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

**FULL PUBLIC REPORT**

**Polymer in WB-241AM**

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**Director  
NICNAS**

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**FULL PUBLIC REPORT****Polymer in WB-241AM****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT(S)

PPG Industries Australia Pty Ltd (ABN 82 055 500 939) of McNaughton Road Clayton VIC 3168

## NOTIFICATION CATEGORY

Polymer of Low Concern

## EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical Name, Other Names, CAS Number, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, Use Details and Import Volume.

## 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

None

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

Polymer in WB-241AM

## PLC CRITERIA JUSTIFICATION

<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 notified polymer will be imported as approximately 14% in a solvent based mixture. The notified polymer will be approximately 50% of the solids of the mixture.

## 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>	< 3	< 3	< 3	< 3	< 3
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## USE

The polymer will be used in a paint coating to be applied to cars and car parts in a production line process at the car manufacturing plant.

## 5. PROCESS AND RELEASE INFORMATION

### 5.1. Operation Description

The notified polymer will be imported as an ingredient of Polymer in WB-241 AM at a concentration of 14%. After import, the notified polymer will be formulated.

#### Paint Formulation

##### Laboratory Scale

The ingredients required for making the paint, including the notified polymer (concentration 14%), will be combined in a container in the laboratory under stirring. The paint (containing maximum 2% notified polymer) will then be sprayed onto panels in a spraybooth having appropriate extraction. The panels are then baked in an oven and the finished paint film subjected to various tests.

##### Production Scale

The polymer solution (containing 14% notified polymer) will be pumped from 200 L drums into the closed mixer via a lance the operator places in the drum. The lance is manually transferred from drum to drum until the required amount of polymer has been added to the mixer. Following mixing with other ingredients, approximately 500 mL of the formulated paint (containing maximum 2% notified polymer) will be sampled for testing. When approved the formulated paint will be filled through dedicated pipework and filling equipment into closed head 200 L drums. The filling equipment automatically places a short fill pipe through the bung hole in the top of the drum and fills the drum.

##### QC Testing

The operator will adjust the paint containing the notified polymer and spray panels for baking and testing. Several tests such as solids, viscosity and weight per litre are performed on the wet paint.

#### Paint Application

The 200 L drums of formulated paint (containing maximum 2% notified polymer) will be pumped into the circulating mix tank using a dedicated lance, pipework and pump. Once in the tank, solvent is added to adjust the paint to application viscosity. This paint will be pumped around a circulation system from which it is sprayed onto car bodies by robots and operators in a dedicated ventilated spray area. Operators spray the paint onto specific areas of the car that are not painted by the robots. The painted cars travel through an oven where the notified polymer undergoes a heat activated chemical reaction with other polymers in the paint, thereby forming the final paint film on the car.

During production breaks, operators use cloths dampened with solvent to clean residual paint from the spray equipment.

## 6. EXPOSURE INFORMATION

### 6.1. Summary of Occupational Exposure

Exposure to the notified polymer at a concentration of 14% (pre-manufacture) and 2% (post-manufacture) is expected. However, the possibility of dermal exposure to drips and spills exists during opening and closing of container, transfer of the notified polymer and formulated paint product, collection of quality control samples, quality control testing, cleaning of the tanks and general maintenance. Workers are provided with appropriate protective equipment i.e. safety glasses, gloves, and protective clothing as per the MSDS.

Certain quality control tests involve spraying. The potential for exposure by inhalation of paint is prevented as the paint is only sprayed in a properly designed spray-booth.

Overall, the risk to workers is expected to be low due to the expected low toxicity of the notified polymer and the use of engineering controls and PPE.

#### Paint Application

The majority of the spray application is automatic (by robots). Where manual spray coating occurs (to certain areas of the car) the worker will wear a fully body suit and vapour masks. Exposure to the notified polymer at a concentration up to 2% could occur during transfer of the paint and cleaning of the spray equipment. Overall, the risk to workers is expected to be low due to the expected low toxicity and the use of engineering controls and PPE.

### 6.2. Summary of Public Exposure

The notified polymer will not be directly available to the public. The notified polymer is used in an automotive paint that is cured prior to reaching the public. The notified polymer does not exist as a separate entity in the polymer-coating network. Therefore, although the public will come into contact with the exterior of car bodies, the notified polymer will not be available for exposure.

### 6.3. Summary of Environmental Exposure

#### 6.3.1. Environmental Release

Under normal use procedures, losses of the notified polymer through overspray, mixing of chemicals and cleaning of plant equipment as well as losses from residues in containers have been estimated to be a maximum of 40%, which equates to a maximum of 1.22 tonnes per annum. Wastes from application will be hardened and disposed of to landfill.

Empty drums that contained the paint will be sent to drum re-conditioners where the waste is incinerated. Residual waste of the notified polymer in paint drums is expected to be 2% of imported volume.

The remainder of the notified polymer undergoes a chemical reaction with other polymer components in the paint during the paint baking process, to form the final paint film. It is not available for direct release to the environment. Disposal of the automobile may be through landfill or recycling, and the fate of the paint will be related to that of the automobile.

#### 6.3.2. Environmental Fate

Wastes remaining in drums are sent to drum recyclers and incinerated. Equipment washing are captured, collected and disposed of by licensed waste disposal contractors in cement kilns, and wastes from the painting application process are collected and disposed of in licensed landfill. In landfill the notified polymer is not expected to hydrolyse, despite the presence of hydrolysable functionality, nor be mobile due to its low water solubility. It is, however, expected to degrade slowly via biotic and abiotic process.

## 7. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance at 20oC and 101.3 kPa</b>	Viscous liquid (dissolved in organic solvent)
<b>Melting Point/Glass Transition Temp</b>	Not available
<b>Density</b>	1.1kg/m <sup>3</sup> (estimated)
<b>Water Solubility</b>	Over 10.0 g/L
<b>Dissociation Constant</b>	Likely to be ionised throughout the environmental pH range.
<b>Particle Size</b>	Not applicable. The notified polymer is a solution in solvent.
<b>Reactivity</b>	The notified polymer will thermally degrade at temperatures above 200°C although the specific temperature is unknown. Polymer in WB-241 is incompatible with strong mineral acids, strong alkalis and strong oxidising agents.
<b>Degradation Products</b>	Not applicable

## **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**

Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is overchelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. Whether this applies to the notified polymer is unclear. However, the toxicity to algae is likely to be further reduced due to the presence of calcium ions, which will bind to the functional groups.

## **10. RISK ASSESSMENT**

### **10.1. Environment**

Up to 1.22 tonne per annum of waste notified polymer may be generated during coatings manufacturing and use each year as a result of incidental spills, equipment cleaning, and residues in containers. The majority of this waste will be sent to landfill for disposal. In landfill, the notified polymer in solid wastes is expected to be immobile, and eventually will degrade through biotic and abiotic processes, and consequently, should not pose a significant risk to the environment.

The notified polymer is not expected to be overly toxic to aquatic or terrestrial life. The notified polymer is anionic, but as noted above, its aquatic toxicity is not expected to be in the highest range. Due to the high molecular weight, no bioconcentration of this polymer is expected. The notified polymer will remain in the soil or sink and remain in the sediment of an aquatic environment.

Most of the notified polymer used in automotive finishes will eventually be incorporated in metal recycling programs or sent to landfill for disposal following its lifecycle. During reclamation, the notified polymer would be destroyed in furnaces and converted to water vapour and oxides of carbon, nitrogen and phosphorous.

Given the above, environmental exposure and the overall environmental risk are expected to be low.

### **10.2. Occupational Health and Safety**

The OHS risk presented by the notified polymer is expected to be low due to limited exposure as a result of the use of engineering controls and PPE, and the predicted low toxicity of the notified polymer.

### **10.3. Public Health**

The paint formulated with the notified polymer is intended for use by professional spray painters in automotive manufacturing plants only, and will not be sold to the public. Following application, the notified polymer will become trapped within a film and will not be bioavailable. Therefore, the risk to public from exposure to the notified polymer is considered to be negligible.

## 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 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, work practices or personal protective equipment 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.

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

- Personal protective equipment required during formulation are:
  - Eye protection (safety glasses)
  - Gloves impervious to organic solvents and chemical
  - Air mask in closed space
- 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 end user to minimise environmental exposure during (manufacture, formulation, use) of the notified polymer:
  - Take care in handling to prevent environmental exposure and contamination of water through leaks or spills.

#### Disposal

- The notified polymer should be disposed of by landfill or incineration.

#### Storage

- The following precautions should be taken regarding storage of the notified polymer:
  - Store in a cool, dry and well-ventilated area.
  - Avoid sunlight.
  - Keep away from ignition or heat source.

#### Emergency procedures

- Spills of the notified polymer should be handled according to related regulations. Take precautions so as not to pollute rivers, lakes etc. Avoid from flowing out to river or drainage ditch, when washed with water.

### 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.