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**NATIONAL INDUSTRIAL CHEMICALS NOTIFICATION AND ASSESSMENT SCHEME
(NICNAS)**

FULL PUBLIC REPORT

Polymer in RC49753

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**Director
NICNAS**

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FULL PUBLIC REPORT**Polymer in RC49753****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

DuPont (Australia) Ltd (ABN 59 000716 469)
168 Walker Street
North Sydney NSW 2060

NOTIFICATION CATEGORY

Self Assessment: Polymer of Low Concern

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical Name, Other Names, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, Use Details, Import Volume, and Site of Reformulation

VARIATION OF DATA REQUIREMENTS (SECTION 24 OF THE ACT)

No variation to the schedule of data requirements is claimed.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None.

NOTIFICATION IN OTHER COUNTRIES

Korea.

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

RC49753 (solution containing notified polymer)

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (Mn) >1000

3. COMPOSITION

PLC CRITERIA JUSTIFICATION

The notified polymer contains only low concern functional groups.

<i>Criterion</i>	<i>Criterion met (yes/no/not applicable)</i>
Molecular Weight Requirements	Yes
Functional Group Equivalent Weight (FGEW) Requirements	Yes
Low Charge Density	Yes
Approved Elements Only	Yes
Stable Under Normal Conditions of Use	Yes
Not Water Absorbing	Yes
Not a Hazard Substance or Dangerous Good	Yes

The notified polymer meets the PLC criteria.

4. INTRODUCTION AND USE INFORMATION

MODE OF INTRODUCTION OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

The resin manufacturing of RC49753 will occur in the USA or Europe and the notified polymer will be imported into Australia as either a < 60% component in a finished paint or a <60% component of a resin solution used for paint manufacturing.

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED CHEMICAL (100%) OVER NEXT 5 YEARS

<i>Year</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Tonnes</i>	30-100	100-300	100-300	100-300	100-300

USE

The notified polymer will be used in automotive refinish paints.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

Paint Manufacturing

The majority of the notified polymer will be imported as a component of RC49753, which is used in the manufacturing of paint at DuPont's Sydney plant.

RC49753 is imported in 200 L steel drums inside containers and transported to the manufacturing site for storage, mixing and transformation into finished paint. All storage warehouses are approved for storage of bulk class 3 flammable goods, and are located in bunded areas with layout and storage according to Australian standards.

During formulation, the solution containing the notified polymer will be semi-manually weighed and then transferred to a mechanically stirred, enclosed mixing tank using a trolley jack with tilt facility. Other ingredients are added to the batch slowly and stirred mechanically. The tank fume is exhausted to the atmosphere.

Once combined with other ingredients into the finished paint product, it will be semi automatically filled into steel containers, of 4 L or 1 L capacity. During formulation, RC49753 is emptied into and when completed drained from a gravity fed mixer.

Once the finished paint is tested and approved by QA, the paint is gravity fed and filled into 4 L and 5 L open head mild steel approved cans and labelled with NOHSC compliant labels. The finished paint is transported to the warehouse, or immediately containerised for distribution.

Imported finished paint product, which has been manufactured overseas, may also be stored in the warehouse.

Individual orders are re-aggregated paint into cartons with other paint types to be transported to the final destination - the spray painter/smash repairer. Product containing RC49753 may be sold singly or packed in cardboard cartons, each carton holding four 1 L, 0.95 L, 3.785 L, 4 L or 5 L cans

End Use.

Spray-painters who are qualified, professional tradesmen mix the paint containing RC49753 as a component (part A) to be mixed with isocyanate catalyst (part B) according to the product recipe, using a balance or measuring cylinder and mixing jar. After mixing, the paint is loaded into a spray gun and sprayed out onto the vehicle in a spray booth constructed and used to AS 4114.

After the refinishing is complete, the spray gun and lines are emptied and any residual paint placed into a "paint waste" drum for recycling. The spray gun is then cleaned at an earthed recycled solvent wash station ready for the next use.

6. EXPOSURE INFORMATION

6.1. Summary of Occupational Exposure

Transport and warehousing workers may come into dermal and ocular contact with the notified polymer through accidental leaks and spillages of the drums and containers. The overall risk is exceedingly low.

Paint manufacturing workers will manually weigh and transfer the polymer solution to the mixing vats. Workers will wear impermeable gloves, eye protection and impermeable trousers or suits when required. Exposure from the notified polymer to these workers can occur by either dermal or ocular routes, however significant exposure will be limited by the workplace practices, personal protective equipment and plant design used.

Throughout end use, spray painters may come into contact with the notified polymer in paint through dermal, inhalation and ocular routes. The likelihood of exposure, however, will be minimal as application is done in a ventilated spray booth. Air supplied breathing apparatus is used in conjunction with the application of product containing RC49753 due to the necessity of isocyanate curing.

The use of the paint containing the polymer expected to be in accordance with the NOHSC National Guidance material for Spray Painting. The level of protection from exposure afforded by the standard control measures to protect against the isocyanate will minimise any exposure from the notified polymer. PPE used will be impermeable gloves (butyl rubber) in accordance with ANZS2161, eye/face protection goggles in accordance with ANZS1336 and ANZS1337, supplied air respiratory protection in accordance with ANZS1716 and ANZS1715 and clothing in accordance with AS2919.

When the paint containing the notified polymer has dried and cured and the notified polymer RC49753 will have chemically reacted, creating a new species as a paint film, which is unavailable for exposure.

6.2. Summary of Public Exposure

The notified polymer will not be available to the public and will be sold to smash repair businesses for use by technically qualified spray painters. Members of the public will not come into contact with the notified polymer until it has completely reacted, cross-linked and transformed into a fully integrated constituent of a non-reactive paint film covering the surface of the vehicle

6.3. Summary of Environmental Exposure

6.3.1. Environmental Release

Local Manufacturing Process

During paint manufacture, there is potential for small releases through spills, which will be contained within bounded areas and collected for disposal. In the event of a wash out of the mixer, the maximum loss will be 2% of the notified polymer dissolved in the wash out solvent. The solvent recycling company will dispose of the RC49753 contained in the used wash solvent by complying with N.S.W. EPA protocol allowing no water-soluble fractions of polymer remain in still residuals for disposal to landfill or asphalt tackifier. It is assumed that 2.5% of the notified polymer remains in each 200 L imported drum. This is removed during drum recycling by washing or incineration.

Local Spray painting

- Waste attached to disposed container

be wasted annually in the residual paint in end-user containers. Traditionally, used paint cans have been crushed and sent to landfill. However due to a Coating Care program being extended by the Packaging Covenant to steel cans used by industry this residue may also be incinerated in a steel furnace.

- Residues from paint as sprayed

Over spray will be between 20% and 50%. A water curtain will capture it or it will be captured by spray booth/room filters and directed to landfill as dried insoluble polymer that has met NSW state EPA tests for water extra able fractions. In a worst case situation up to 50% of the notified

polymer will be lost due to over spray. Note: 50% over spray is a maximum amount; normally over spray would be less than 20% for an experienced tradesman.

- Residues from paint in mixing container

Residual paint remaining in the mixing container is washed out with a solvent wash. This accounts for approximately 5% of the imported polymer.

- Residues from Cleaning Spray Equipment

After refinishing is complete the spray gun and lines will be emptied and any residual paint will be placed into a waste paint drum for recycling. The spray gun and lines are then washed with recycled solvent with the resultant effluent going to solvent recovery. Approximately 5% of the imported notified polymer would be lost in this way.

Hence the Maximum total amount of RC49753 resin released during use is:

$5\%_{\text{container}} + 50\%_{\text{over spray}} + 5\%_{\text{mixing}} + 5\%_{\text{cleaning}} = 65\%$ used in Australian consumed products.

Release to the environment during shipping, transport and warehousing will only occur through accidental spills or leaks of the drums or steel packaged containers.

During formulation and packaging, spills are expected to be minimal. When spills occur, they will be contained by bunding, collected with absorbent material and sent to a licensed off site waste disposal centre. Empty drums from import will be sent to drum reconditioning firms where any residuals are removed by flushing or burning so that the drum is clean for reuse. Any unburnt waste from drum cleaning is treated by a N.S.W. EPA protocol that eliminates any water-soluble fraction.

6.3.2. Environmental Fate

The notified polymer is expected to be hydrolytically stable and to not be readily biodegradable. Due to its hydrophobic nature, it is expected that the notified polymer will be stable in landfill and if released will associate with sediments and organic phases of soil and sediments, and slowly degrade by biotic and abiotic processes to simple carbon compounds. During automobile recycling, the polymer will be destroyed in the steel furnace.

7. PHYSICAL AND CHEMICAL PROPERTIES

Physico-chemical properties for the notified polymer are unknown. Some of those listed below are for the imported polymer solution: RC49753

Appearance at 20°C and 101.3 kPa	Semi-viscous liquid (solution)
Melting Point/Glass Transition Temp	138 to 192°C (solution)
Density	998 kg/m ³ (solution)
Water Solubility	Insoluble (estimated at < 50 mg/L) due to the largely hydrophobic constituents.
Reactivity	Stable under normal environmental conditions.
Degradation Products	None under normal conditions of use. Under extreme conditions would form CO, CO ₂ and water.

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

No toxicological data is available for the polymer.

8.2. Human Health Hazard Assessment

The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

9. ENVIRONMENTAL HAZARDS

9.1. Ecotoxicology

No toxicological data were submitted.

9.2. Environmental Hazard Assessment

Poly non-ionic polymers with NAMW > 1000 are of low concern to the aquatic compartment.

10. RISK ASSESSMENT

10.1. Environment

The polymer is highly hydrophobic with NAMW >1,000 and insoluble, if released would be expected to associate with sediments and the organic fraction of the soil partition. The use pattern is highly diffuse within cities and towns.

No aquatic exposure is anticipated during manufacture and end use of the notified polymer. It is envisaged that the 4.5% waste would be generated from the manufacturing process. These wastes would be collected by licensed waste contractors and be either incinerated or reduced to an insoluble polymer mass meeting EPA criteria that may be used as a rubberiser and tackifier in road base.

It is expected that the majority of the waste generated from end users will be solidified and disposed of in approved landfills as inert solid waste by solvent recyclers to state EPA specifications. In landfill, the solid wastes will not be mobile and will degrade slowly and not pose a significant risk to the environment.

The environmental risk presented by the notified polymer is expected to be low, based on low hazard and aquatic exposure.

10.2. Occupational Health and Safety

The OHS risk presented by the notified polymer is expected to be low, based on low hazard of polymers meeting the criteria of polymers of low concern. Combined with low exposure and the use of engineering controls and personal protective equipment workers will be well protected from all hazardous ingredients including isocyanates, resulting in a high level of protection from the notified polymer RC49753. The notified polymer may be present in formulations containing other hazardous ingredients. If these formulations are classified as hazardous to health in accordance with the NOHSC Approved Criteria for Classifying Hazardous Substances, workplace practices and control procedures consistent with the provisions of the State and Territory hazardous substances legislation must be in operation.

10.3. Public Health

The notified polymer will not be sold to the public, being used by professional spray painters in a controlled industrial setting. Once the polymer is applied and cured it will be contained in an inert matrix, and hence will not be bio-available. Risk to the public is considered *very* low.

11. CONCLUSIONS – ASSESSMENT LEVEL OF CONCERN FOR THE ENVIRONMENT AND HUMANS

11.1. Environmental Risk Assessment

The polymer is not considered to pose a risk to the environment based on its reported use pattern.

11.2. Human Health Risk Assessment

11.2.1. Occupational health and safety

There is Low Concern to occupational health and safety under the conditions of the occupational settings described.

11.2.2. Public health

There is Negligible Concern to public health when used in the proposed manner.

12. MATERIAL SAFETY DATA SHEET

12.1. Material Safety Data Sheet

The notifier has provided MSDS for the resin solution and final coating product as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the applicant.

13. RECOMMENDATIONS

CONTROL MEASURES

Occupational Health and Safety

- No specific engineering controls or work practices are required for the safe use of the notified polymer itself, however, these should be selected on the basis of all ingredients in the formulation.
- Personal protective equipment required during formulation are
 - Eye protection (safety glasses or goggles)
 - Impermeable gloves
 - Industrial clothing and footwear
 - Breathing Protection when appropriate

Guidance in selection of personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

- The use of the product containing the notified polymer should be in accordance with the NOHSC *National Guidance Material for Spray Painting* where appropriate.
- A copy of the MSDS should be easily accessible to employees
- If products and mixtures containing the notified polymer are classified as hazardous to health in accordance with the NOHSC *Approved Criteria for Classifying Hazardous Substances*, workplace practices and control procedures consistent with provisions of State and Territory hazardous substances legislation must be in operation.

Environment

- The following control measures should be implemented by the notifier to minimise environmental exposure during formulation of the notified polymer:
 - Bunding
- The following control measures should be implemented by end users (spray painters) to minimise environmental exposure during use of the notified polymer:
 - Exhaust ventilation with filter

Disposal

- The notified polymer should be disposed of to landfill or incinerated.
- Empty containers should be sent to local recycling or waste disposal facilities.

Emergency procedures

- Spills of the notified polymer should be handled by absorbing with sand and put into suitable container for disposal. Contaminated containers can be re-used after cleaning.

13.1. Secondary Notification

The Director of Chemicals Notification and Assessment must be notified in writing within 28 days by the notifier, other importer or manufacturer:

- (1) Under subsection 64(1) of the Act; if
 - the notified polymer is introduced in a chemical form that does not meet the PLC criteria.
- or
- (2) Under subsection 64(2) of the Act:
 - if any of the circumstances listed in the subsection arise.

The Director will then decide whether secondary notification is required.