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

FULL PUBLIC REPORT

Polymer in HC-28-2320

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Director

Chemicals Notification and Assessment

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FULL PUBLIC REPORT

Polymer in HC-28-2320

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT(S)

PPG Australia Pty Ltd of McNaughton Road CLAYTON VIC 3168.

NOTIFICATION CATEGORY

Limited-small volume: Polymer with NAMW ≥ 1000 (1 tonne or less per year).

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication: chemical name, other names, CAS number, molecular and structural formula, molecular weight, spectral data, purity and impurities, import volumes, manufacturing process, and polymer information.

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)

Not stated.

NOTIFICATION IN OTHER COUNTRIES

The chemical is present on TSCA in USA and DSL in Canada.

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Polymer in HC-28-2320

MOLECULAR WEIGHT

>1000

METHODS OF DETECTION AND DETERMINATION

ANALYTICAL METHOD IR and GPC.

3. COMPOSITION

DEGREE OF PURITY

High.

DEGRADATION PRODUCTS

Under extreme heat conditions such as fire, the coating containing the notified polymer would burn and emit noxious fumes including oxides of carbon and nitrogen.

LOSS OF MONOMERS, OTHER REACTANTS, ADDITIVES, IMPURITIES

There is no loss of monomers, additives or impurities during the life of the coating.

4. INTRODUCTION AND USE INFORMATION

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

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>	<1	<1	<1	<1	<1

USE

The notified polymer is used in the manufacturer of coil coatings.

5. PROCESS AND RELEASE INFORMATION

5.1. Distribution, Transport and Storage

PORT OF ENTRY

Not stated.

IDENTITY OF MANUFACTURER/RECIPIENTS

PPG Australia Pty Ltd.

TRANSPORTATION AND PACKAGING

The polymer solution containing the notified polymer will be imported in 200 kg dangerous goods approved steel drums transported in shipping containers. It will be transported by road to the warehouse and then to the formulation sites. Formulated coating products will be filled in steel drums of 20 and 200 L capacity. Transportation of the coating products will be via road to customer sites throughout Australia.

5.2. Operation Description

The polymer solution containing the notified polymer will be imported as a component of the product, HC-28-2320, comprising 30-60% of the product. It will be formulated into coil coating products in Australia in a process where blending is enclosed. The final concentration of the notified polymer in coil coating is <10%. The final product is used in coil coatings, where application is largely automated.

5.3. Occupational exposure

Number and Category of Workers

<i>Category of Worker</i>	<i>Number</i>	<i>Exposure Duration</i>	<i>Exposure Frequency</i>
<i>Polymer manufacture</i>			
Synthesis	3	8	20
Filling	3	8	20
Laboratory testing	1	8	20
<i>Laboratory development</i>	3	8	20
<i>Coating manufacture</i>			
Coating formulation	3	8	30
QC testing	3	8	30
Filling	3	8	30
<i>Coating application</i>	30	4	220

Exposure Details

The notified polymer is imported into Australia. However, the notifier may synthesise the polymer locally if it becomes necessary. Currently, the notifier has no plans to manufacture the polymer locally.

There will be one warehouse site, one polymer/coating manufacture site and seven coating application sites in Australia.

Dermal and ocular exposure may occur during formulation and application processes. However, exposure to significant amounts of the notified polymer is limited because of the engineering controls

in place, for example, closed blending vessels and automatic coating process. Personal protective equipment is expected to be worn by workers.

After application and once dried, the adhesive/paint 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.

5.4. Release

RELEASE OF CHEMICAL AT SITE

The notified chemical will be imported from the USA. The formulated coating containing the notified polymer is manufactured at the PPG site in Clayton VIC. Operations are performed under exhaust ventilation in a mixing vessel, and then the formulation is filled in steel drums of 20 and 200 L for transportation to customer sites. There is limited scope for accidental spillage to occur during the manufacturing process and transportation. Should a spill occur it would be contained to the plant by bunding. Due to the involatile nature of the polymer, there would be negligible release to the atmosphere.

RELEASE OF CHEMICAL FROM USE

Coil coating in Australia occurs at approximately seven industrial facilities which are fully bunded so spills do not pose a major problem. The polymer does not present an emission hazard to the atmosphere as all paint overspray is trapped in the coil coating process. The coating, however, does contain some solvent that will evaporate in the ventilation systems and the vapour is vented via a stack to the atmosphere. Coil coating lines have integral solvent recovery or incinerators. The solvent value is partially recovered in the form of energy and used for the plant's ovens. The coil coating process produces very little waste and the excess material, or waste is recycled by PPG.

5.5. Disposal

PPG has developed the Dusol process where waste resin and coating generated from accidental spills and cleaning of equipment during formulation of the finished product containing the notified polymer are dissolved, and the residue converted to an inert solid which can be taken to an appropriate landfill site for disposal.

Waste generated at customer sites during paint application is recycled by PPG or disposed of by a licensed waste management company. Drum residues are disposed of either by incineration or taken to landfill.

5.6. Public exposure

The notified polymer is intended only for use in industry. It will not be available to the public.

Members of the public may make dermal contact with products containing the notified polymer. However, the exposure to public will be negligible because the notified polymer is bound within a matrix and unlikely to be bioavailable.

6. PHYSICAL AND CHEMICAL PROPERTIES

The notified polymer is not isolated during its lifecycle and always present as polymer solution. Data of physical and chemical properties are generated from the polymer solution containing 30-60% notified polymer.

Appearance at 20°C and 101.3 kPa	A volatile liquid
Boiling Point	82-240°C
Remarks	Based on the mixed organic solvents
Density	1000 kg/m ³

METHOD	ISO 2811	
Vapour Pressure		<0.13 kPa at 20°C
Water Solubility		Not determined. The notified polymer is insoluble in water and is generally dissolved in hydrocarbons throughout its use. Low water solubility may be expected from its largely hydrophobic structure.
Hydrolysis as a Function of pH		Not determined. Based on the structure, although there are some groups susceptible to hydrolysis, this is not likely to occur at normal environmental pH ranges.
Partition Coefficient (n-octanol/water)		Not determined. Given the nature of the polymer it is likely to have a high partition coefficient, as it is hydrophobic.
Adsorption/Desorption		Not determined. As the solvent evaporates from the polymer solution it will become more viscous and will readily bind to soil or sediment thereby becoming immobilised.
Dissociation Constant		Not determined. The polymer has a small amount of acid functionality present which is expected to have typical acidity.
Particle Size		Not determined.
Remarks	The polymer is present in solution.	
Flash Point		23-32°C
METHOD	ISO 3679	
Remarks	Based on the mixed organic solvents	
Flammability Limits		Upper: 11.2% (explosion) Lower: 1% (explosion)
Remarks	Based on the mixed organic solvents	
Autoignition Temperature		Not determined.
Explosive Properties		Upper explosion: 11.2% Lower explosion: 1%
Remarks	Based on the mixed organic solvents	
Reactivity		The notified polymer is stable under recommended storage and handling conditions.

7. TOXICOLOGICAL INVESTIGATIONS

No toxicity data were submitted.

8. ENVIRONMENT

No environmental fate data were provided.

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

No environmental exposure of the notified polymer is expected when the polymer is incorporated into the coating product and used to coat coils because the polymer will be cured to form a hard surface coating, which will be inert. The product will also be covered by subsequent layers of surface coating. At the end of their useful life, the metal panels coated with the product are likely to be either recycled for steel reclamation or placed into landfill.

Less than 10 kg of the notified polymer is expected to be generated as waste each year during formulation and less than 100 kg from application of the coating product. Waste generated at both the production and application sites are recycled or converted to an inert solid, which is incinerated or disposed of to landfill.

The notified polymer is not water soluble. If accidentally released into the sewer, the polymer is not expected to remain in the water compartment, but rather is expected to flocculate and form solids. These can be removed for disposal in landfill, where the polymer will occur in a dried out and polymerised form and hence is not expected to be mobile and leach from the soil. While the substance is not expected to be readily degradable, it will undergo slow degradation through both biotic and abiotic processes.

Some of the notified polymer may be destroyed by incineration. Wastes disposed of through a licensed waste disposal contractor are also expected to be incinerated. Recycled car panels containing the polymer are likely to be destroyed in blast furnaces thereby incinerating the polymer in the primer. Incineration of the polymer is expected to destroy the polymer, producing water vapour and oxides of carbon and nitrogen.

Given its very high molecular weight, the polymer is not expected to cross biological membranes and bioaccumulate (Connell, 1990).

9.1.2. Environment – effects assessment

No ecotoxicological data were provided in the notification dossier. However, under normal usage, the polymer is not expected to enter the aquatic compartment and pose a threat to aquatic organisms.

9.1.3. Environment – risk characterisation

The notified polymer is not expected to pose a significant risk to the environment. The usage patterns indicate that the levels of release of the polymer to the environment will be low. Under normal usage there will be no release into the aquatic environment.

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

Dermal and ocular exposure can occur during formulation and application processes. If the polymer is synthesised in Australia, greater occupational exposure will be expected. However, exposure to significant amounts of the notified polymer is limited because of the engineering controls in place during the formulation and application processes. Personal protective equipment worn by workers will further reduce exposure.

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.

9.2.2. Public health – exposure assessment

The notified polymer will not be sold to the public except in the form of finished articles. There is potential for public exposure to articles comprised wholly or partly of the notified polymer. However, public exposure will be low because the notified polymer is in an inert matrix and unavailable for absorption.

9.2.3. Human health - effects assessment

No toxicity data were provided for the notified polymer. The polymer has a high number average molecular weight of well above 1000, and is unlikely to cross biological membranes. In addition, the notified polymer does not contain any high or moderate concern reactive functional groups. Therefore, the notified polymer is not considered to be hazardous to human health.

9.2.4. Occupational health and safety – risk characterisation

The OHS risk presented by the notified polymer is expected to be low due to the expected low toxicity of the polymer and the low potential for exposure during the formulation and coil coating processes.

9.2.5. Public health – risk characterisation

As there will be negligible exposure of the public to the products containing the notified polymer the health risk to the public from exposure to the notified polymer is considered low.

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

10.1. Hazard classification

Based on the available data the notified polymer is not classified as hazardous under the NOHSC *Approved Criteria for Classifying Hazardous Substances*.

10.2. Environmental risk assessment

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

10.3. Human health risk assessment

10.3.1. Occupational health and safety

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

10.3.2. Public health

There is Negligible Concern to public health based on its reported use pattern.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

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

11.2. Label

The label for the product containing the polymer provided by the notifier was in accordance with the NOHSC *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.

12. RECOMMENDATIONS

CONTROL MEASURES
Occupational Health and Safety

- No specific measures are required for the notified polymer, however, in the interests of good occupational health and safety, appropriate protective equipment should be worn when handling the imported polymer solution.

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

- The notified polymer should be disposed of according to methods outlined in the MSDS. The polymer should not be allowed to enter drains or waterways. Wastes should be recycled or disposed of through a licensed waste management facility.

Emergency procedures

- Spills/release of the notified chemical should not be allowed to enter drains or waterways, and be handled by containing and collecting spills with non-combustible absorbent material, such as sand, earth or vermiculite and placed in a suitable container for disposal in accordance with local regulations.

12.1. 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(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.

13. BIBLIOGRAPHY

Connell DW (1989) General characteristics of organic compounds which exhibit bioaccumulation. In: Connell DW ed. Bioaccumulation of xenobiotic compounds. Boca Raton, USA, CRC Press, pp 47-57.

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