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

**FULL PUBLIC REPORT**

**Polymer in Polyether Polyurethane Dispersion WR-43-4942**

This Self Assessment has been compiled by the applicant and adopted by NICNAS in accordance with the provisions of the *Industrial Chemicals (Notification and Assessment) Act 1989* (Cwlth) (the Act) and Regulations. This legislation is an Act of the Commonwealth of Australia. The National Industrial Chemicals Notification and Assessment Scheme (NICNAS), administered by the Department of Sustainability, Environment, Water, Population and Communities has screened this assessment report. The data supporting this assessment will be subject to audit by NICNAS.

For the purposes of subsection 78(1) of the Act, this Full Public Report may be inspected at our NICNAS office by appointment only at Level 7, 260 Elizabeth Street, Surry Hills NSW 2010.

This Full Public Report is also available for viewing and downloading from the NICNAS website or available on request, free of charge, by contacting NICNAS. For requests and enquiries please contact the NICNAS Administration Coordinator at:

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**Director  
NICNAS**

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**FULL PUBLIC REPORT****Polymer in Polyether Polyurethane Dispersion WR-43-4942****1. APPLICANT AND NOTIFICATION DETAILS**

## APPLICANT

PPG Industries Australia Pty Ltd (ABN 82 055 500 939)  
McNaughton Rd, Clayton Victoria 3168

## 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, CAS Number, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities and Import Volume

## PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

## NOTIFICATION IN OTHER COUNTRIES

China Exempt Polymer [2006]1112

**2. IDENTITY OF CHEMICAL**

## MARKETING NAME(S)

Polyether polyurethane dispersion WR-43-4942

## MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (NAMW) > 10,000 Da

## REACTIVE FUNCTIONAL GROUPS

The notified polymer contains only low concern functional groups.

**3. PLC CRITERIA JUSTIFICATION**

<i>Criterion</i>	<i>Criterion met</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. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance at 20°C and 101.3 kPa</b>	The dried polymer is a clear, nearly colourless flexible plastic (information provided the notifier).
<b>Melting Point/Glass Transition Temp</b>	0°C (polymer dispersion, based on water)
<b>Density</b>	1052 kg/m <sup>3</sup> at 20°C (notified polymer) 1030 kg/m <sup>3</sup> at 20°C (dispersion)
<b>Water Solubility</b>	3.3 g/L at 20°C
<b>Dissociation Constant</b>	EPA Method OPPTS 830.7840 Shake Flask Method The notified polymer is a salt and is expected to ionise at environmental pH (4-9).
<b>Reactivity</b>	The polymer is expected to be stable, and not expected to depolymerise or degrade under normal environmental conditions.
<b>Degradation Products</b>	None under normal conditions of use

#### 5. INTRODUCTION AND USE INFORMATION

##### 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>	1-5	1-5	1-5	1-5	1-5

##### USE AND MODE OF INTRODUCTION AND DISPOSAL

###### Mode of Introduction

The polymer will be imported at < 40% as a dispersion in water in 200 L drums. It will be imported via Melbourne harbour, transported by road, and stored at the notifier's warehouse prior to reformulation.

###### Reformulation/manufacture processes

The polymer dispersion will be reformulated at the notifier's site producing leather paint containing up to 25% notified polymer. The finished paint will be stored and transported to customers in 20 L pails by truck.

###### Use

The notified polymer will be used as a component of waterborne leather paints for industrial use only, and will not be available to the general public. The coating will be applied by spray and roller.

## 6. HUMAN HEALTH IMPLICATIONS

### 6.1. Exposure Assessment

#### OCCUPATIONAL EXPOSURE

##### *Transport and Storage*

Waterfront, transport and warehouse workers will only be exposed to the notified polymer in the event of accidental spillage. Unloading containers from ships will involve 4 – 6 workers for 2 hours per day, 10 days per year. Transport to the notifier's site will involve 3 workers for 4 hours per day, 10 days per year.

##### *Laboratory Development*

Development of the leather paint will involve 3 laboratory workers. Potential exposure of these workers may occur for up to 8 hours per day, for up to 80 days per year. Exposure through ocular and dermal routes during the handling of small quantities of the polymer solution and the finished leather paints will be minimised by the use of appropriate personal protective equipment such as a laboratory coat, impervious gloves and safety glasses.

##### *Reformulation (Paint Manufacture)*

The reformulation of polymer dispersion into paints will involve 6 workers for up to 4 hours per day on a daily basis. Three groups of workers will participate in this reformulation process, including those involved in paint mixing, quality control and drum filling. The mixing vessels will be enclosed and fitted with local exhaust ventilation. Accidental dermal and ocular exposure to the polymer may be possible during charging of the mixing vessels, sampling of quality control samples and draining of the vessels. The risk of exposure will be mitigated by the use of both personal protective equipment, consisting of impervious gloves, coveralls and goggles, and engineering controls, consisting of local exhaust ventilation to minimise exposure to volatiles and particulates.

##### *End Use*

Throughout end use, 2 spray painters and/or 2 roller coater operators may be exposed for up to 4 hours per working day to the notified polymer via dermal, inhalation and ocular routes during the manufacturing and cleaning process. The risk of exposure will be minimal as application occurs within a ventilated booth and as the workers will use personal protective equipment for both the application and the subsequent cleaning process. After application the paint is cured by the application of heat. Once this process is complete the notified polymer is contained within an inert matrix and is not bioavailable.

#### PUBLIC EXPOSURE

The notified polymer will not be sold to the public except in the form of finished articles. While the public will be exposed to finished leather articles containing the notified polymer, the incorporation of the notified polymer in an inert matrix will mean it is no longer bioavailable.

### 6.2. Toxicological Hazard Characterisation

No toxicological data were submitted. The notified polymer meets the PLC criteria and can therefore be considered to be of low hazard.

### 6.3. Human Health Risk Assessment

#### OCCUPATIONAL HEALTH AND SAFETY

The OH&S risk presented by the notified polymer is expected to be low, based on low hazard and low exposure, as well as the engineering controls and personal protective equipment used by workers.

#### PUBLIC HEALTH

The notified polymer is intended for industrial use only. It will not be sold to the general public. The public will come into contact with leather products coated with the notified polymer; however, the notified polymer will then be in a cured inert polymer matrix and thus will not be bioavailable. Hence, the risk to public health from the notified polymer is considered to be acceptable.

## 7. ENVIRONMENTAL IMPLICATIONS

## 7.1. Exposure Assessment

### ENVIRONMENTAL RELEASE

The notified polymer is not expected to be released directly to the environment during transport or at the reformulation site. During the paint formulation process it is estimated that the total waste notified polymer produced from spills, drum residues and equipment cleaning will be 4.5% of the total import volume. Residues from spills and equipment cleaning will become part of the waste solvent stream and settled polymer solids will be disposed of to landfill. Empty drums will be collected by drum recyclers and the polymer residues will be disposed of according to State/Territory regulations.

The paint containing the notified polymer is applied to leather surfaces with approximately 100% efficiency via roller coating applicators and 70% efficiency by spray application. Of the paint applied by spray, approximately 30% will be released as overspray and will be captured by standard engineering controls, treated and the solid waste disposed of by licensed waste contractors.

Approximately 5% of the imported volume of notified polymer will be washed out during cleaning of the spray gun and mixing equipment and will be collected and disposed of in the same manner as waste from spray booths. It is estimated that a further 5% of imported notified polymer will remain as residue in the empty paint containers and these residues will be disposed of to landfill.

### ENVIRONMENTAL FATE

In the event of an accidental spillage of the notified polymer into waterways, the polymer is not expected to dissolve but rather disperse or precipitate out of solution and settle to sediment. In landfill, the notified polymer is anticipated to be immobilised in the soil and sediments due to its high molecular weight where it will degrade by biotic and abiotic processes to form water and oxides of carbon and nitrogen.

Once applied to leather articles the notified polymer will be incorporated into an inert polymer matrix and will be neither bioavailable nor able to bioaccumulate. Leather articles coated with the polymer are expected to be disposed of to landfill at the end of their useful lives.

## 7.2. Environmental Hazard Characterisation

No ecotoxicological data were submitted. Anionic polymers are known to be moderately toxic to algae. The mode of toxic action is over-chelation of nutrient elements needed by algae for growth. The highest toxicity is when the acid is on alternating carbons of the polymer backbone. This mode of action does not apply to the notified polymer and the polymer is therefore unlikely to pose an overchelation hazard to algae.

## 7.3. Environmental Risk Assessment

Accidental spills of the notified polymer are expected to be negligible. Spills of notified polymer to land are expected to bind to soil, while spills of notified polymer to the aquatic compartment are not expected to dissolve but rather disperse or settle to sediment. Up to 40% of notified polymer will contribute to waste during paint manufacturing and use as a result of incidental spills, equipment cleaning, overspray and residues in containers. The majority of this waste will be collected by licensed waste contractors for disposal. Most of the notified polymer will be used in leather coatings and will eventually be incorporated in an inert polymer matrix. Leather articles coated with notified polymer will ultimately be sent to landfill for disposal at the end of their useful lives. In landfill, the notified polymer in solid wastes and on the surface of leather articles is expected to be immobile, and eventually will degrade through biotic and abiotic processes. Therefore, based on its assumed low hazard and reported use pattern, the notified polymer is not expected to pose an unacceptable risk to the environment.

## 8. CONCLUSIONS

### 8.1. Level of Concern for Occupational Health and Safety

Under the conditions of the occupational settings described, the notified polymer is not considered to pose an unacceptable risk to the health of workers.

### 8.2. Level of Concern for Public Health

When used in the proposed manner, the notified polymer is not considered to pose an unacceptable risk to public health.

### 8.3. Level of Concern for the Environment

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

## 9. 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.

- Spray application should be carried out in accordance with the National Guidance Material for Spray Painting.
- 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 reformulation of the notified polymer:
  - Local exhaust ventilation with filter
  - Bunding
- The following control measures should be implemented by the leather applicator to minimise environmental exposure during use of the notified polymer:
  - Exhaust ventilation with filter

#### Disposal

- The notified polymer should be disposed of to landfill.

#### Storage

- The following precautions should be taken by the notifier regarding storage of the notified polymer:
  - Bunding

#### Emergency procedures

- Spills and/or accidental release of the notified polymer should be handled by physical containment, collection and subsequent safe disposal.

## 10. REGULATORY OBLIGATIONS

### Secondary Notification

This risk assessment is based on the information available at the time of notification. The Director may call for the reassessment of the chemical under secondary notification provisions based on changes in certain circumstances. Under Section 64 of the *Industrial Chemicals (Notification and Assessment) Act (1989)* the notifier, as well as any other importer or manufacturer of the notified chemical, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified chemical is listed on the Australian Inventory of Chemical Substances (AICS).

Therefore, the Director of NICNAS must be notified in writing within 28 days by the notifier, other importer or manufacturer:

- (1) Under Section 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 Section 64(2) of the Act; if
  - the function or use of the chemical has changed from a component of waterborne leather paints for industrial use, or is likely to change significantly;
  - the amount of notified polymer being introduced has increased, or is likely to increase, significantly;
  - the chemical has begun to be manufactured in Australia;
  - additional information has become available to the person as to an adverse effect of the chemical on occupational health and safety, public health, or the environment.

The Director will then decide whether a reassessment (i.e. a secondary notification and assessment) is required.

### *Material Safety Data Sheet*

The notifier has provided an MSDS as part of the notification statement. The accuracy of the information on the MSDS remains the responsibility of the notifier.