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October 2010

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

FULL PUBLIC REPORT

Polymer in RL2645

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 Health and Ageing and 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 RL2645****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT

Akzo Nobel Pty Ltd (ABN 59 000 119 424)
51 McIntyre road,
Sunshine North 3020 Victoria

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, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents, Residual Monomers/Impurities, Use Details, Import Volume, Concentration of Polymer in Imported Product.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None.

NOTIFICATION IN OTHER COUNTRIES

USA and Japan.

2. IDENTITY OF CHEMICAL

MARKETING NAME(S)

RL2645 (Product containing the notified polymer up to 35% concentration)

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (NAMW) >1000 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

Appearance at 20°C and 101.3 kPa	Milky white non-viscous liquid (notified polymer up to 35% concentration in water).
Melting Point/Glass Transition Temp	N/A (notified polymer is not extracted from water).
Density	980 kg/m ³ at 20°C (notified polymer up to 35% concentration in water).
Water Solubility	Not determined. The notified polymer is expected to be dispersable in water due to structural considerations and experience of use.
Dissociation Constant	Not determined. The notified polymer has functions expected to ionise at environmental pH (4–9).
Particle Size	Not determined as notified polymer is never isolated from water.
Reactivity	Stable under normal environmental conditions.
Degradation Products	None under normal conditions of use. The notified polymer contains hydrolysable functionality, but hydrolysis is unlikely to occur under ambient conditions in the environmental pH range (4–9).

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>	1-2	1-2	1-2	1-2	1-2

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

The notified polymer will be shipped from Japan as a dispersion in water containing up to 35% w/w of the notified polymer in export quality, closed head lined steel drums. The port of entry will be Melbourne, Victoria. The drums will be transported from the wharf to the Sunshine North factory by road.

Reformulation/manufacture processes

The notified polymer, as the imported dispersion containing up to 35% w/w in water, will be used in the manufacturing of a waterbased industrial coating.

After arriving at the Akzo Nobel site, the palletised drums have raw material/safety labels affixed and are stored in an approved bunded storage area. The palletised, coded drums are then taken by fork-lift to the paint factory for paint manufacture.

During paint manufacturing, the notified polymer dispersion (at up to 35% w/w) will be pumped from 200 L drums into the closed mixer. Following mixing with other ingredients, a sample of the paint containing up to 10% of notified polymer is removed for QC. The paint is then filtered and filled into 200 L drums and stored in a warehouse prior to distribution to car manufacturers in Victoria.

Use

The notified polymer will be used as a component of an industrial automotive paint topcoat.

At the car manufacturer's plant, the paint will be pumped into the application tank and then sprayed onto car bodies by robots and operators in a dedicated spray area. The coated cars travel through an oven where the coating is cured.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

- The notified polymer is handled as a dispersion in water at up to 35% concentration during transportation and reformulation and up to 10% concentration during paint application.
- During transport and storage, workers are unlikely to be exposed to the notified polymer except when packaging (steel drums) is accidentally breached.
- Potential occupational exposure to the notified polymer during reformulation is prevented by virtue of safeguards in place for handling such materials. These safeguards include isolation of the paint process, engineering controls such as local exhaust ventilation, safe working practices according to standard operating procedures and personal protective equipment (gloves, overalls, goggles).
- During paint application, the notified polymer is handled as a dispersion; the relevant levels of organic solvents present and residual monomers are the source of exposure hazards.
- Potential occupational exposure to the notified polymer during paint application is prevented by virtue of safeguards in place for other hazardous ingredients in the notified polymer solution. These safeguards include isolation of the process, engineering controls such as local exhaust ventilation, safe working practices according to standard operating procedures and personal protective equipment (gloves, overalls, goggles and respirators).

PUBLIC EXPOSURE

The notified polymer is intended only for use in industry and as such public exposure to the notified chemical is not expected. Also, once applied (as a component in paint) to car bodies, the notified polymer is cured into an inert matrix and is hence unavailable for exposure.

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 OHS 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.

Dermal and ocular exposure may occur during certain processes involving the notified polymer such as container handling, and during reformulation/paint manufacturing/application. However, exposure to significant amounts of the notified polymer would be adequately controlled through the use of fully automated/semi-automated processes, the engineering controls and personal protective equipment. Significant inhalation exposure is not expected from the proposed mode of use in the form of the notified polymer as introduced.

Once the paint has been applied, the notified polymer is cured into an inert matrix and effectively eliminating any potential for exposure.

Overall, the OHS risk presented by the notified polymer is expected to be low, based on the likely low exposure to workers and the assumed low intrinsic hazard of the notified polymer.

PUBLIC HEALTH

The notified polymer is intended only for use at industrial and commercial sites and as such, risk of public exposure to the notified polymer is considered low. Members of the public may make dermal contact with the cars containing the notified polymer. However, the risk to the public from exposure to the notified polymer is considered to be minimal, since the notified polymer is: (a) expected to be of low toxicological hazard, (b) present at low concentration (<10%) in the finished article, and (c) expected to largely trapped within the inert matrix of the finished paint, effectively eliminating any potential for exposure to the public.

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. There is potential for release of the notified polymer during mixing, spray-gun loading, spraying, equipment cleaning, from container residues and in the event of an accidental spill. Up to 25% of the notified polymer will be released through overspray within spray booths but this will be captured by standard engineering controls, treated and the solid waste disposed to landfill. An estimated 2% of the polymer will remain as residues in containers, which will cure and harden before disposal to landfill. Less than 1% of waste polymer will be generated from cleaning application equipment. As the notified polymer will only be used in industrial applications, it is expected that no waste notified polymer will enter the sewerage system or natural waterways.

ENVIRONMENTAL FATE

The notified polymer contains groups that can hydrolyse under severe conditions, but is expected to be stable under normal environmental conditions. Due to its low water solubility, the notified polymer in solid wastes is expected to remain bound within soils and sediments of landfills and eventually degrade through biotic and abiotic processes. If spilt on land, the notified polymer is expected to bind to soil and become immobilised in the soil layer. If spilt to water, it is not expected to dissolve but rather disperse or settle to sediment. The notified polymer is not expected to be readily biodegradable but due to its high molecular weight and low water solubility, it is not expected to bioaccumulate. Upon curing of the paint containing the notified polymer, the polymer becomes part of an inert matrix in the car paint. Ultimately, the metal in the car is usually recycled resulting in the incineration of the notified polymer with release of water vapour and oxides of carbon, nitrogen and sulfur.

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 does not apply to the notified polymer and it is therefore unlikely to pose an overchelation hazard to algae.

7.3. Environmental Risk Assessment

Accidental spills of notified polymer are expected to be negligible. Spills of notified polymer to land are expected to bind to soil and should not be mobile. Spills of notified polymer to waters are not expected to dissolve due to the notified polymer's expected very low water solubility, and it is expected to disperse or to settle to sediment.

Up to 560 kg of notified polymer will be released during coatings manufacturing and use as a result of incidental spills, equipment cleaning, overspray 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.

Most of the notified polymer used in automotive finishes will eventually be incorporated in metal recycling programs or sent to landfill for disposal at the end of the automobile's lifecycle. During metal reclamation, the notified polymer would be destroyed in furnaces and converted to water vapour and oxides of carbon, nitrogen and sulfur. Due to its limited environmental exposure, the risk of the notified polymer to the environment is expected to be low based on its reported use pattern.

8. CONCLUSIONS

8.1. Level of Concern for Occupational Health and Safety

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

8.2. Level of Concern for Public Health

There is Negligible Concern to public health when used in the proposed manner.

8.3. Level of Concern for the Environment

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

9. MATERIAL SAFETY DATA SHEET**9.1. 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.

10. 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 Safe Work Australia *National Guidance Materials for Spray Painting* [NOHSC (1999)].

- 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 (manufacture, formulation, use) of the notified polymer:
 - Bunding
 - Standard operating procedures.

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.
 - Ensure drums tightly sealed.
 - Standard Operating Procedures used.

Emergency procedures

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

10.1. 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.
 - the notified polymer is imported in different form, other than a dispersion (up to 35% concentration in water).or
- (2) Under Section 64(2) of the Act; if
 - the function or use of the chemical has changed from a component of an industrial automotive paint topcoat, or is likely to change significantly;
 - the amount of notified polymer being introduced has increased from 2 tonnes /year, 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.