

File No SAPLC/140

August 2012

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

PUBLIC REPORT

Polymer in Polyester LS5613

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 have 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 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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SUMMARY

The following details will be published in the NICNAS *Chemical Gazette*:

ASSESSMENT REFERENCE	APPLICANT(S)	CHEMICAL OR TRADE NAME	HAZARDOUS SUBSTANCE	INTRODUCTION VOLUME	USE
SAPLC/140	Akzo Nobel Pty Ltd	Polymer in Polyester LS5613	No	≤ 50 tonnes per annum	Component of industrial paint

CONCLUSIONS AND REGULATORY OBLIGATIONS

Human health risk assessment

Based on the assumed low hazard and the reported use pattern, the notified polymer is not considered to pose an unreasonable risk to the health of workers and the public.

Environmental risk assessment

Based on the assumed low hazard and the reported use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.

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 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 and the applicator to minimise environmental exposure during manufacture, formulation and use 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 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.

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 polymer 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 polymer, have post-assessment regulatory obligations to notify NICNAS when any of these circumstances change. These obligations apply even when the notified polymer 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 notified polymer has changed from component of industrial paint, or is likely to change significantly;
 - the amount of polymer being introduced has increased, or is likely to increase, significantly;
 - the method of manufacture of the notified polymer in Australia has changed, or is likely to change, in a way that may result in an increased risk of an adverse effect of the notified polymer on occupational health and safety, public health, or the environment;
 - additional information has become available to the person as to an adverse effect of the notified polymer 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 MSDS of the product containing the notified polymer provided by the notifier was reviewed by NICNAS. The accuracy of the information on the MSDS remains the responsibility of the applicant.

ASSESSMENT DETAILS**Polymer in Polyester LS5613****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, Molecular and Structural Formulae, Molecular Weight, Polymer Constituents,
Residual Monomers/Impurities, Manufacture Volume.

PREVIOUS NOTIFICATION IN AUSTRALIA BY APPLICANT(S)

None.

NOTIFICATION IN OTHER COUNTRIES

None.

2. IDENTITY OF CHEMICAL**MARKETING NAME(S)**

RP4741 (containing 55-65% notified polymer)
Polyester LS5613 (containing 55-65% notified polymer)

MOLECULAR WEIGHT (MW)

Number Average Molecular Weight (NAMW) > 1000 Da

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**

A clear amber viscous liquid (the notified polymer at 55-65% in solvent)

Melting Point/Glass Transition Temp

Not determined (the polymer is not isolated from solution)

Density

1070 kg/m³ at 25°C (for 55-65% solution)

Water Solubility

The notified polymer is expected to have very low water solubility due to predominantly hydrophobic nature of its monomers.

Dissociation Constant

Not determined. The notified polymer contains residual acid functionalities which are expected to show typical acidity ($pK_a \sim 4$). However, this is not considered to be a concern due to the expected very low water solubility.

Particle Size

Not determined (not isolated from solution)

Reactivity

Stable under normal environmental conditions. The notified polymer contains hydrolysable functionalities. However, hydrolysis is not expected to occur significantly in the environmental pH range of 4 – 9.

Degradation Products

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>	30-50	30-50	30-50	30-50	30-50

USE AND MODE OF INTRODUCTION AND DISPOSAL**Mode of Introduction**

Polymer in RP4741 will be manufactured at approximately 150-200 °C at Akzo Nobel Pty Ltd, Sunshine North, Victoria. Samples will be taken for quality control purposes to achieve designed end-point parameters. The completed neat polymer will be cooled and thinned with solvent, tested and packaged in 200 L steel drums labelled with safety stickers. The drums are palletised and transported by fork-lift to an approved storage bund until required for reformulation into paint. The RP4741 polymer solution itself will not be transported off the Akzo Nobel site at Sunshine North, Victoria.

Reformulation/manufacture processes

The notified polymer will be reformulated into paint at the Akzo Nobel Sunshine North factory. The palletised, coded drums are taken by fork-lift to a Resin Plant blend tank where the polymer solution will be blended with other components using standard operating procedures to produce an intermediate product (containing 13% of the notified polymer). After QC testing, the intermediate product will be pumped to a bulk storage tank in an approved, bunded storage area. This intermediate product will be pumped, as required, to the paint factory for reformulation of the finished coating.

The paint reformulation process can be summarised as follows:

- The notified polymer solution will be pumped from the bulk storage tank to the mixing tank.
- Solvents (as per paint formula) will be added and mixed.
- Pigments will be added and dispersed under high speed mixing.
- Further solvent, cross-linking polymer and additives will be mixed in.
- The resulting paint (containing 2.0% of the notified polymer) will be tested and adjusted for paint properties.
- The paint will be pumped through a hose to a filtration unit for filtering and to a bulk storage tank in an approved bunded storage area.

Use

The notified polymer will be used as a paint additive for an industrial application and will not be available to the general public. The thermosetting paint containing the polymer at typically 2% will be applied by coil coating to metal sheet which will be used in the building industry.

6. HUMAN HEALTH IMPLICATIONS

6.1. Exposure Assessment**OCCUPATIONAL EXPOSURE**

Dermal and ocular exposure may potentially occur during certain processes involving the notified polymer. However, exposure to significant amounts of the notified polymer is limited because of the mainly automated processes, and the engineering controls and personal protective equipment worn by workers.

After coating application and once dried, the paint containing the notified polymer is cured into an inert matrix and the polymer is hence unavailable for exposure.

PUBLIC EXPOSURE

The notified polymer will not be sold to the public. The public may come into contact with the finished and dried product on repainted automobile bodies. However in this form the notified polymer will be bound in an inert matrix and as such will not be bioavailable 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 the assumed low hazard of the notified polymer as well as the engineering controls and personal protective equipment used by workers to minimise exposure.

PUBLIC HEALTH

The notified polymer will not be sold to the public. The paint containing the notified polymer is used by industrial applicators. Once the polymer is applied and cured it will be contained in an inert matrix, and hence will not be bioavailable for exposure. The risk to the public from exposure to the notified polymer is considered to be low.

7. ENVIRONMENTAL IMPLICATIONS

7.1. Exposure Assessment

ENVIRONMENTAL RELEASE

The notified polymer will be manufactured and reformulated at the same site in Australia. The amount of notified polymer released directly to the aquatic environment is not expected to be significant at the manufacturer site, reformulation site and at the applicator (coil coating) plant.

Indirect releases from these processes are expected to be from:

- Accidental spills (including transport and storage), which would be contained or collected by bunding, absorbent material for disposal to landfill.
- Manufacturing and reformulation equipment residues, which are expected to be collected and discarded to landfill.
- Empty drums containing residues (estimated to be 200 kg notified polymer per annum), which are expected to be sent to licensed drum reconditioners, where the residual notified polymer may be either collected for disposal to landfill or thermally decomposed into water and oxides of carbon.

In the coil coating process, the amount of notified polymer (in the paint) lost directly to the environment is not expected to be significant. Indirect losses are expected to be from:

- Accidental spills, which are expected to be cleaned up with absorbent material. The absorbed polymer is expected to be thermally decomposed or discarded to landfill. With existing good practices in place, spills would be minimal.
- Empty drums containing paint residues, which will be collected by licensed drum reconditioners who thermally decompose the contents or wash out the residues. The residues are estimated to be about 20 kg of polymer per annum, and are expected to be thermally decomposed or discarded to landfill.
- Rejected painted metal sheet, which may be treated through metal recycling processes where the fully cross-linked polymer is thermally decomposed during metal recovery.

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

ENVIRONMENTAL FATE

Up to 800 kg per annum of waste notified polymer might be generated during paint manufacture and use 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 degrade into water and oxides of carbon.

Most of the notified polymer will be used for metal sheet coating where it is cured and will be thermally decomposed when any coated sheet is subject to metal recovery, forming water and oxides of carbon. 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 and it is not expected to bioaccumulate due to its high molecular weight.

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

Based on the low hazard and assessed use pattern, the notified polymer is not considered to pose an unreasonable risk to the environment.