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

FULL PUBLIC REPORT

Polymer in Uralac SC890 M1-55

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**Director
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FULL PUBLIC REPORT

Polymer in Uralac SC890 M1-55

1. APPLICANT AND NOTIFICATION DETAILS

APPLICANT

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

NOTIFICATION CATEGORY

The notified polymer meets the PLC criteria.

EXEMPT INFORMATION (SECTION 75 OF THE ACT)

Data items and details claimed exempt from publication:

Chemical name and CAS number, molecular formula, structural formula, means of identification, molecular weight, estimated import volumes.

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

Polymer in Uralac SC890 M1-55

3. COMPOSITION

POLYMER CONSTITUENTS

The notified polymer is composed of monomers listed on AICS

HAZARDOUS IMPURITIES/RESIDUAL MONOMERS

The notified polymer does not contain any hazardous residual monomers above the relevant cut-off concentration.

4. INTRODUCTION AND USE INFORMATION

MAXIMUM INTRODUCTION VOLUME OF NOTIFIED POLYMER (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 is a component (< 20%) in a paint used in the packaging industry, in particular as a clear varnish to coat cans.

5. PROCESS AND RELEASE INFORMATION

5.2. Operation Description

The notified polymer will be imported as a component of the product, Uralac SC890 M1-55, comprising up to 70% of the product in solvent naphtha and 2-butoxyethanol. It will be imported in 200 kg dangerous goods approved steel drums transported in shipping containers. It will be reformulated into a surface coating product at the notifier's plant at Clayton, Vic., and packaged into paint containers of 20-200 L. The final concentration of the notified polymer in the product, PPG8128-806A, is between 10 and 30%.

5.3. Occupational exposure

The paint is manufactured in mixers under local exhaust ventilation to capture volatiles at source. The ventilation system is operated and maintained to meet the exposure standards for the hydrocarbon solvent blend containing the notified polymer. The number of workers exposed is:

Paint manufacture	3 workers, 8 hours/day, 30 days/year
Quality control testing	3 workers, 8 hours/day, 30 days/year
Filling	3 workers, 8 hours/day, 30 days/year.

The possibility exists for dermal exposure due to minor spillage, cleaning and maintenance of equipment and from rinsing of the steel drums.

Roller coating of cans is carried out in an automated process with effective fume extraction systems. Engineering controls are designed to ensure the occupational exposure limits for organic solvents are met. Thirty workers will be exposed for 4 hours/day, 220 days/year. Dermal exposure may occur from minor spillage and from cleaning and maintenance of equipment.

5.4. Release

RELEASE OF CHEMICAL AT SITE

During coatings production, the notifier estimates that up to 100 kg per annum of waste containing the notified polymer will be generated from cleaning up minor spills, during the cleaning of formulation equipment and the rinsing of import drums.

RELEASE OF CHEMICAL FROM USE

Given a transfer efficiency of at least 90%, up to 1000 kg per annum of the notified polymer will be disposed of during coatings application and equipment cleaning and up to 100 kg of the notified polymer will be disposed of during drum cleaning.

5.5. Disposal

The notified polymer in waste resulting from coatings formulation and application and empty import drums will be disposed of to landfill. Incineration of wastes may also occur. The solvent used to clean formulation equipment will be collected and undergo the Dusol process by which the solvent is recycled and the remaining solid waste disposed of in landfill or incinerated.

5.6. Public exposure

The public is not likely to be exposed to the notified polymer during transport, manufacture, coating and disposal. The public will make dermal contact with paint containing the notified polymer on the exterior of metal cans. However, the paint film will be fully cured and not biologically available.

6. PHYSICAL AND CHEMICAL PROPERTIES

Appearance at 20°C and 101.3 kPa	Polymer solution is a viscous liquid.
Density	1035 kg/m ³
Water Solubility/extractability	Low solubility/extractability

Remarks	The notified polymer is not isolated from the organic solvent in which it is produced and as a result no water solubility data is available. However, a solution/extractability test has been included in the submission. Aliquots of the ground test material (10 g) were added to water (1000 mL) and stirred for a period of 24 h at 20°C. After this time the solution was filtered to remove excess polymeric material and the total organic carbon content of the aqueous phase was determined. The authors of the study indicated that as the carbon content of the polymer was not known it was not possible to determine the mean dissolved polymer concentrations in the aqueous extracts. However based on total organic carbon content, a mean corrected value of 0.081 mg/L of carbon was found in the aqueous extracts. All four replicates and a blank were subjected to analysis for the
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solvents present, butyl glycol, Solvesso and butyl glycol acetate, by GC/FID. This analysis indicated that none of these components was present at or above the limit of detection of 5 mg/L. Therefore, the origin of the organic carbon found in the samples after filtration cannot be specifically attributed to the polymer. The result does suggest that the notified polymer is likely to have a low water solubility which is consistent with the predominantly hydrophobic character of its monomers.

TEST FACILITY Chemex (2002)

Hydrolysis as a Function of pH Not determined

Remarks The notified polymer contains ester linkages that could be expected to undergo hydrolysis under extreme pH conditions. However, in the environmental pH range of 4 to 9, significant hydrolysis is unlikely to occur.

Partition Coefficient (n-octanol/water) Not determined

Remarks The notified polymer's likely hydrophobic nature is indicative of partitioning into the organic phase.

Adsorption/Desorption Not determined

Remarks The notified polymer is expected to be relatively immobile in soil due to its expected low water solubility and large molecular weight.

Dissociation Constant Not determined

Remarks The notified polymer contains carboxylic acid and alcohol functional groups, which are expected to have typical acidity.

Particle Size Not applicable

Flammability

Remarks Flammability limits, autoignition temperature and explosive properties are not available for the notified polymer in isolation. For the polymer solution, the relevant values for these properties will be those of the solvents, as detailed on the MSDS.

Viscosity >300 mPa.s

8. ENVIRONMENT

9. RISK ASSESSMENT

9.1. Environment

9.1.1. Environment – exposure assessment

Exposure

During coatings production up to 100 kg per annum of waste containing the notified polymer will be generated from cleaning up minor spills, the cleaning of formulation equipment and the rinsing of import drums. Up to a further 1000 kg per annum will be disposed of during coatings application. After evaporation of the solvent using the Dusol process, wastes containing the notified polymer will be sent to landfill. Incineration of wastes may also occur. At the end of their useful lives, the can to which the coating has been applied will also be sent to landfill.

Fate

The notified polymer is expected to be insoluble in water and therefore is unlikely to be mobile in either aquatic or terrestrial compartments. As a consequence, in landfill it is expected to associate with soil and sediment and slowly degrade through biotic and abiotic processes to water and oxides of carbon, nitrogen and sulphur. Incineration of the notified polymer will produce water vapour and oxides of carbon.

Due to its high molecular weight (>1000 NAMW), the notified polymer is not expected to bioaccumulate.

9.1.2. Environment – effects assessment

No ecotoxicological data were submitted.

9.1.3. Environment – risk characterisation

The majority of the notified polymer will be applied as a coating to the external surface of cans and, once applied and heat cured, poses little risk to the environment. As the coating disintegrates in landfill, the notified polymer is expected to associate with soil and sediment where it will slowly degrade through biotic and abiotic processes to water and oxides of carbon.

Based on low environmental exposure resulting from its limited potential for release to sewer and high coating transfer efficiency, the risk to the environment is expected to be low.

9.2. Human health

9.2.1. Occupational health and safety – exposure assessment

Dermal and ocular exposure may occur during certain formulation processes, and during coating application. However, exposure to significant amounts of the notified polymer is limited because of the engineering controls (exhaust ventilation) and personal protective equipment worn by workers.

After application and once dried, the coating containing the notified polymer is cured into an inert matrix and is 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 available to the public. Members of the public may come into contact with products containing the notified polymer, however, as the polymer is cured and not bioavailable, exposure is assessed as negligible.

9.2.3. Human health - effects assessment

The notified polymer meets the PLC criteria and therefore low hazard is expected due to the lack of reactive functional groups and the inability of the polymer to penetrate biological membranes.

9.2.4. Occupational health and safety – risk characterisation

Based on the likely low hazard of the notified polymer and the limited potential for exposure, the OHS risk presented by the notified polymer is expected to be low.

9.2.5. Public health – risk characterisation

The potential for public exposure to the notified polymer during transport, manufacture, use and disposal is assessed as negligible. Members of the public will make dermal contact with paint containing the notified polymer on the exterior of metal cans. However, the paint film will be fully cured and not biologically available. Consequently, the risk to public health is assessed as negligible.

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 notified polymer is not likely to present a hazard to the environment when it is stored, transported and used in the proposed manner.

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 when used in the proposed manner.

11. MATERIAL SAFETY DATA SHEET

11.1. Material Safety Data Sheet

The MSDS of the notified polymer and the product containing the polymer provided by the notifier were in accordance with the NOHSC *National Code of Practice for the Preparation of Material Safety Data Sheets* (NOHSC, 1994a). They are 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 notified 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

- Employers should ensure that the following personal protective equipment is used by workers to minimise occupational exposure to the notified polymer:

- For handling the polymer solution, impervious gloves, coveralls and goggles should be worn.
- When handling open containers of paint, anti-static flame retardant overalls, anti-static footwear, impervious gloves and eye protection is recommended.
- If products and mixtures containing [the notified chemical] 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

Disposal

- Once cured, solid waste containing the notified polymer should be disposed of in landfill or by incineration.

Emergency procedures

- Spills/release of the notified polymer should be contained as described in the MSDS (ie. Collect spilled material with an inert absorbent) and the resulting waste disposed of to an authorised landfill.

Secondary notification

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

Under subsection 64(1) of the Act; if

- the notified polymer is introduced in a chemical form that does not meet the PLC criteria.

No additional secondary notification conditions are stipulated.

13. BIBLIOGRAPHY

Chemex (2002) Solution/Extraction Behaviour of Uracron SC890 M1-55. Reference No. ENV6047/030215. Chemex Environmental International Limited, Cambridge, UK (unpublished report provided by the notifier).

National Occupational Health and Safety Commission (1994a) National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC:2011(1994)]. Australian Government Publishing Service, Canberra.

National Occupational Health and Safety Commission (1994b) National Code of Practice for the Labelling of Workplace Substances [NOHSC:2012(1994)]. Australian Government Publishing Service, Canberra.