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

FULL PUBLIC REPORT

Polymer in RP3996

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 the Environment and Water Resources 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 334-336 Illawarra Road, Marrickville NSW 2204.

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 RP3996.****1. APPLICANT AND NOTIFICATION DETAILS**

APPLICANT

Akzo Nobel Pty Limited (ABN 59 000 119 424)
51 McIntyre Road,
Sunshine North, VIC 3020

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

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None

NOTIFICATION IN OTHER COUNTRIES

US EPA: PMN TS-7571PS, 31 October 1991.

2. IDENTITY OF CHEMICAL

MARKETING NAME

RP3996

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (NAMW) >1000

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	The notified polymer at 60-70% w/w in solvent is a clear amber viscous liquid.
Melting Point/Glass Transition Temp	Not applicable (Polymer is not extracted from solution.)
Density	1.08 kg/m ³ at 25°C (for 64% solution)
Water Solubility	Not applicable (Polymer is not extracted from solution.) The notified polymer is expected to have very low water solubility due to the predominantly hydrophobic nature of its monomers.
Dissociation Constant	Not applicable (The notified polymer has an acid equivalent weight of over 10000, i.e., very low acidity.)
Particle Size	Not applicable in solution.
Reactivity	Stable under normal environmental conditions.
Degradation Products	None under normal conditions of use. While it contains hydrolysable functionalities, this should not occur under ambient environmental conditions (pH range 4-9)

Comments

The notified polymer is never isolated. It is formed in solvent at 60 – 70 % w/w content.

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>	30-100	30-100	30-100	30-100	30-100

USE AND MODE OF INTRODUCTION AND DISPOSAL

Mode of Introduction

The notified polymer will be imported from the United States as a solution in solvent containing 60-70% w/w of the polymer in export quality closed head steel drums packed in sea containers. The port of entry will be Melbourne, Victoria. The drums will be transported from the wharf to the reformulation site by road.

Reformulation/manufacture processes

The notified polymer will be reformulated into paint in Victoria.

After arriving at the reformulation site, the palletised drums are stored in the approved bunded storage area after a raw material code and safety stickers are applied. The palletised, coded drums are then taken by fork-lift to the paint factory where the polymer solution is blended with other components using standard operating procedures to produce an industrial paint which is packaged to new 200-litre drums. These are stored in an approved finished goods bunded storage area before being transported by road to the customer.

The paint manufacturing process (reformulation) can be summarised as follows:

- The notified polymer solution is transferred from drums to mixing tank by lifting drums using a drum lifter and pouring the contents directly into the tank, which is under extraction to prevent solvent vapour exposure to workers.
- Solvents (as per paint formula) are added mixed.

- Pigments are added and dispersed under high speed mixing.
- Further solvent, cross-linking polymer and additives are mixed in.
- The resulting paint is tested and adjusted for paint properties.
- The paint is pumped through a hose to a filtration unit for filtering and packaging into 200-litre steel drums and sealed.

Use

The only intended use for the notified polymer will be as a paint component for an industrial application and will not be available to the general public. The liquid paint containing the polymer will be used to coat metal sheet through roller application, which will be exported for use in the building industry. The notified polymer content of the thermosetting paint will be typically 20-30% w/w and the polymer will act as the main film former.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment

OCCUPATIONAL EXPOSURE

- The notified polymer is handled as a solution or as a paint mixture; in both cases the relevant levels of organic solvents present and other ingredients are the source of exposure hazards. The polymer itself (never isolated) is considered non-hazardous.
- Potential occupational exposure to the notified polymer is prevented by virtue of safeguards in place for other hazardous ingredients in the polymer solution and in the paint. These safeguards include isolation of the paint manufacturing process, engineering controls such as local exhaust ventilation, safe work practices according to standard operating procedures and personal protective equipment (gloves, overalls, goggles and respirators).
- The above issues also apply to the industrial applicator of the paint. The industrial paint containing the notified polymer will only be applied using the Coil Coating Application technique. The paint is transferred by a pump from a drum into a trough. Workers involved would wear overalls, goggles and gloves. The paint is picked up from the trough by a stationary roller and applied continuously to a moving metal sheet. From this point the metal and coating are baked and the notified polymer is cured into an inert matrix and the polymer is hence unavailable to exposure.

PUBLIC EXPOSURE

The notified polymer is intended only for use in industry and as such public exposure to the notified chemical is not expected. Once applied to metal sheet, the notified polymer is cured into an inert matrix and is hence unavailable to 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.

PUBLIC HEALTH

The low hazard of the notified polymer translates to a low risk to the public. In addition, paint containing the notified polymer will not be sold to the public, only being used by industrial applicators. Once the paint is applied and cured, the polymer will be contained in an inert matrix, and hence will not be bioavailable. Risk to the public is considered low.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

The amount of notified polymer released directly to the environment will be virtually nil at the reformulation site and at the applicator (coil coating) plant.

Indirectly, release would be:

- Accidental spills (including transport and storage) which would be contained under existing procedures (bundling, use of absorbent material and disposal by licensed centre).
- Reformulation equipment residues would be discarded to approved land-fill.
- Empty drum residues are disposed of by licensed drum reconditioners.

In the coil coating process, the amount of notified polymer (in the paint) lost directly to the environment will be nil. Indirect losses would be :

- Accidental spills, contained under existing procedures whereby the paint containing the polymer would be cleaned up with absorbent material. The absorbed polymer would be incinerated or discarded to approved land-fill. With existing good practices in place, spills would be minimal.
- Empty drums containing paint residues are collected by licensed drum reconditioners who incinerate the contents or wash out the residues. The eventual concentrated residues are incinerated or discarded to approved land-fill. Empty drum residues are estimated at 400 kg of polymer per annum.
- If any painted metal sheet is rejected, it is disposed through metal recycling where the fully cross-linked polymer is incinerated during metal recovery.

It is expected that approximately 800 kg per annum of notified polymer will be generated as waste from the reformulation and coating activities.

ENVIRONMENTAL FATE

The notified polymer contains groups in the backbone that might 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 the soils and sediments of landfills and eventually degrade. 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. It is not expected to be readily biodegradable but due to its high molecular weight, it is not expected to bioaccumulate. Incineration of the notified polymer will result in the formation of water vapour and oxides of carbon and silicon.

7.2. Environmental Hazard Characterisation

No ecotoxicological data were submitted. PLCs without significant ionic functionality are of low concern to the aquatic environment.

7.3. Environmental Risk Assessment

Up to 800 kg per annum of waste notified polymer might be generated during paint manufacture 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 land fill for disposal. In landfill, the notified polymer in solid wastes is expected to be immobile, and eventually degrade, and consequently, should not pose a significant risk to the environment.

Spills of notified polymer to land are expected to bind to soil and should not be mobile or affect ground water due to very low water solubility, and the product is expected to disperse or to settle to sediment.

The notified polymer used in coating metal sheet where it is cured will be exported..

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 considered 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.

- 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 *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(2004)], 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 and the applicator to minimise environmental exposure during reformulation of the notified polymer:
 - bunding.
 - standard operating procedures.

Disposal

- The notified polymer should be disposed of to landfill.
- Empty containers should be sent to local recycling or waste disposal facilities.

Storage

- The following precautions should be taken by the notifier and the applicator regarding storage of the notified polymer:
 - Bunding.
 - Ensure drums tightly sealed.
 - Standard Operating Procedures used.

Emergency procedures

- Spills/release of the notified polymer should be handled by treating with approved absorbent and put into suitable container for disposal. (Full details in MSDS.) Contaminated containers can be re-used after cleaning.

Transport and Packaging

In accordance with regulation 1866, Resin solution, 3, III, 3[Y] for polymer solution.

11. 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 paint component for industrial use only, or is likely to change significantly;
 - the amount of chemical being introduced has increased from 100 tonnes, or is likely to increase, significantly;
 - if 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.