chromaclear 3200S. Because of the solvent content, both products will be imported in 3.78 L approved dangerous goods cans and will be transported by road from the wharf to the warehouse and from the warehouse to the customer.

## 7. PUBLIC EXPOSURE

RC80371 will be used in the professional refinishing of motor vehicles, and will not be sold to the public. Consequently, public exposure will be limited to dermal contact with finished paint surfaces on motor vehicles, where the notified chemical will be bound in the paint matrix, or contact with an accidental spill during transportation. Public exposure is most likely to occur by the dermal route, although exposure by the inhalation and ocular routes may occur from a spill.

## 8. OCCUPATIONAL EXPOSURE

<i>Nature of Work Done &amp; (Number of Workers Exposed)</i>	<i>Details of Occupational Exposure</i>	<i>Maximum Potential Exposure Duration &amp; Personal Protective Equipment/ Engineering Controls Maximum Duration of Exposure</i>
<b>Transport &amp; Storage:</b> Unloading of import containers; Transporting containers.	Containers will be sealed and exposure is unlikely except in the event of a spill.	Not indicated, but expected to be as a minimum gloves, and coveralls.
<b>Paint Application:</b> Spray painting (4000) Includes activation and thinning of paint, paint application and cleaning of spray equipment.	Skin contact to the polymer in paint is possible during preparatory stages of the paint for spraying and cleaning of equipment.  Formation of aerosols and therefore inhalation exposure is likely during spray application. Once the final paint mix has hardened, the notified polymer is bound within the matrix and unavailable for exposure.	Impervious gloves, eye protection, protective suit while mixing the paint. A full face shield and respirator are used while inside the ventilated spray booth.

## **9. ENVIRONMENTAL EXPOSURE**

### **9.1. Release**

The notifier estimates that the majority of waste containing the notified polymer will be generated from overspray (20-50% of total paint produced) during spray painting operations. A small quantity of the notified polymer (<1% of import volume) will be lost as residues in the import containers.

After five years the amount of notified polymer released would be 7.5 tonnes per annum.

### **9.2. Fate**

The notified polymer will be reacted with other paint components to form a very high molecular weight and stable paint formulation. Once incorporated into the paint formulation, the notified polymer is expected to be immobile.

The notified polymer in waste from spills, equipment cleaning and drum recycling will be collected by licensed waste disposal contractors and treated by a distillation process whereby, the solvent is reclaimed and the remaining solid containing the notified polymer will be disposed of in landfill or combined with asphalt and used as road base tackifier. The notified polymer in overspray will also be disposed of in landfill. In landfill and road base, the notified polymer is expected to associate with the soil matrix and not leach into the aquatic environment.

As the notified polymer is not expected to be water soluble, it is not expected to be mobile in either the terrestrial or aquatic compartment. The polymer is not expected to cross biological membranes, due to its high molecular weight and low water solubility, and should not bioaccumulate (Connell, 1990).

## **10. EVALUATION OF HEALTH EFFECTS DATA**

### **Health Effects of the Notified Polymer**

No toxicological data on the notified polymer were submitted. The notifier states that similar polymers are in use and to date no adverse health effects have been reported.

### **Health Effects of the Constituents and Hazardous Impurities of the Notified Polymer and its Additives/Adjuvants & Regulatory Controls**

#### ***Constituents:***

Residual monomers are present in the polymer solution at concentrations of less than 0.1%, which is below their respective concentration cut off levels as listed in the NOHSC List of Designated Hazardous Substances (NOHSC 1999a)

#### ***Hazardous Impurities:***

None.

### ***Additives/Adjuvants***

The notified polymer does not contain additives or adjuvants per se. The resin occurs in a solvent formulation comprising:

#### **Aromatic Hydrocarbon Solvent at 10 - 30%**

The neat solvent presents as an aspiration hazard.

Classification: mixtures containing the solvent at and above 10% are classified as Harmful (Xn).

Labels and MSDS require as appropriate: Risk Phrase 'R65 – Harmful May Cause Lung Damage if Swallowed' (NOHSC 1999a). Scheduled Poison S5 (AHMAC,1999).

National Exposure Standard: None applicable. However, exposure to solvents in the workplace should be controlled.

#### **Xylene at 10 to 30%**

The neat solvent is acutely toxic by inhalation, and skin contact; it is also a skin irritant. It may cause central nervous system depression. The solvent is flammable.

Classification: mixtures containing the solvent at and above 12.5% are classified as Harmful (Xn).

Labels and MSDS require as appropriate: Risk Phrase 'R20/21 – Harmful by Inhalation and in Contact with Skin; and R38 – Irritating to Skin' (NOHSC 1999a).

National Exposure Standard: 80 ppm TWA, 150 ppm STEL (NOHSC 1995).

#### **Butyl acetate at up to 10%**

May cause toxicity if inhaled or absorbed through skin. Inhalation or contact with material may irritate or burn skin and eyes. Vapours may cause dizziness or suffocation. The solvent is highly flammable.

National Exposure Standard: 150 ppm TWA, 200 ppm STEL (NOHSC 1995).

#### **Amyl acetate at up to 10%**

Irritating to eyes, nose and throat causing cough and wheezing. At high concentrations can cause headache, drowsiness, weakness, dizziness and unconsciousness. Prolonged or repeated skin contact can cause irritation, dryness and cracking. May damage the liver. The solvent is flammable.

National Exposure Standard: 100 ppm TWA, (NOHSC 1995).

## **11. EVALUATION OF ENVIRONMENTAL EFFECTS DATA**

No ecotoxicological data were provided.

## **12. ENVIRONMENTAL RISK ASSESSMENT**

The majority of the notified polymer will be incorporated into a very high molecular weight and stable paint formulation and as such poses little risk to the environment. A significant proportion of the notified polymer will be disposed of as waste in landfill by licensed waste contractors or combined with asphalt and used as road base tackifier. In landfill and road base, the polymer is expected to become part of the soil matrix and not leach from the soil because of its expected low solubility in water.



The polymer is not expected to cross biological membranes, due to its high molecular weight and predicted low water solubility, and should not bioaccumulate.

The low environmental exposure of the notified polymer as a result of the proposed use indicates the overall environmental hazard should be low.

### **13. HEALTH AND SAFETY RISK ASSESSMENT**

#### **13.1. Hazard Assessment**

No toxicological data were provided. Considering the high molecular weight, the notified polymer is unlikely to cross biological membranes. Local effects, eg skin irritation, cannot be excluded, however. The notified polymer meets the PLC criteria and is unlikely to be classified a hazardous substance under the Approved Criteria for Classification of Hazardous Substances (NOHSC 1999b).

The notified polymer is not a dangerous good for road or rail transport. However, when imported in finished sealer products (5-20%) in flammable hydrocarbon solvent it will be stored and transported according to the statutory requirements applying to Class 3, Flammable, Dangerous Good (FORS, 1998). Based on the potential to cause adverse health effects, the hydrocarbon solvents are subject to the provisions of Commonwealth, State and Territory Hazardous Substances regulations. In addition because the hydrocarbon solvent content, the sealer products are a Scheduled Poison (S5) (AHMAC, 1999).

#### **13.2. Occupational Health and Safety**

Skin contact and inhalation exposure from the notified polymer (5-20%) during spray painting is considered minimal as long as in situ engineering controls (spray booth) and full personal protective equipment are utilised. Should exposure occur, the risk of health effects from the notified polymer is low. Once the final paint mix has hardened, the notified polymer is bound within the matrix and unavailable for exposure.

#### *Conclusion*

The notified polymer is of low concern to worker health and safety and no specific additional risk reduction measures are necessary.

Exposure to the solvents in the polymer solution will need be controlled by the use of effective ventilation systems to reduce exposure to levels below the relevant national occupational exposure standard and by personnel wearing the appropriate protective equipment.

#### **13.3 Public Health**

Negligible public exposure is expected following dermal contact with painted automobiles, as the notified polymer is expected to be bound within the paint surface. Exposure following accidental spills is also expected to be limited, as the product is transported in 4 L tins, and only a small amount would be expected to be released following an accidental spill. Based on the expected low exposure to the polymer and its expected low toxicity it is considered that RC80371 will not pose a significant risk to public health when used in the proposed manner.

## 14. MSDS AND LABEL ASSESSMENT

### 14.1. MSDS

The MSDS of a product containing the polymer provided by the notifier was in accordance with the National Code of Practice for the Preparation of Material Safety Data Sheets (NOHSC, 1994a). It is published here as part of the assessment report. The accuracy of the information on the MSDS remains the responsibility of the applicant.

### 14.2. Label

The label for products containing the polymer provided by the notifier were in accordance with the National Code of Practice for the Labelling of Workplace Substances (NOHSC, 1994b). The accuracy of the information on the label remains the responsibility of the applicant.

## 15. RECOMMENDATIONS

To minimise occupational exposure to **RC80371** the following practices and guidelines should be observed:

- Use of the paint containing the notified polymer by spray application should be in accordance with the National Guidance Material for Spray Painting (NOHSC 1999c).
- Workers should receive regular instruction on good occupational hygiene practices in order to minimise personal contact, and contamination of the work environment with spray paint products, including those containing the notified polymer.
- Employers should ensure that NOHSC exposure standards for all of the components of the polymer solution are not exceeded in the workplace.
- Personal protective equipment should be used where exposure to the notified polymer solution and the products that contain it occurs. Respiratory protection is required for spray painting. Workers should be trained in the proper fit, correct use and maintenance of their protective gear. Guidance in the selection, personal fit and maintenance of personal protective equipment can be obtained from:

Respiratory Protection:	AS /NZS 1715; AS /NZS 1716 (SA/SNZ, 1994 b, c)
Protective eyewear:	AS 1336 (SA 1994); AS/NZS 1337 (SA/SNZ 1992).
Impermeable clothing:	AS 3765.2 (SA 1990).
Impermeable gloves:	AS 2161.2 (SA/SANZ 1998).
Occupational footwear:	AS/NZS 2210 (SA/SANZ 1994).

- Workplace practices and control procedures consistent with provisions of State, Territory and Commonwealth legislation based on the National Model Regulations for the Control of Workplace Hazardous Substances (NOHSC 1994c) must be in operation if products containing the notified polymer are determined to be hazardous.

- A copy of the MSDS for the notified polymer and the products that contain it should be easily accessible to employees.

## 16. REQUIREMENTS FOR SECONDARY NOTIFICATION

Secondary notification may be required if:

- any of the circumstances stipulated under subsection 64(2) of the Act arise. If any importer or manufacturer of the notified polymer becomes aware of any of these circumstances, they must notify the Director within 28 days; or
- the notified polymer is introduced in a chemical form that does not meet the PLC criteria.

## 17. REFERENCES

Australian Health Ministers Advisory Council (AHMAC) (1999) Standard for the Uniform Scheduling of Drugs and Poisons, Australian Government Publishing Service, Canberra 1999.

Connell DW (1990). General characteristics of organic compounds which exhibit bioaccumulation. In Connell DW, (Ed) Bioaccumulation of Xenobiotic Compounds. CRC Press, Boca Raton, USA.

FORS (1998). Australian Code for the Transport of Dangerous Goods by Road and Rail. Canberra, Federal Office of Road Safety.

NOHSC (1994a) National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC:2011(1994)]. National Occupational Health and Safety Commission, Australian Government Publishing Service, Canberra.

NOHSC (1994b) National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)]. National Occupational Health and Safety Commission, Australian Government Publishing Service, Canberra.

NOHSC (1994c) National Model Regulations for the Control of Workplace Hazardous Substances [NOHSC:1005(1994)]. National Occupational Health and Safety Commission, Australian Government Publishing Service, Canberra.

NOHSC (1995) Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment, [NOHSC:1003(1995)]. In: Exposure Standards for Atmospheric Contaminants in the Occupational Environment: Guidance Note and National Exposure Standards. National Occupational Health and Safety Commission, Australian Government Publishing Service, Canberra.

NOHSC (1999a) List of Designated Hazardous Substances [NOHSC:10005(1999)]. National Occupational Health and Safety Commission, AusInfo, Canberra.

NOHSC (1999b) Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(1999)]. National Occupational Health and Safety Commission, AusInfo, Canberra.

NOHSC (1999c) National Guidance Material for Spray Painting. National Occupational Health and Safety Commission, AusInfo, Canberra.

Standards Australia (1990) Australian Standard 3765.2-1990, Clothing for Protection against Hazardous Chemicals Part 2 Limited protection against specific chemicals. Standards Association of Australia.

Standards Australia (1994) Australian Standard 1336-1994, Eye protection in the Industrial Environment. Standards Association of Australia.

Standards Australia/Standards New Zealand (1992) Australian/New Zealand Standard 1337-1992, Eye Protectors for Industrial Applications. Standards Association of Australia/Standards Association of New Zealand.

Standards Australia/Standards New Zealand (1994a) Australian/New Zealand Standard 2210-1994, Occupational Protective Footwear. Standards Association of Australia/Standards Association of New Zealand.

Standards Australia/Standards New Zealand (1994b) Australian/New Zealand Standard 1715-1994, Use and Maintenance of Respiratory Protective Devices. Standards Association of Australia/Standards Association of New Zealand.

Standards Australia/Standards New Zealand (1994c) Australian/New Zealand Standard 1716-1994, Respiratory Protective Devices. Standards Association of Australia/Standards Association of New Zealand.

Standards Australia/Standards New Zealand (1998) Australian/New Zealand Standard 2161.2-1998, Occupational protective gloves, Part 2: General requirements. Standards Association of Australia/Standards Association of New Zealand.