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

FULL PUBLIC REPORT

Polymer in RP-51-4216

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**Director
Chemicals Notification and Assessment**

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FULL PUBLIC REPORT**Polymer in RP-51-4216****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT(S)

PPG Industries Australia Pty Ltd (ACN 055 500 939)
McNaughton Road
CLAYTON VIC 3168

NOTIFICATION CATEGORY

Synthetic Polymer of Low Concern, Early Introduction Permit

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 and Impurities
- Manufacture/Import Volume
- Site of Manufacture/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

US EPA, 1992

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

RP-51-4216

CAS NUMBER

Not assigned

3. COMPOSITION

<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
No Substantial Degradability	Yes
Not Water Absorbing	Yes

Low Concentrations of Residual Monomers
Not a Hazard Substance or Dangerous Good

Yes
Yes

The notified polymer meets the PLC criteria.

4. INTRODUCTION AND USE INFORMATION

The imported resin solution contains < 100% of the notified polymer and the final coil coating contains < 60% of the resin solution.

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	< 30	< 30	< 30	< 30

USE

The notified polymer will be used in the manufacture of coil coatings in Australia.

5. PROCESS AND RELEASE INFORMATION

5.1. Operation Description

The notified polymer will be imported by ship, and coatings containing the polymer may also be imported. There is also a possibility that future manufacture of the polymer will occur in Australia.

Polymer manufacture involves the charging of raw materials to the reactor, mixing under heat and addition of solvents. The polymer solution is stored in 200 L drums or bulk storage tanks.

During coating manufacture, the polymer solution undergoes blending with other ingredients in a high-speed mixer, followed by quality control testing, filtration and filling into 20 L or 200 L steel drums. The coil coating is delivered to the warehouse (classified as Class 3 Dangerous Goods), and then distributed to industrial facilities, where it is fed into the automated coating system using a semi automated vacuum pump. Coating is achieved in a series of automated roller coating operations.

6. EXPOSURE INFORMATION

6.1. Summary of Environmental Exposure

The imported resin solution contains < 100% of the notified polymer and the final coil coating contains < 60% of the resin solution.

If the notified polymer is manufactured in Australia there is potential for release due to spillage of polymer solution. Spills will be contained to the plant through bunding and minimised via good work practices. During coatings manufacture, spillage may occur during filling, blending, batch adjusting and testing and filtrating and filling stages. Spills will be contained within bunded areas and collected for disposal. During coatings application waste is expected to be generated from spillage and cleaning equipment.

It is estimated that up to 300 kg and 3000 kg (based on the maximum import volume of 30 tonnes) of the notified polymer per annum will be released during the coatings manufacture and application, respectively.

The notifier claims that the transfer efficiency of application during coil coating is claimed to be at least

90%. Coil coating lines have integral solvent recovery or incinerators. The solvent value is partially recovered in the form of energy and used for the paint ovens of the plant. Waste from coatings manufacture process will also be collected and recycled by the notifier. The notifier has developed a process (which meets all current local environmental statutory requirements) to dissolve the waste resin and coating and the residue is converted to an inert solid which can be disposed of to landfill. If the notified polymer is manufactured in Australia, the waste can be expected to be treated in the same manner.

Less than 30 kg per annum is expected to remain in the import drums, which will be crushed and disposed of to landfill. The residual polymer content in the empty coatings containers was not provided by the notifier but estimated to be less than 150 kg per annum based on the maximum import volume. These will also be disposed of in landfill.

The notified polymer may hydrolyse in theory but this should not occur in the environmental pH range of 4 to 9. It can be expected to partition to the organic phase and associate with soils and sediments.

6.2. Summary of Occupational Exposure

During polymer manufacture (3 workers, 8 hours/day, 20 days/year), reactant chemicals are weighed under exhaust ventilation and piped automatically to the closed reaction vessel. Exposure is minimised due to the use of personal protective equipment. Coating manufacture and packaging into containers (3 workers, 8 hours/day, 30 days/year) is carried out under exhaust ventilation to capture volatile components. There is potential for occupational exposure during the manufacture of polymer and during the coating manufacture due to spills. Spillage is contained in bunded areas. Exposure is also possible during quality control testing and filling into containers. The coating is stored in 20 L and 200 L steel drums.

Coating application (30 workers, 4 hours/day, 220 days /year) is an automated, fully enclosed process that takes place under exhaust ventilation. During the application process, exposure is minimal due to the high efficiency of paint application. Worker exposure by the dermal route is possible during cleaning of equipment. After application and once dried, the coating containing the notified polymer is cured into an inert matrix and is hence unavailable to exposure. During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging is accidentally breached.

6.3. Summary of Public Exposure

Neither the notified polymer nor the coil coating product will be available to the public. Members of the public may make dermal contact with the materials coated with the polymer. However, exposure will be negligible because the notified polymer is likely to be bound within a cured paint film. The only other potential public exposure would arise from a spill during a transport accident.

7. PHYSICAL AND CHEMICAL PROPERTIES

The physical and chemical properties reported below are for the polymer in the solvent mixture, unless otherwise stated.

Appearance at 20°C and 101.3 kPa	Viscous liquid with an odour characteristic of the solvents.
Melting Point/Glass Transition Temp	Not determined
Density	1047 kg/m ³ (polymer)
Water Solubility	Not determined. The notifier indicates that the water solubility of the polymer solution is 1.8% and that the polymer, which is never isolated from the solution, is expected to be insoluble in water due to the lack of polar functionality except for terminal groups.
Reactivity	Stable under normal conditions. May react with strong oxidising agents.
Degradation Products	No degradation products are expected. In case of

fire, the polymer can produce oxides of carbon.

8. HUMAN HEALTH IMPLICATIONS

8.1. Toxicology

No toxicological data were submitted.

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

Non-ionic polymers that have molecular weights greater than 1000 are generally of low concern (Nabholz et al. 1993).

10. RISK ASSESSMENT

10.1. Environment

Once the applied coating containing the notified polymer is dried, it is cured into an inert matrix and therefore becomes unavailable. The notified polymer disposed of to landfill as solid is expected to be immobile due to its inert state and poor solubility in water and not to move into the aquatic compartment. Although it is not expected to be readily biodegradable, it is anticipated that prolonged residence in an active landfill would eventually degrade the notified polymer through slow abiotic processes to give water vapour and oxides of carbon.

Based on the proposed use pattern, the release of the notified polymer to the environment is expected to be low and the exposure to the aquatic environment be limited. While no ecotoxicity data are available, due to the limited release to water it is unlikely that the polymer would exist at levels which could pose a threat to aquatic organisms. The high molecular weight indicates a low potential for bioaccumulation.

Based on its reported exposure levels and use pattern, the polymer is not considered to pose a risk to the environment when it is used in the proposed manner.

10.2. Occupational health and safety

The manufacture process is highly automated, with adequate ventilation provided. All workers handling the polymer will wear impervious gloves, coveralls and goggles. The polymer solution is not classified as hazardous. The OHS risk presented by the notified polymer is expected to be low.

10.3. Public health

The notified polymer will only be available for industrial use and will not be sold to the public. Following coil coating application, the notified chemical will become trapped within a film and will not be available. Therefore, the risk to public from exposure to the notified polymer is considered 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 manufacture of coil coatings.

12. MATERIAL SAFETY DATA SHEET

12.1. Material Safety Data Sheet

The notifier has provided MSDS 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

- Employers should implement the following engineering controls to minimise occupational exposure to the notified polymer solution:
 - Exhaust ventilation during coating manufacture and filling process.
 - Enclosed and automated coating manufacture, filling process and paint application.
- Employers should implement the following safe work practices to minimise occupational exposure during handling of the notified polymer solution:
 - During transfer operations and cleaning of equipment, avoid spills and splashing.
- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer solution and coil coating containing it:
 - Chemical resistant gloves
 - Protective clothing which protects the body, arms and legs
 - Goggles or eye protection with side shields
 - Antistatic footwear, anti-static flame retardant coveralls and respiratory protection during paint application

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

- 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

Disposal

- Disposal of the notified polymer solution should be in accordance with the relevant local, state and federal government regulations. The recommended method of disposal is controlled incineration by approved agent, however, disposal of to landfill is acceptable.

Emergency procedures

- Spills/release of the notified polymer solution should be handled by containing the spill and preventing run off into drains and waterways.
- Place absorbent material such as vermiculite, sand or dirt on to the spilled material. Collect using clean non-sparking tool. Place and seal in a suitable labelled container.
- Contain but do not dilute the material. Mop up the remaining material and place into the same container.
- Contact the environment protection authority or the local waste management authority if large quantities of the material enter waterways.

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.

No additional secondary notification conditions are stipulated.

14. BIBLIOGRAPHY

Nabholz JV, Miller P and Zeeman M (1993) Environmental Risk Assessment of New Chemicals Under the Toxic Substances Control Act (TSCA) Section Five. In: Landis WG, Hughes JS & Lewis MA ed Environmental Toxicology and Risk Assessment, ASTM STP 1179, American Society for Testing and Materials, Philadelphia, USA, pp. 40-50